Visioning workshop for a sustainable future for Østerbro

Master‘s thesis

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Abstract

In the scale and speed of global changes in the Anthropocene, dealing with wicked problems such as the growing burden of climate change, biodiversity loss, or unsustainable consumption seems to many as unmanageable and even unthinkable. The issues we face are multi-faceted, interconnected, highly unpredictable and threatening to society at an unprecedented scale, which people are not equipped to deal with, or even wrap their heads around.

This collective inability to imagine alternative futures has been identified in literature as a major obstacle to address sustainability challenges, influencing individual behaviour, planning, as well as policy development.

Supporting and encouraging communities to imagine a desirable future therefore forms the basis of this master‘s thesis. The scope of this work lies in the Copenhagen neighbourhood of Østerbro, which can be seen as a case study to test our workshop design. This led to the formulation of the two research questions:

How can we, as Sustainable Design Engineers, develop a visioning method to make sustainable futures discussable?

How can it be used to collaboratively create a sustainable vision for Østerbro?

The framing of the project design follows methods and theories starting with Design for Sustainable Transitions, Six Transformations Framework, Nature-based Thinking together with visioning, scenario development, design games and ethnographic methods. The project navigated through the above-mentioned methods and theories started with the design of a visioning workshop, followed by testing of the workshop in two rounds, which led finally to the final solution - the Six Transformations Visioning Workshop. This workshop can be executed in two ways: as a product service system, which implies us as facilitators organising and conducting the workshop and as a toolkit for schools in Østerbro to do the workshop in a lesson.

Our project as a solution presents a tool to help the failure of imagination because it qualifies participants to discuss a more sustainable future and encourages communities to envision a preferable future for their neighbourhood.

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Through this Master‘s thesis, we have had the chance of collaborating with organisations and engaging with people and professionals that we would like to thank. Their contribution to our design process was substantial to the direction of the project and quality of the result.

First and foremost, we want to thank Birgitte Hofmann for the encouragement, positive and enthusiastic supervision, while providing us with her immense knowledge, insightful advice and great contacts.

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A big thanks towards everyone who participated in our workshops, the children of the Randersgades Skole, and the women who participated in the workshop in the Jagtvej library. We would especially like to thank the teacher, who helped us conduct the workshop with her art class at Randersgades Skole. Without her, we would not have had the chance to involve the children in our design process which was enormously important for our project.

Finally, we would like to thank our friends, families, and fellow students for their support throughout the whole thesis and their feedback.

Reader‘s guide

This report is structured around four sections and eight chapters (Figure 1). The first section covers the framing of the project by introducing the problem formulation and research question. The aim of this chapter is to provide the background and justification of the Master‘s thesis. It is followed by the project design chapter, which presents an overview of the different methods and theories used to approach the project in conjunction with the elaboration on how the elements fit together to answer the research question. This lead us to the state of the art which can be understood as a basis for the empirical research, where we introduce the collaboration partner followed by research on existing workshops, current solutions in cities within the Transformations 1, 2, 4, and 5, and current greening interventions in Østerbro. Subsequently, the process of the project is presented, followed by the reflection on the conducted workshops 1 and 2. Thereof, the final workshop design and the two fields of application are described accompanied by the discussion on how our solution is sustainable. The next chapter covers potential future steps for our project and opportunities for further research.

The conclusion aims to summarize the findings of the report, provide an overview on the limitations that were found through the project, together with reflections on the implications for Sustainable Design Engineers.

Figure 1 – Reader's guide, source: authors

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1. Introduction

It doesn’t stop; every morning it begins all over again. One day, it’s rising water levels; the next, it’s soil erosion; by evening, it’s the glaciers melting faster and faster; on the p.m. news, between two reports on war crimes, we learn that thousands of species are about to disappear before they have even been properly identified. Every month, the measurements of carbon dioxide in the atmosphere are even worse than the unemployment statistics.

Bruno Latour, Facing Gaia. Eight Lectures on the New Climate Regime (Latour, 2017).

1.1. Background

Climate change and its accompanying biodiversity loss and more frequent and severe extreme weather events have a significant effect on human health, wellbeing, livelihoods and extent of land that can sustainably support human populations. We have entered Anthropocene – when the main force shaping our planet has for the first time in its history been proven to be human activity. It is now imperative to radically transform our ways of life and production systems in order to safeguard the future of not only our species, but also the fauna and flora that we share the Earth with. Global partnership frameworks such as the 2030 Agenda for Sustainable Development and the Paris Agreement call for actions that not only mitigate climate change and adapt to its impacts, but also address other related societal problems such as hunger, poverty, power asymmetries.

A shift to more sustainable societies calls for a coordinated effort at all levels of society and across all sectors, from individual action, through local communities, up to national and international policy. This points to the pressing need of addressing sustainability challenges through participatory processes, where policy development is informed by the values and needs of not only experts but, most importantly, a wider public. The changes and level of concerted effort needed to combat such wicked problems exceeds what humans are used to dealing with alone (Steffen et al. 2015). This can lead to cognitive overload, anxiety, fear, or even denial (Norgaard, 2011), which all inhibit our sense-making and decision-taking abilities.

There is an irrefutable body of evidence for the extent of climate change and biodiversity loss provided by the current tools for exploring the future trajectories, such as the integrated economic and biophysical assessment models developed by the Intergovernmental Panel for Climate Change (Forster et al., 2018). However, it has been identified that these models based on quantifiable phenomena, accurate and state-of-the-art as they can be, often fail to reflect the complexities and context-specificity of issues they aim to address (Pereira et al., 2019; Rosa et al. 2017). The focus on quantifiability has created

an ‘imagination gap’ which can limit creative thinking about futures, and truly radical, system-level innovation for a path to sustainability (Pereira et al. 2019).

Imagination has been described by Galafassi (2018), basing on Yusoff and Gabrys (2011), as the way of seeing, sensing, thinking and dreaming that enables people to anticipate and shape change necessary for a transition towards sustainability. In order to construct goals, pathways, and ultimately actions that shape a sustainable future, we need to imagine alternative futures, step away and look critically at the current socio-political regime and practices. Milkoreit (2016) states that imagination “hardly ever happens in the minds of political decision-makers today” (Milkoreit, 2016, p. 188) and frames imagination not as an inherent human quality, but as a skill which needs to be practiced.

In the context of sustainable transitions, imagination takes on a larger and more active role - moving beyond simply creating images of the future, and extending into building capacity for transformation, giving agency and ability to shape the path towards sustainable futures. To pinpoint what we mean by that, first we need to look at the different types of futures discussed in the field of futures research.

1.2. Different types of futures

Imagining futures can take on many different forms, from companies planning for the next fiscal quarter, to authors building narratives of space conquest, emergence of new human species, doomsday scenarios, or utopias. Candy (2010) breaks futures into three basic types – possible, probable, and preferable. Withing all possible futures, there is the area of probable futures – the ones that our current trajectories are pointing towards. The probable futures are the ones most commonly created by forecasts and mathematical models analysing current pathways, such as the rise in temperature in relation to how fast humanity can curb CO_2 emissions. Possible, but improbable futures are the domain of science-fiction narratives. A third subset is the preferable futures – the domain of dreamers. What sustainable transition designers and, by extension, the authors of this thesis, are concerned with is reducing the distance between probable and preferable.

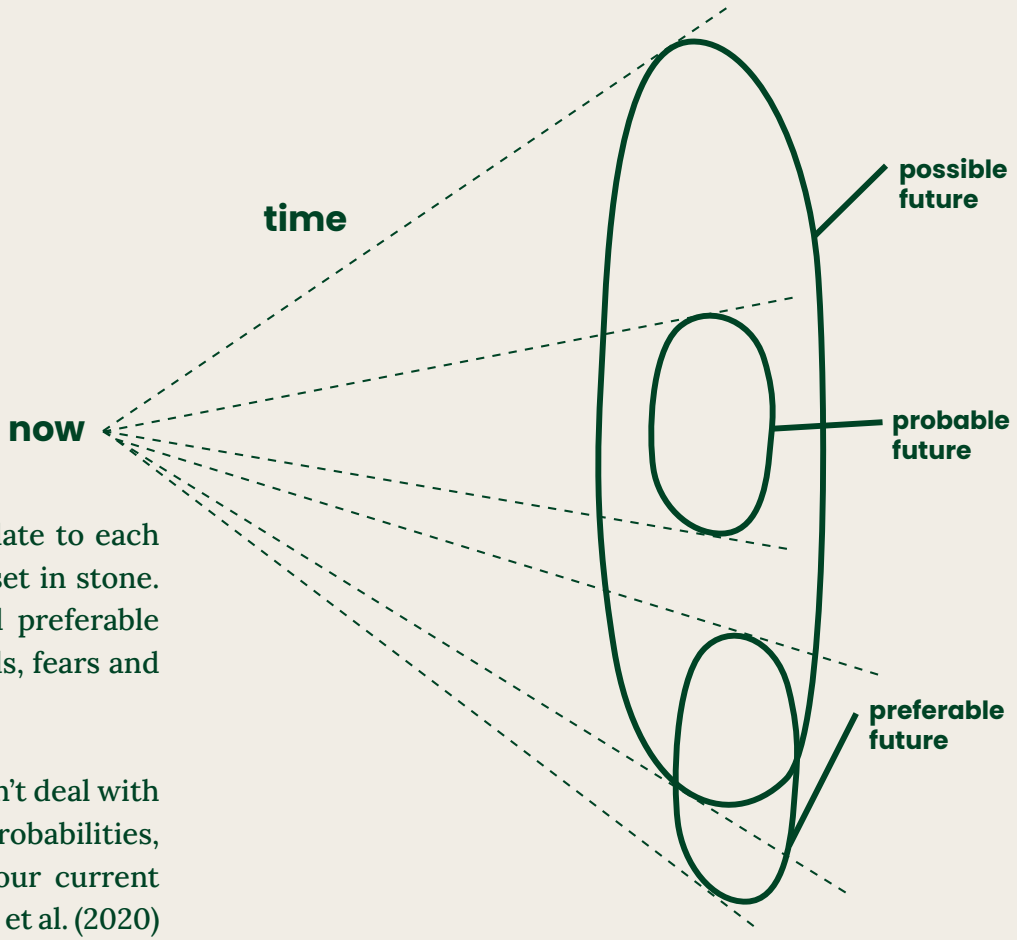


Figure 2 - Three types of futures, source: Candy, 2010

Figure 2 shows the three futures and how they relate to each other. None of the three futures, however, is ever set in stone. The boundaries of what is possible, probable and preferable shift constantly, reflecting our shifting actions, goals, fears and understanding of the world.

The issue of building more sustainable futures doesn’t deal with certainties – merely hopes, fears, aspirations, and probabilities, which we are only equipped to create based on our current knowledge. This phenomenon, referred to by Liveley et al. (2020) as “present imaginaries of future possible worlds” points to the fact that we tend to create visions of the future based on the language, terms, practices of today (Miller, 2006), and we risk creating scenarios that are merely extensions of our present priorities and concerns (Poli, 2017; Liveley et al. 2020).

1.3. Sustainable urban futures

Current models predict that by 2050, more than 2/3 of the global population will live in cities (United Nations Department of Economic and Social Affairs, 2018). Cities today already have significant carbon emissions - as they continue to grow, their ability to follow sustainable development principles will decide if we can meet global climate targets (City of Copenhagen, 2021). This is an indicator that it is increasingly vital to radically change urban systems. Cities are especially vulnerable to socio-economic and ecological instabilities, but at the same time they are fertile ground for experimentation and innovation – bringing them to the spotlight of sustainable transitions (Loorbach and Shiroyama, 2016).

Even when considering the transition in a single city, the systemic view needs to be retained to encompass the interconnectedness of social and natural dimensions. The direction taken by decision-makers and planners of today will influence the well-being, health, social life and economic opportunities of citizens of tomorrow.

In our thesis, we decided to focus on the Østerbro neighbourhood of Copenhagen to explore solutions that address the failure of imagination on a local scale.

Copenhagen is regarded as a city with many established sustainable initiatives, often touted as an example for other cities to follow. The urban design focused on liveability, walkability, relationship with water, nature-based solutions for climate resilience, and dense cycling infrastructure serve as an inspiration for similar initiatives replicated in urban areas worldwide (Ramboll and City of Copenhagen, 2014). Thus, we found it pertinent to work with citizens who already live in what others may regard as ‘the sustainable future’ and qualify them to discuss a bolder one. Setting our thesis in the Copenhagen context aims to see the truly forward-thinking alternative realities, rather than replicating already existing ideas.

Copenhagen and the neighbourhood of Østerbro, with its Klimakvarteret filled with nature-based resilience approaches, follow the trend of ‘urban greening’. The introduction of nature into the urban fabric is recognized as an important factor contributing to enhancing biodiversity, liveability, nature-oriented economic development and human well-being. Greening of the city is reflected in many ongoing initiatives in the municipality, like the ambition to plant 100,000 trees, the “Space for Nature” strategy that involves both land and water and priority for native species planting, or funding for citizen-driven biodiversity projects organized by the city and the Danish Society of Nature Conservation (City of Copenhagen,2015).

In this project, we collaborated with the organisations Miljøpunkt Østerbro and Kultur Ø to gain insight into the ongoing local sustainability initiatives, both from the environmental (Miljøpunkt Østerbro) and cultural angle (Kultur Ø).

1.4. Research question

The aim of this design study is to address the issues of limited ability to imagine alternative futures in the local context of Østerbro, by exploring and testing tools such as narrative and visual scenarios, and a scenario-based visioning workshop. We base our research on existing methods for interventions to spark creative thought about sustainable futures and methods for co-creating scenarios to develop a new tool that combines visual and written narratives, mapping of interrelations of urban interventions for sustainability and developing a shared vision of a preferrable future.

We set out to gain insight into the following research questions:

How can we, as Sustainable Design Engineers, develop a visioning method to make sustainable futures discussable?

How can it be used to collaboratively create a sustainable vision for Østerbro?

In the following section we elaborate on the theoretical framework used in this design project, as well as the methods we used in the process.

2. Project design

„Predicting the future is much too easy, anyway. You look at the people around you, the street you stand on, the visible air you breathe, and predict more of the same.
To hell with more. I want better.“

Ray Bradbury (1982), Beyond 1984: The People Machines

This section will describe how we designed our research process, the theoretical framework and methods used in order to gain an insight into the research question. The problem area we have outlined could be approached from multiple angles. To arrive at this particular project design, we combined the theories and methods that were part of the Sustainable Design Engineering master’s programme with the knowledge and experience we brought into this collaboration from our academic backgrounds and previous work (Figure 3).

We conducted an exercise to map out the known theories, methods, approaches, and competencies with which we both contribute to this project. This exercise helped us identify strong points, synergies, and the direction of this thesis, but also crucial knowledge gaps that needed to be filled in order to gain the most relevant insight into our research questions.

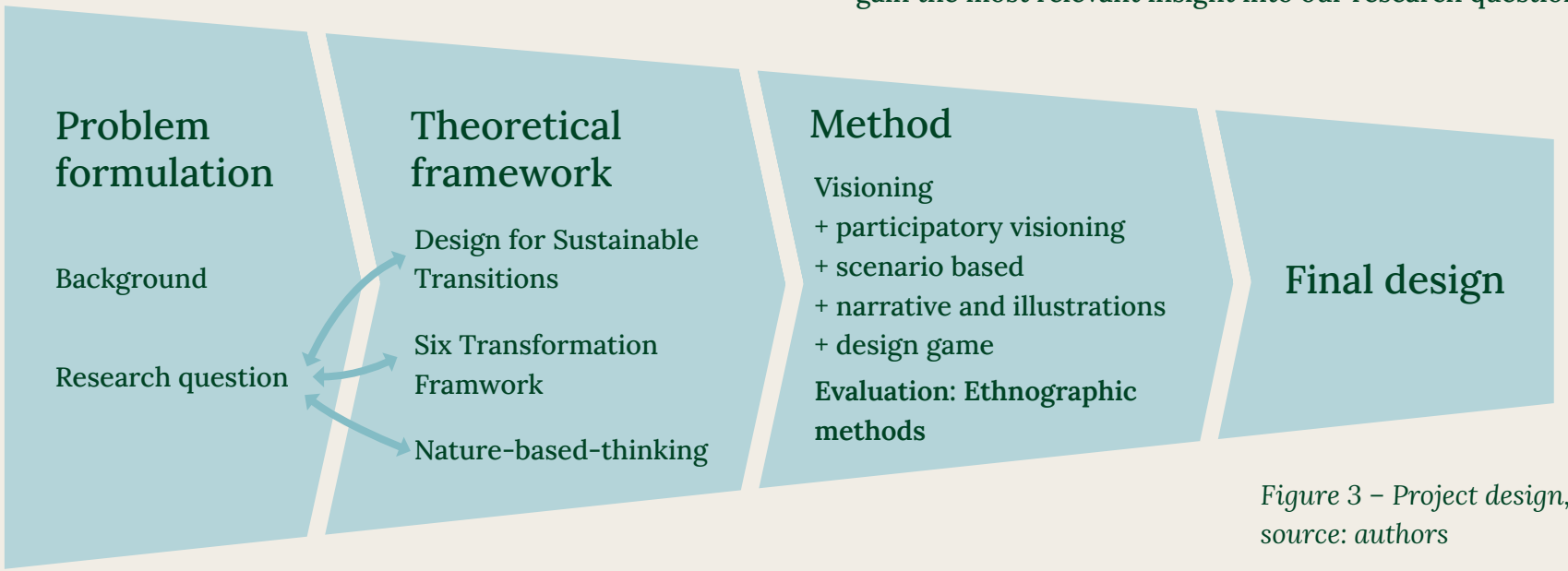


Figure 3 – Project design, source: authors

2.1. Design for Sustainable Transitions

The scale and complexity of the wicked challenges described in the introduction cannot be overcome by technological innovation or incremental change such as an increase in efficiency or isolated regulatory intervention (Loorbach and Shiroyama, 2016). They call for what is referred to as a sustainability transition – a radical, structural change in how societies function, how they are governed, their production and consumption patterns (Köhler et al. 2019; Loorbach, 2010). These transitions are characterized by taking a strong systems approach and recognizing that sustainability isn’t brought about by creating more sustainable products or services, but rather by intervening with the systems that these products and services are embedded in (Gaziulusoy and Öztekin, 2019).

These systems consist of the environment (ecologies), technology (products, processes, built environment) and society (institutions, practices, culture), and the interrelations between them, making them socio-technical-ecological systems (STES) (Ahlborg et al. 2019).

In the field of Sustainable Design Engineering, sustainability transitions theory is integrated with design theories and methods, creating Design for Sustainable Transitions (DfST). The DfST field is concerned with creating alternative socio-technical-ecological systems, how design can be used to enable transitions into these alternative systems, as well as the role of designers themselves (Gaziulusoy and Öztekin, 2019).

Gaziulusoy (2015) proposes a list of criteria that design efforts should fulfil to be part of a systemic transition, bringing attention to elements that are often missing from existing solutions. These criteria include a strong sustainability model, radical innovation, enabling a mindset change and adopting long-term perspectives. To enact a sustainability transition in a socio-technical-ecological system, the proper timescale needs to be adopted. As changes in urban planning and the mindsets of citizens and policymakers cannot change rapidly, the challenge lies in imagining a long-term preferable future first. In this thesis, we aim to address this challenge through design methods that will allow citizens to create visions of this alternative future.

2.2. Six Transformations Framework

To frame how we approach sustainability and the pathways that communities need to take to reach it, we have based our project on the Six Transformations Framework (Sachs et al., 2019), which proposes an action agenda for the implementation of the 17 UN Sustainable Development Goals (SDGs) (United Nations, n.d.). The Framework divides the SDGs into six areas of action:

„(1) Education, gender and inequality;
(2) Health, well-being and demography;
(3) Energy decarbonization and sustainable industry;
(4) Sustainable food, land, water and oceans;
(5) Sustainable cities and communities; and
(6) Digital revolution for sustainable development“
(Sachs et al., 2019, p. 805).

We align our project with the Six Transformations Framework’s approach to sustainability – not just focused on environmental or social sustainability, but recognizing that the path towards a just, climate-neutral, and liveable world needs to integrate all of the six areas. The Framework, and by extension the SDGs, call for concerted action from governments, businesses, and civil society. Therefore, we find it crucial that the solution we propose in this thesis is not only concerned with present, local problematizations – we align it with international efforts to contribute to the global sustainable transitions.

2.3. Nature-based Thinking and Nature-based Solutions

During the 2021 global UN Climate Conference COP26 in Glasgow, a full day of deliberations was dedicated to nature-based solutions. This is a clear indication that they are becoming a firmly established tool for climate adaptation and mitigation, while also recognized for the co-benefits of enhancing biodiversity, and creating more liveable spaces for happier, healthier communities (European Commission, n.d - a).

The term Nature-based Solutions emerged in the late 2000s (Eggermont et al., 2015), taking over as an umbrella term for many related concepts such as blue-green infrastructure, ecosystem services, natural capital (Nature, 2017), ecosystem-based approaches (Cowan et al. 2010), and ecological engineering (Eggermont et al., 2015).

IUCN defines Nature-based Solutions as “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” (Cohen-Shacham et al., 2016, p. 7), and the European

Commission as “Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience” (European Commission, n.d. -b). The definitions are considered intentionally vague to encompass a diverse range of methods which can be applied in many contexts to address, e.g., ecosystem conservation, the urban heat island effect, stormwater management, coastal erosion and storm surge protection, air quality and more, all as a result of natural processes (Cohen-Shacham et al., 2016).

Even though the term is relatively new, it has already been criticized for its utilitarian and anthropocentric character, mostly seen in the word ‘solutions’. The radical change urged by IPCC (Forster et al., 2018) and IPBES (IPBES, 2019) to break from current trajectories and meet biodiversity conservation goals calls for more transformative concepts that go beyond local NBS interventions (Randrup et al., 2020).

Not satisfied with the instrumental perspective of ‘solutions inspired by nature’, Randrup et al. (2020) propose to extend it to ‘Nature-based Thinking’ – not utilizing natural processes to replace or supplement infrastructure, but acknowledge the human-natural-technological nexus in all of urban development, balance the anthropocentric and eco-centric values.

Looking at urban design from a Nature-based Thinking perspective exposes how unsustainably one-sided the relationship between humans and non-human nature in cities currently is. There is a need to move away from the ‘nature as service’ mindset, and towards urban solutions that take into account the indivisibility and potential for synergies in the socio-technical-ecological system to foster long-term sustainability (Randrup et al., 2020).

For the purposes of this thesis, we understand Nature-based Solutions as specific local instances of applied Nature-based Thinking, which is the overarching mindset that should guide sustainable urban development. We do not regard any of these concepts as superior or more complete, merely that they are distinct in their practicality.

Seeing as the scope of our thesis is based in cities, we see Nature-based Thinking and the implementation of Nature-based Solutions as a way forward to foster a positive relationship between humans and non-human nature and to enhance the well-being of citizens of Copenhagen. Transformation 5 (Sustainable Cities and Communities) calls for designing cities which increase the quality of life of their inhabitants and enhance their climate resilience by introducing more green spaces through inclusive planning (Sachs et al., 2019).

This approach is central to our thesis, as not only have Nature-based Solutions proven to be a practical and cost-effective way to raise the climate resilience of urban areas, but that Nature-based Thinking highlights that restoring the relationship with nature in cities helps to design “new and more integrated pathways towards urban sustainability” (Randrup et al., 2020, p.2).

2.4. Visioning

Pohl and Hirsch-Hadorn (2007) point out that to enable a sustainability transition, there is a need to generate three types of knowledge – systems knowledge (the current, unsustainable state of systems to know what needs to change), target knowledge (alternate possible systems), and transformation knowledge (building new pathways). Of the three, only systems knowledge can be created by discovery-based research. Target and transformation knowledge must be created through creative imagination (Gaziulusoy and Ryan, 2017). This results in a desirable state in the future, referred to as a vision (target) and obtained through a process of visioning, as well as a pathway to that vision (transformation) (Wiek and Iwaniec, 2013).

Below we describe the various approaches to visioning and considerations that need to be taken into account when designing a visioning process for a sustainable transition.

2.4.1. Participatory visioning

Developing a shared vision among a group of diverse actors provides a reference point for strategies and aligning activities, while also developing a sense of ownership and accountability over the vision (Wiek and Iwaniec, 2013). Participatory visioning is a process that combines visioning with participatory design, in which design activities are performed by designers together with relevant actors, who include experts, users or other stakeholders (Spinuzzi, 2005).

Currently, in knowledge production in sustainability sciences there is an over-representation of narrow expert groups and underrepresentation of the public (Musch and von Streit, 2020). Garduño García and Gaziulusoy (2021) outline three main reasons why collaborative approaches to knowledge generation in sustainable transitions are necessary: to represent the values of a variety of actors in the negotiation of transitions, to challenge the established power structures and their vested interests that slow down transitions, and to promote a wider ownership of these transition processes. Creating inclusive deliberation spaces, where people from different backgrounds are represented, allows for the transition design to be informed by multiple knowledge cultures, including practice-based and tacit knowledge (Garduño García Gaziulusoy, 2021; Miller et al.

2011). A successful implementation of sustainability transition also relies on the inclusion of the public (Garduño García and Gaziulusoy, 2021), as they are the ones who have power in the system by being consumers and users of the urban space, as well as through their political power in a democracy.

To make futures inclusive and discussable, it is vital to move towards a more empathic engagement with the future scenarios. This is done by making the visioning process enjoyable, using easily understood language and engaging with a variety of visual and interactive media (Gouache, 2022). There is a need for future visions to tell a story and have a personal character, which can be easily empathized with, which can be attained by showing everyday future situations (Garduño García and Gaziulusoy, 2021).

2.4.2. Scenarios

Scenarios are deliberately crafted, internally consistent and plausible descriptions or images of potential trajectories of a given system (Heugens and van Oosterhout, 2001). In contrast with visions, they do not necessarily show desirable futures (Wiek and Iwaniec, 2013). They have been identified as useful tools for dealing with uncertain futures and inspiring action by letting the recipients explore multiple possible futures, their implications, and pathways that lead to them. Exposure to different viewpoints in participatory scenario-building exercises can boost the understanding of complex systems, such as cities, and stimulate learning and collective action (Johnson et al. 2012). They have become a popular tool for competence building and decision-making used by organisations such as the European Commission (European Commission, n.d. c,d).

The design of scenarios is based on the specific purposes they set to achieve – they can be firmly placed within probable trajectories through the integration of mathematical models, such as expected future emissions and expected climate impacts, or take the form of stories, which allows for more creative freedom. The quantitative, science-based type is more common for e.g., organizational strategic planning, goal setting, or policy development. The freer, more qualitative type is commonly found in activist art or education.

Our use of scenario development in this thesis is two-fold. Based on our desk research, we created scenarios based on three of the Six Transformations that we found relevant (see section 3.4.) to aid in the creation of a final shared scenario.

It is important to note that in participatory visioning activities, the scenarios themselves are to be considered a means to an end. Since scenarios cannot show a full spectrum of possible futures, but a selected few, “the most important outputs are not

the scenarios themselves, but the conversations they prompt which enable understanding of associated uncertainties, different perspectives, range of options and strategies to move forward” (Gaziulusoy and Ryan, 2017, p. 8).

2.4.3. Scenario Workshop

To investigate exiting methods for participatory scenario development we analysed four scenario workshop designs (see section 3.3).

The scenario workshop methodology follows a participatory approach that strives to encourage action to solve local and community challenges and anticipate potential future scenarios. More precisely, scenario workshops aim to engage participants from local communities, such as experts, policymakers and citizens, in deliberative discussion around the matter of concern and by that produce a communal plan of action (Participedia, n.d.). This is achieved by gathering and creating new knowledge while aligning the different understandings, attitudes, and visions of all participants around the presented scenarios. The process of a scenario workshop typically includes three stages: critical, visionary, and implementation phase (Participedia, n.d.) while discussions, voting, presentations and brainstorming are ongoing throughout the workshop.

The benefit of this method is that it motivates different stakeholders to decide on desirable future scenarios while challenging the status quo by, for example, asking “What if?”. By asking “What if?”, it allows the participants to envision future possibilities and, based on that, shape and discuss actions today. (Eusea, n.d.). The method is furthermore useful to raise awareness around the future issues of a community and while aiming for a consensus it also examines the differences and similarities between the participants.

The weakness of the method can be found in the costs and efforts in organising and performing a scenario workshop because of the required large number of participants from different disciplines across the community.

2.4.4. Narratives and illustrations

When working with future scenarios narratives and illustrations can be used as powerful tools to engage participants of the described scenario workshops. While narratives can help to not only “shape understanding of past events, but also in seeking to shape trajectories of change into the future “(Buchanan and Dawson, 2007, p.669), illustrations can support conveying ideas to audiences and potentially evoke imagination. In the following section, we will discuss the two elements that will be used in the workshops.

According to Garduño García and Gaziulusoy, (2021), narratives that are furnished with objects and technologies not only “provide participants with the everydayness, that enables them to relate with the proposed future” but also “evoke emotional responses and enable participants to speculate what futures might be and feel like” (Garduño García and Gaziulusoy, 2021, p.11) which can potentially lead to the change of behaviour.

As narratives can translate into different meanings for everyone, they can evoke a spectrum of imagined futures in the readers. To give an example, while reading a narrative may create a vivid movie-like scene in one‘s head, for others, it may not convey any mental image. As imagining futures with nothing but a written description can be a demanding mental task, visual elements should be regarded not as decoration, but as a crucial element of scenarios (Gaziulusoy and Ryan, 2017). We see that as Sustainable Design Engineers with a background in design and architecture, we are able to bring our visual design competencies to assist the participants in creating images of the scenarios.

2.5. Design game and boundary objects

To follow Gouache’s (2022) recommendations on democratizing participatory visioning processes by facilitating enjoyable, highly visual interactions that use accessible language, we take inspiration from design games in developing our solution.

The function of the design game is to collaboratively and creatively facilitate the involvement of different participants. By that, the idea generation and communication can be improved and by “shifting focus to the game, power relations and other factors that might hamper idea generation, are downplayed” (Brandt and Messeter, 2004, p. 121).

The elements of the design game can be understood as boundary objects - a concept introduced by Star (1989). They are “objects that are shared and shareable across different problem-solving contexts” (Carlile, 2002, p. 451). By using boundary objects, the production and sharing of knowledge can be facilitated across boundaries of the social or knowledge world of the individuals (Star, 1989; Star, 2010).

Boundary objects are most effective when they provide the means for people to build a shared syntax (vocabulary, common concepts), when they allow people to voice and learn about their differences and dependencies, and when they enable the joint translation and transformation of knowledge (Carlile, 2002). This is crucial in the participatory visioning process and enables the development of shared visions by participants coming from different knowledge cultures.

The elements developed for our workshop can be understood as boundary objects that allow “various interpretations, and yet have a common core shared by all participants” (Brandt et al., 2008, p. 60).

2.6. Ethnographic methods

2.6.1. Workshop observation

The ethnographic method which was used throughout the workshop was the observation of the different steps performed by the participants. The observation of the workshop was documented by taking notes and photos together with recording parts of the discussions during the exercises. Furthermore, we facilitated a discussion at the end of the workshop to receive feedback on the participants’ experiences, feelings, and suggestions on the workshop design.

2.6.2. Semi-structured qualitative interviews

To gather insight into how participants navigated the visioning process and how they viewed the outcomes, we conducted three semi-structured qualitative interviews with participants of the workshops and one with the teacher who helped us facilitate a workshop in her school. This form of ethnographic enquiry aims to guide the interviewees with open-ended questions without imposing meaning, but to also allow them freedom and flexibility to share their personal perspectives, impressions, priorities in a casual, conversational setting (Zorn, 2008).

The semi-structured interviews, together with a general discussion round at the end of each workshop, served as the main basis for collecting feedback on the participants’ impressions and suggestions for improvements in future workshops.

Interviewees were chosen from the pool of workshop participants based on what insights they had during the workshop feedback round, as well as their availability and willingness to be interviewed. We recorded the interviews by taking notes containing the summarized points of discussion, as well as direct quotes. The notes were sent to the interviewees afterwards to confirm the contents and reaffirm the interviewees’ consent for including their views in this thesis. The interviews were anonymized so as to respect the identities of the interviewees, who will only be referred to in this thesis by their role (participant/teacher).

2.7. How do they all fit together?

To enable a radical sustainable transition in a complex socio-technical-ecological system like a city (or, in our case, a neighbourhood in Copenhagen), we set out to democratise the process of creating a vision of a preferable future. This vision helps align activities that lead us towards this future and encourage ownership of the idea. In this thesis, we create insight into how this vision can be created through tools like scenarios, narratives, illustrations, consolidated into a new visioning workshop that takes inspiration from Nature-based Thinking and is based on the Six Transformations Framework.

The following section tells the story of how we make use of the theories and methods described above to develop, test, and evaluate this new visioning workshop.

3. State of the art

3.1. Introduction

Nature-based Thinking has been proposed as a promising answer to some of the challenges that cities face regarding sustainability on the social, technological and ecological level (see section 1.1 and 1.3). While Nature-based Solutions are most well-known for providing ecological sustainability and biodiversity, a more holistic approach to urban sustainability should also include education, fighting inequality, and supporting the health and well-being of citizens. Existing solutions all around the world aim to solve the mentioned challenges and are, therefore, presenting the base for the state of the art of this Master‘s thesis.

In the following section, we will describe the solutions in cities structured around selected four of the Six Transformations that we find most relevant for the project, as well as current greening initiatives in Østerbro, also those developed by our collaboration partners Miljøpunkt Østerbro and Kultur Ø.

3.2. Collaboration partners

3.2.1. Miljøpunkt Østerbro

The local climate and environment centre Miljøpunkt Østerbro mediates between the government and local citizens towards a more sustainable city. They work with the Østerbro Lokaludvalg (local committee) to cover a “wide range of activities focusing on topics such as the UN‘s world goals, urban nature, biodiversity, waste and resources, air pollution, climate adaptation, (...) cycling, ecology, food waste and plastic pollution” (Miljøpunkt Østerbro, n.d.). Furthermore, they aim to involve citizens, educating and fostering more sustainable human-nature relations, to find local solutions to the global climate and environmental challenges. The activities in the neighbourhood in Østerbro include urban greening, support for initiatives for the environment, creating a professional network to encourage sustainable behaviour (Miljøpunkt Østerbro, n.d.).

We see Miljøpunkt Østerbro as an ideal collaborator for our thesis, as we can benefit from their knowledge and experiences in the field, as well as their network of contacts to reach relevant participant to test our solution. In exchange, we invited them to become participants themselves, to see first-hand what the citizens of Østerbro see as their preferred sustainable future. Both we and the organisation have a common goal in ensuring that citizens care about sustainability in their daily lives and aim to make the neighbourhood greener. As the organisation doesn’t deal with participatory visioning as their primary approach, collaborating with us in this project may help qualify them to discuss sustainable future visions both internally, as well as in their external activities with citizens.

Our contact person in this organisation was Louise Nøhr, project manager at Miljøpunkt Østerbro.

3.2.2. Kultur Ø

Kultur Ø is part of the City of Copenhagen‘s Culture and Leisure Administration responsible for Østerbro, Nordhavn and in the Inner City. With a collaborative approach, they aim to create a city that lives and develops through culture and leisure experiences, literature, music, creativity, and sports (Kultur Ø, n.d.). Kultur Ø has a large team with close relationships to administrations, the city council and it has a city-wide department named “DIT: KBH” (meaning “your Copenhagen”) which brings together multiple culture houses in Copenhagen to organise volunteering, co-creation and creative entrepreneurship. The facilities of Kultur Ø consists of: Øbro Jagtvej Library, Østerbro Library, Krudttønden, Kulturcenter Kildevæld (under construction), Idrætshuset and Østerbro Stadion, Remisen, Svanemøllehallen, Svanemølleanlæget, Ryparkens Idrætsanlæg, Østerbrohuset, Østerbro Skøjtehal, Fælledklevarden Skølhuset and Idedtshallen Skolenhuset (Kultur Ø, n.d.). Kultur Ø has offered to promote our initiative within their network and share their facilities, so we could host our second workshop in Østerbro Library.

Our contact person in Kultur Ø was Mikael Hillmann.

3.3. Current scenario-based workshops and discussion

3.3.1. Introduction

This section provides and overview of different workshops together with a discussion of their strengths and limitations, which creates the justification for our design process. The workshops: the EASW Methodology, Scenario Workshops, the Scenario Exploration System and the Future Workshop will be presented in duration, participants and procedure. Finally, we reflect on them and identify gaps, which can be understood as the starting point for our workshop proposal.

3.3.2. The EASW Methodology (EASW)

The European Awareness Scenario Workshop (EASW) method, developed in Denmark and used by the European Commission, aims to promote dialogues between all interested parties and local actors, improves the understanding of local problems and conditions and “facilitates consensus on proposed solutions” (ADAGE Environment, 1998, p. 2). The participants are encouraged to “discuss current and future problems, seek solutions and suggest changes that are crucial to the improvement of their

city and its sustainable development” (ADAGE Environment, 1998, p. 3).

Duration: 2-3 days

Participants: 24-32 interdisciplinary participants divided into four groups according to their expertise.

Procedure: The workshop starts with introduction to the state of art including current projects in the city, as well as existing plans for the city development. Subsequently, the participants are asked to express their ideas and formulate the best and worst scenario. The main objectives for their sustainable future are selected and summarised in a poster and discussed. The next day starts with the topic of realising the ideas. This requires discussions on feasibility, after which the participants are asked to create another poster about their suggested actions to implement the ideas and subsequently present the poster to the other groups. The evaluation of the posters is done by voting. Finally, the participants are asked to define responsibilities (individuals or/and community), assess if high or low technologies are needed and the assign a group that continues the task, if possible. Afterwards, the result is presented to local and regional authorities.

3.3.3. Scenario workshops (SW)

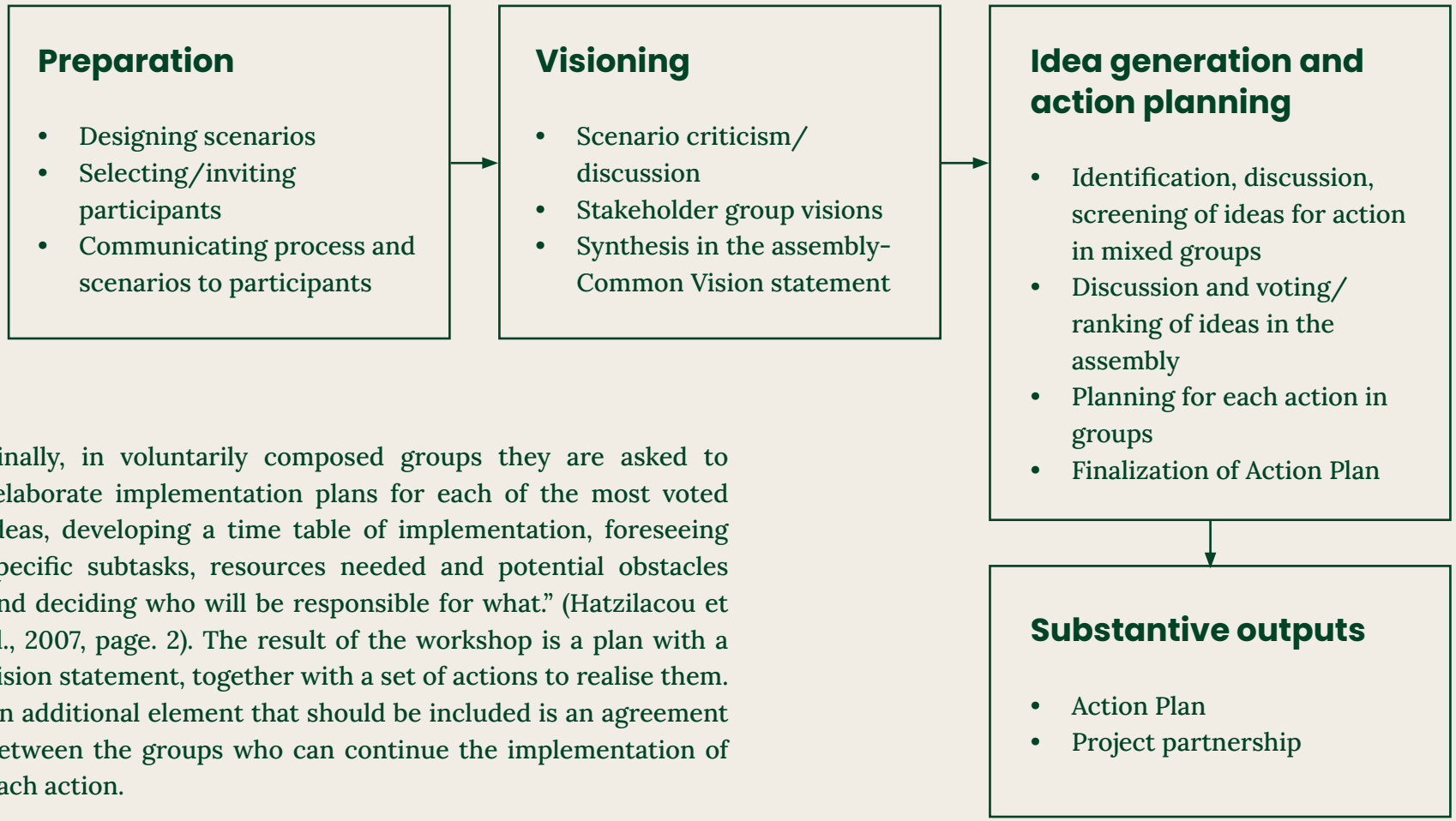
SW is a participatory method for public debates of environmental and technological issues and for participatory planning. Furthermore, it initiates dialogues between stakeholders and promotes learning between participants.

Duration: 2 days or one-off workshops

Participants: four clusters of stakeholders that are shaped in homogenous groups: scientists, policy makers, business representatives and citizens.

Procedure: The three main tasks of the scenario workshop are: visioning, idea generation and action planning (Figure 5). The organizers prepare four alternative scenarios in advance of the workshop. On the first day, the participants are asked to criticize and deliberate the scenarios in their groups. Afterwards, they are encouraged to use the elements from the scenarios to create their own vision and to finally align it into one common vision statement that is shared between all the groups.

The second day is dedicated to the generation of ideas and action planning. This time, participants are asked to create mixed groups and to work on ideas to realize their vision. They use voting and ranking to select the most popular idea.



Finally, in voluntarily composed groups they are asked to "elaborate implementation plans for each of the most voted ideas, developing a time table of implementation, foreseeing specific subtasks, resources needed and potential obstacles and deciding who will be responsible for what." (Hatzilacou et al., 2007, page. 2). The result of the workshop is a plan with a vision statement, together with a set of actions to realise them. An additional element that should be included is an agreement between the groups who can continue the implementation of each action.

Figure 5 - SW process, source: Hatzilacou, 2007

3.3.4. The Scenario Exploration System (SES) - Operation sustainability, The City Greening Game

The Scenario Exploration System (SES) can be understood as a game that utilizes engagement techniques to encourage the full potential in the reflection of the participants to imagine a systemic scenario collectively. The City Greening Game aims to “encourage constructive conversations among key city actors, and to promote integrated long-term thinking in a spirit of collaboration in the context of sustainable urban planning” (European Commission, n.d.-c). To enable sustainable urban development and planning, the roles of the players are chosen to represent the most important actors in this context (European Commission, n.d.-d).

Duration: 3 hours

Participants: five participants and one facilitator. The players are representative of the municipal authority, national authority, city business, NGO and a public voice.

Procedure: This method involves game material such as a board, several cards and sheets. The participants decide on the role they want to play, followed by the selection of two contrasting scenarios over a 5-, 10- and 20-year time horizon. The game includes 18 megatrends cards (such as climate change or urbanization), which affect the scenarios over the selected time horizon. The first 60 minutes is spent on covering the explanation and preparation of the game, including the definitions of roles. The second phase of the game is again 60 minutes, and it covers the exploration of the first scenario. Phase number 3 has the goal to explore the second scenario in the same manner as the first one. The game centres around long-term objectives, which the participants need to solve by exploring scenarios. A score system gives the game its playful character. The game ends with a reflection on similarities and differences of the two contrasting scenario explorations.

3.3.5. The future workshop (FW)

FW is a method that focuses on critique, collaborative learning through interaction, group dynamics and teamwork, democracy and empowerment and on the facilitation of creative problem-solving processes (Vidal, 2005). FW aims to support oppressed groups to pursue better living conditions and an improved society by facilitating learning on how to create, sustain and develop reliable participative communities (Vidal, 2005).

Duration: 1-3 days

Participants: 15-20 participants

Procedure: FW consists of the following five phases (Jungk and Müller, 1987):

- The preparation phase (invitation of participants, preparation of facilities, presentation of the agenda to the participants)
- The critique phase (critical discussion and analysis of a problem, structuring ideas, evaluation and prioritization)
- The fantasy phase (imaginative warm up, turn critique in the opposite, brainstorming and development of an utopia)
- The implementation phase (prioritizing, evaluation and formulation of the ideas and development of an action plan)
- The follow-up phase (monitoring of the action plan, potentially planning of new FWs)

3.3.6. Discussion of the analysed methods

The methods SW and EASW are useful tools when it comes to concrete and tangible scenarios for the local community. They can help to create a common ground between the participants, create a consensus and plan actions for the implementation of the scenarios. However, we believe that due to the inclusion of a validation phase based on the feasibility of the ideas, the creativity of future scenarios is limited. A sustainable transition in a city requires radical change and bold ideas. Therefore, by focusing on current initiatives and existing plans for the near future, the ideas of the participants may be restricted to small scale solutions.

The Green city game is building on the representation of roles that can be chosen by the participants. When the participants chose a role they normally do not have in the real world, valuable insights from their knowledge worlds may get lost, such as the tacit and practice-based knowledge. However, we do see gamification as an inspiring element for the development of our solution. Furthermore, we see great potential in involving multiple actors when developing and analysing scenarios.

We furthermore disagree with the approach of FW for starting with a critical perspective and then continues with fantasy and implementation, because this approach shifts the focus to current problems. Instead, we believe the right choice for creating a desirable future is to “depict a future preferable situation, then analyse the actual situation, and finally find ways to move from the actual situation to a preferable one” (Vidal 2005, p.2), as starting with a critical phase may result in demotivation of the participants.

The research on existing workshops revealed a gap in interdisciplinary participatory workshops combined with visioning sustainable futures that are not framed around current challenges and allow bold creative exploration of positive scenarios. Furthermore, we did not find any solution that combines the mentioned elements with encouraging the involvement of citizens of the local community. Therefore, we decided to develop our own method that can qualify citizens by equipping them with knowledge around sustainable urban interventions in order to develop their vision of a preferable future.

3.4. Analysis of the Transformations in the urban context

To get an overview on existing sustainable urban solutions, we decided to focus our desk research on four out of the Six Transformations:

- 1 (Education, gender and inequality),
- 2 (Health, well-being and demography),
- 4 (Sustainable food, land, water and ocean), and
- 5 (Sustainable cities and communities) (Figure 6).

Transformation 3 (Energy decarbonisation and sustainable industry) and 6 (Digital revolutions for sustainable development) were not chosen, as they do not directly correlate with the topic of this thesis, being the ones most reliant on technological solutions. Although developing participatory visioning activities is just as important in these two areas, we have made the conscious choice to exclude them in order to narrow down the scope of this project. The more focused scope allows us to develop more in-depth scenarios for each Transformation, as well as to identify more interrelations between them. In the following section, we will analyse the different sustainable urban solutions that can fit within the four selected Transformations.

Leave no one behind

Transformation 6
Digital revolution for
sustainable development

Transformation 1
Education, gender
and inequality

Transformation 5
Sustainable cities
and communities

Transformation 2
Health, well-being
and demography

Transformation 4
Sustainable food, land,
water and oceans

Transformation 3
Energy decarbonization and
sustainable industry

Figure 6 - Selected Six Transformations, source: based on Sachs et al., 2019

3.4.1. Urban design in Transformation 1 - Education, gender and inequality

Gender-sensitive urban planning creates opportunities for implementing Transformation 1 in an urban context. By “building an understanding of the different perspectives and interests of women and men as users and user groups, considering gender, as well as age, life situation and ethnic, cultural and social backgrounds, as an analytical tool to balance multiple differences and equality” (Damyanovic and Zibell, 2013, p. 25), inequality and gender can be addressed in urban planning (Bendik, 2019).

A great example of the inclusion of different ethnic, cultural and social backgrounds in the Danish context is Superkilen, a public park in Nørrebro, a district in Copenhagen. Nørrebro suffers from a negative image because of a higher level of violence and crime as a result of a lack of cultural integration and other aspects such as disconnectedness of the area to other parts of the city. The development of Superkilen aimed to solve some of these problems by the extensive involvement of residents in the design of the park. As a result, all the elements, such as the materials and furniture, are influenced by a variety of nationalities such as Thai Boxing Ring from Bangkok or a Swing Bench from Baghdad. Furthermore, it creates space for local cultural events organised by the local community, such as a 1001 Nights Storytelling event or open-air concerts. The park furthermore provides space for different age groups - for example, the Black Octopus from Japan, which aims to attract young families with children for play and interaction. The overall aim of the Superkilen project was to „become a creative and diverse public space that would not only reflect the neighbourhood’s cultural diversity, but that would also benefit local residents across different ages, gender, religions and cultures.” (Akšamija, 2012, p. 5). The safety aspect is implemented by the “lighting, oversight and the general openness of the design allows for an increased feeling of security in the area, which has had a positive effect on reducing gang activity, vandalism and crime” (Akšamija, 2012, p. 13). It can be argued that this also improves gender equality in the urban space. (Gardner, 2019). Superkilen provides an example of a successful improvement of inequality and gender-sensitive design in an urban space (Akšamija, 2012).

Another, more radical, urban approach is the human-centred concept for urban transformation called 15-Minute City. The concept is that most of the daily necessities, such as workplace, shopping opportunities and schools can be reached by either walking or cycling from the residents‘ homes within 15 minutes. The 15-Minute City Project is designed to “help access-focused urban transformations be what we need them to be: ambitious, inclusive, measurable and effectively implemented” (The 15-Minute City Project, n.d.). Accessibility is a core element in this concept, both physically and financially and together

with proximity and safety creates a sustainable solution in the context of inequality.

Accessibility and safety are also necessities when it comes to the inclusion of the gender perspective in the urban context. There are two approaches to implementing gender balance in urban planning: the bottom-up and top-down approach, which implies the involvement of women as citizens (bottom up) as well as urban planners and policy makers (top down). Making women active participants in the process of planning and policy making together with educating gender equality in urban planning and decision-making processes are crucial to create gender awareness and to create gender-sensitive cities. According to Bendik (2019), the topic of urban planning with regards to the gender perspective was academically neglected in the Danish context. Representative cases from other cities in Europe could therefore be used as model examples for Denmark. In Barcelona, for instance, female architects and urban planners founded an organization, named ‘Col·lectiu Punt 6’, to create gender awareness in the planning of urban areas and green spaces to adress gender discrimination in the city (Ortiz Escalante and Gutiérrez Valdivia, 2015). Through the active involvement of women in the participatory urban planning, ‘Col·lectiu Punt 6’ aimed to create a “better understanding about the realities of women, and how they experience their neighbourhood.” (Bendik, 2019, p. 30). By hosting workshops, conducting questionnaires and organising exploratory walks, they ensure a bottom-up gender perspective on studying neighbourhoods. Thereby they can help planners with “identifying and analyzing the neighbourhoods, where women feel the least safe and welcome” (Bendik, 2019 p. 30).

Education on gender awareness is not the only thing needed to fulfil the aspect of education in the design of urban space. Children also play a crucial role when it comes to urban planning. Urban planning that is safe and engaging for children “is essential for the creation of inclusive cities that work better for everyone” (Arup, n.d.). Prioritising children’s perspective can help improve health and wellbeing (by e.g., encouraging physical activity), and can boost the local economy through the retention of families. The report moves on to suggest that safety, focus on communities, inclusivity and accessibility for everyone, and enhancing nature can move into focus of political agendas while also adding value for all citizens. Nature-based Solutions support and complement this approach – the inclusion of green areas and especially wild nature promotes connection to it, adventure, healthy risk, in addition to promoting climate resilience of communities. Finally, Arup present outlines for opportunities to shape child-friendly city for city leaders and policy makers, developers and investors and built environmental professionals (Arup, n.d).

Education in urban spaces can be done e.g. through infoboards or educational paths. One example of how it could look like in the context of educating about nature in Østerbro is the park Kildevældsparken, which we will describe more in detail in section 3.5. In addition to infoboards with illustrations and greening an area to enable the reconnection by experiencing nature, there are several other approaches that can enhance education in public areas. Solutions such as educational and inclusive playgrounds can help children develop cognitive, emotional, social abilities and provides creative and active space (Real Play Coalition, 2020).

3.4.2. Urban design in Transformation 2 - Health, well-being and demography

The urban space plays an important role when it comes to the mental and physical health of its residents. Social connections are meaningful, as positive interactions are crucial for the health and wellbeing of our society (Kelly et al., 2012). We put particular focus on the connection and dependencies between physical and mental health in our design proposal, as we elaborate in section 4.

Urban solutions that are designed to enhance physical health, such as human centred streets and urban fitness areas, often also provide meeting points for social interaction. Other solutions that focus on improving mental health can also affect physical health by motivating citizens to leave their apartments and explore the city. By creating a city for all ages and abilities, we see a great potential in improving the health and well-being of its citizens. Designing barrier-free streets and public facilities, as well as creating urban space that allows people of all ages and ability levels to meet are promising design elements for building an inclusive city.

However, according to Mehta (2007), wide pedestrian walkways, trees and a variety of street furniture are not enough to create a liveable city. In order to create more interactions, community gathering places such as cafés and a mix of stores can help, as shown by a study performed in Boston in 2005. The figure below shows similar blocks (in size, style of entrances, street furniture and maintenance) in the same street in Boston (Figure 7).

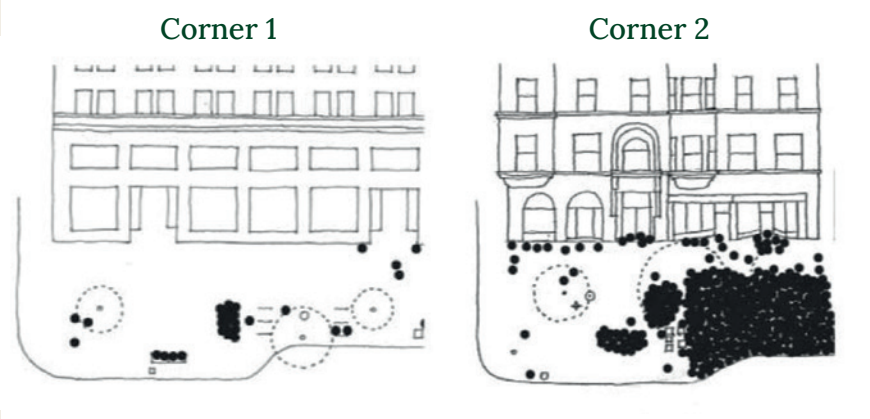


Figure 7 – Transformed corner, source: Mehta, 2007

While the corner 1 building is taken by a bank, corner 2 provides several small shops with window displays, and a café with outdoor seating. Each dot represents a person observed during the study. Corner 1 is creating an attraction for people, but the combination of the features and the activities connected to it in corner 2 creates a much more vibrant and lively street (Kelly et al., 2012; Mehta, 2007).

Urban Nature-based Solutions should also be considered in relation to health. Green spaces boost environmental qualities such as air quality, heat regulation and noise reduction, which have impact on the mental and physical condition. Citizens with access to nature are more encouraged to spend time outdoors, walking, cycling, playing and exercising (Braubach et al., 2017).

Studies have shown that people with access to more greenery in their urban environment have reduced levels of depression, anxiety, and stress, while simultaneously being more physically fit and with lower rates of obesity (World Health Organisation, 2016). Furthermore, it affects the perceived safety and enhances social interactions, inclusion and cohesion (Braubach et al., 2017).

To have a positive impact on people’s health, green spaces do not necessarily need to be designed for sport. Simply providing citizens with a place for relaxation and contact with nature, even if it’s just seeing natural views from a window, can trigger positive change in people with high stress or mental fatigue (World Health Organisation, 2016; Ulrich, 1983). Related studies provide evidence that interacting with nature can furthermore lower blood pressure, heart rate and muscle tension (World Health Organisation, 2016).

3.4.3. Urban design in Transformation 4 - Sustainable food, land, water and oceans

The current food system and land use are connected with high greenhouse gas emissions, high water use, pollution, soil depletion, and major impacts on biodiversity worldwide (Sachs et al. 2019). One way the design of cities like Copenhagen can help combat this issue is to shorten the supply chain and introduce the local production of food into the urban fabric. Urban agriculture can help supplement the dietary needs of city-dwellers, while at the same time introducing nature to communities who are disconnected from it in their daily lives. Community gardens, green roofs, or even small-scale gardening in containers or on balconies contribute to raising awareness about the origins of food, can help manage stormwater runoff, and provide people with recreational green space and community-building activities.

There is potential to scale up solutions in urban agriculture to a commercial scale, as was the case in Tibro, Sweden, where an old factory building was repurposed to house a 7,000m^2 indoor hydroponic farm capable of growing 1000 tonnes of vegetables yearly (Askew, 2018). The farm is designed to cut down significantly on the use of water, space, and pesticides, making it one of the possible solutions for a more sustainable agricultural land use system in urban areas.

Next to the transition of the current food system, the sustainable use and management of land and water in urban areas are significant to the climate resilience of a city. The climate adaptation plan developed by the Copenhagen Municipality aims to “use more spaces such as streets, squares, and green spaces to divert or stagnate rainwater at the surface in the future, thus diminishing the amount of rainwater discharged to the urban pipe network.” (Xu et al., 2021, page 5). Nature-based Solutions, in this context, are creating a great opportunity for the municipality to use nature for the resilience of the city while also benefiting from the social aspect. This gives also the chance to strengthen the connection to water for citizens by for instance integrating space for water-based recreation in urban design (Xu et al., 2021).

Furthermore, it enables the recovery of biodiversity in cities, as they host “numerous species and ecological communities, and can be hotspots for threatened species“ while providing „stable, year-round resources due to plant selection and watering regimes“ (Oke et al., 2021, p. 1). Cities all over the world are embracing nature-oriented approaches to city design and operations. A great example in this context is provided by a part of Singapore’s Biophilic Town Framework (Picture 1), where an artificial waterway with modular floating wetlands which extend over the length of 4,2 km was developed, resulting in an increase of 20% in the biodiversity (WSP, 2020). However, there is a lack of

Picture 1 – Singapor biophilic floating islands, source: WSP,2020

overall concepts in urban planning on the development of fine-scale habitats for wildlife within cities, even though solutions like that can simultaneously enhance biodiversity and improve the quality of life of citizens (Apfelbeck et al., 2020).

To improve biodiversity, promote and enhance the connection to nature for citizens and enhance the overall quality of life for urban residents, urban space must be used differently. For example, it can mean creating greener and car-free streets, extending the number of parks, integrating urban nature reserves and protected areas for animals in the city and installing animal-friendly light (Apfelbeck et al., 2020; California, 2018; Girault and Camille, 2017).

Picture 2 – High line park New York before and after, source: The High Line (n.d.)

Greening cities, especially city centres, is usually met with difficulties due to the population and building density (Peschardt et al., 2012). This can be combated by designing green streets, walls and roofs, small public urban green spaces (pocket parks) and repurposing unused infrastructure – such as the High Line in New York City. Greening the old rail line creates space for nature, animals and citizens (Picture 2).

3.4.5. Urban design in Transformation 5 - Sustainable cities and communities

As perhaps the most relevant of the Six Transformations for this project, sustainable cities and communities concerns the vulnerability of urban areas to the impacts of climate change, but also the enormous impact that an ever-expanding global population of city-dwellers has on the natural environment. Research shows that Copenhagen will face a rise in peak summer temperatures of 2°C to 3°C by 2050, and a rise in rainfall intensity of 10-year rainfall events by 30 to 40% by 2100. The sea level is projected to rise up to 1 meter in the next century (Xu et al., 2021, page 2.).

Transformation 5 recognizes that cities are especially vulnerable to climate change, but also that most of them fail to reduce their emissions fast enough to reduce their considerable impact on the planet (Sachs et al., 2019). The Transformation calls for interventions that can help adapt cities to a changing climate, ensuring that urban communities will not be disproportionately affected by droughts, floods, heat waves and other extreme weather events. In Europe, there is a current trend to make cities denser to increase the efficient use of resources and transport (Emilsson and Sang, 2017). At the same time, researchers and urban planners advise against building up the seemingly empty green spaces, which, when maintained properly, can offer climate adaptation functions.

Urban green areas, and especially areas that combine vegetation and water (also referred to as ‘blue-green infrastructure’) can help lower local temperatures by more than 1°C (Emilsson and Sang, 2017, Leuzinger et al. 2010). Furthermore, Nature-based Solutions can be used to reduce the risk and impact flooding due to cloudbursts and storm surges. One example of this is the Copenhagen Strategic Flood Masterplan (Picture 3), which provides a toolbox of interventions, such as floodable parks, canals, cloudburst boulevards and streets that help with the retention, detention and redirection of stormwater (Ramboll Studio Dreiseitl, n.d.).

Picture 3 – Copenhagen Strategic Flood Masterplan, source: Ramboll Studio Dreiseitl, n.d.

Creating sustainable cities and communities also involves access to clean water, appropriate sanitation, and sustainable waste management systems to address water scarcity, ensure good health of citizens and clean air, water and soil for agriculture and habitats for wildlife. The Copenhagen Municipality has developed the Resource and Waste Management Plan 2024, which aims to move towards a more circular city economy. One of the main objectives is to collect 70% of household, commercial, and light industrial waste for recycling and to triple the reuse of waste in the city’s swap and reuse facilities. This in turn aims to significantly contribute to lowering CO_2 emissions from waste incineration and increase resource use efficiency (City of Copenhagen, 2019).

As we focus the scope of our thesis on Nature-based Solutions, social and urban design elements that people interact with, we decided to omit the Transformation 5 interventions that deal with local economy, sanitation and waste management from our project. We recognize that these interventions are crucial to a well-functioning city. However, in the early test of our design proposal, we have concluded that the participants of our workshops have insufficient knowledge or interest in designing more sustainable sanitation and waste systems, and it is more beneficial for us to choose topics that spark a productive and creative discussion. As we elaborate in section 4.4., we aim to design a visioning method flexible enough to also potentially accommodate a participatory design process with stakeholders more interested in those topics.

We consider Transformation 5 to be both a central part to our design process (with its approach to fostering healthy communities in sustainable and climate-resilient cities), but also to be not specific enough in our context to warrant its own scenario in the visioning process. Thus, even though we design separate scenarios aligned with Transformations 1, 2 and 4, elements of Transformation 5 are present throughout our design.

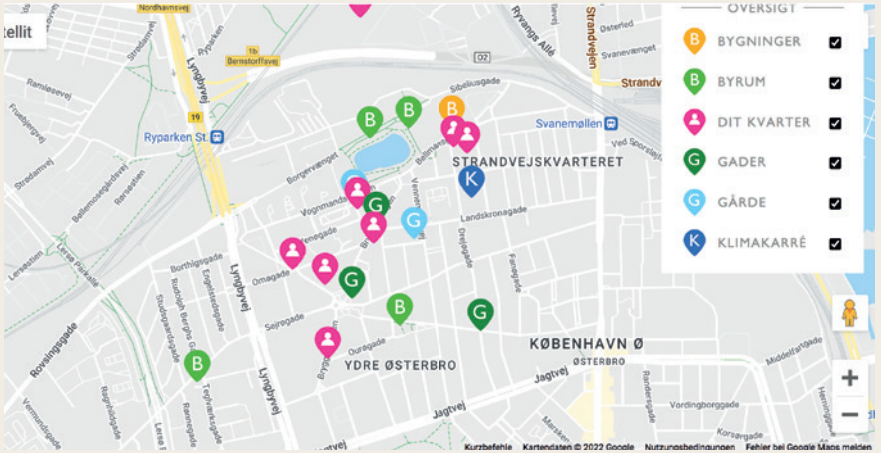
3.5. Current greening intervention in Østerbro

While the previous section presented an overview on solutions in cities all over the world and Copenhagen specifically, we also conducted desk research on ongoing initiatives in Østerbro. The research was complemented by a site visit to see and photograph the solutions that are implemented today in Klimakvarter. This presented valuable insights in the context of our research area, especially on how Nature-based Solutions can be implemented.

Østerbro’s initiative aims to make the city more resilient to floods, cloudbursts and other extreme weather conditions while also creating a joyful, close to nature and healthy city for its citizens. The district is home to Klimakvarteret Østerbro, called “Copenhagen’s first climate-adapted district” (Klimakvarter Østerbro, n.d.). The nature-based approach to climate adaptation encompasses green streets, coutryards, and buildings, to guide stormwater away from buildings, allowing it to flow over the surface and into permeable surfaces to reduce the stress on the sewer system (Klimakvarter Østerbro, n.d.). At the same time, they provide recreational green areas that encourage physical activity, help lower noise levels and air pollution, lower the local temparature, provide shade, and aesthetic appeal (Klimakvarter Østerbro, n.d., Emilsson and Sang, 2017; Braubach et al., 2017).

In order to observe the implemented sustainable solutions in Østerbro, we decided to visit several areas of the Klimakvarter. The map below presents an overview of the different spots that are planned or implemented today (Picture 4). The translations of the marking points are:

- “Bygninger” - building
- “byrum” - urban space
- “Dit kvarter” - your neigborhood
- “gader” - streets
- “gårde” - farms
- “klimakarré” - climate resilient block



Picture 4 – Klimakvartet map, source: Klimakvarter Østerbro, n.d.

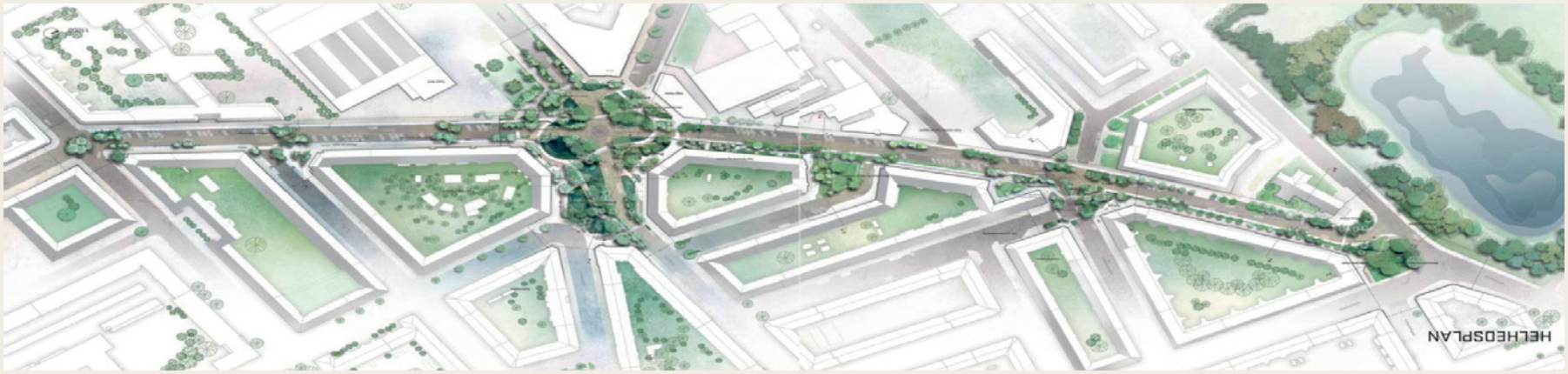
3.5.1. Site visit

The site visit started at the Metrostation Vibenshus Runddel St. and continued via Bryggervangen towards Tåsinge Plads. Subsequently, we visitd the Skt. Kjelds Plads, followed by Bryggervangen, Kildevældsparken, and finally we observed the green corner on Helsingborggade (Figure 8). In the following section, we present a combination of insights that we gained by the site visit complemented by information that is provided on the Klimakvarter website.

Figure 8 – Site visit, source: authors

In the Bryggervangen street (Picture 5), Nature-based Solutions take the form of roadside plantings of grasses, bushes and small trees on gravel with several inlets for water, that in combination provide filter and guide water for the drainage system (Picture 6). These strips of planted land can help to make the street more resilient to floods by retaining and filtering stormwater that is then directed towards Skt Kjelds Plads and onwards to the sea. The method used in these spaces is called ‘first flush’ - the first bout of dirty rainwater redirected from the street’s surface is conveyed into the sewers, while the second, cleaner flush of water is directed into the green areas (Bryggervangen - Klimakvarter Østerbro, n.d).

Picture 6 – Bryggervangen site visit



Picture 5 – Bryggervangen, source: Bryggervangen — Klimakvarter Østerbro, n.d

At Tåsinge Plads we detected similar solutions on a larger area together with on open green space, a playground, and benches that invite the citizens to experience nature on a small scale in the urban environment. According to klimakvarter.dk, Tåsinge Plads is „Copenhagen’s first climate change-adapted urban space” (Tåsinge Plads – Klimakvarter Østerbro,n.d). Furthermore, it presents a 1000 square meter „Danish rainforest” (Picture 7-8), which is divided by a small bridge to keep the flow of foot traffic and allow citizens to observe the wild nature in the city without interfering. The overall area „can delay and infiltrate rainwater from a surrounding area of approximately 8000 m²” (Tåsinge Plads – Klimakvarter Østerbro,n.d).

Picture 7 – Tåsinge Plads site visit 1

Picture 8 – Tåsinge Plads site visit 12

We also visited the climate resilient urban space of Skt. Kjelds Plads which creates the heart of the Klimakvarter. The idea behind the proposal is to show that urban nature can not only assist with rainwater management, but can also create a framework for a greener, more social and active everyday life in the urban space (Klimakvarter Østerbro, n.d.). SLA Landskabsarkitekter, the landscape architecture studio that contributed to the development of this area, state that:

“Urban nature is the grown environment in coexistence with the built environment [...] It can solve a lot of the problems our cities face today - from overheating and pollution to cloudburst management and climate adaptation. But it can also make life more worth living and inspire new social communities, new opportunities for creative creativity and new active and healthy forms of life” (Skt. Kjelds Plads - Klimakvarter Østerbro,n.d).

This space can be seen as an extension to the initiatives implemented along Bryggervangen, with green areas extending over a majority of the square. The diversity of planting creates a welcoming environment for many types of wildlife, which we encountered during the site visit. The landscape is sculpted in little hills and depressions, where rainwater can collect and be retained, while pathways through the green areas are constructed in such a way that still allows traversal. The pavestones seen in Picture 9 cross over a stretch of grass that turns into a shallow channel after rainfall, when the stones encourage skipping on them over the water surface in a more playful manner.

Picture 9 – Skt. Kjelds Plads site visit

The designers of the Nature-based Solutions in the area involved citizens and representatives of local businesses through workshops, project groups and consultation meetings throughout the project. According to the project leader, Louise Molin Jørgensen:

“It is important that the residents are involved in the process of developing the urban space. As a result, a more site-specific urban space is created that is adapted to the specific conditions and the life there is in the area. The process is also important in giving the residents knowledge and ownership of the project, so that they feel reassured in relation to the future inconveniences caused by construction, and so that they occupy the new green areas as their own when the project is completed.” (Skt. Kjelds Plads - Klimakvarter Østerbro,n.d).

Picture 10 – Skt. Kjelds plads, source: Skt. Kjelds Plads — Klimakvarter Østerbro, n.d

The park Kildevældsparken is a free track around the small lake Kildevældssøen surrounded by nature. It creates an environment of learning, playing, discovering, experiencing and reconnecting with nature. The old railway elements are creating a connection to the historical roots of the park. The structure of the park is divided in four landscape zones: the wilderness, the lawn, the hills and the fairy-tale forest.

The wilderness serves a diversity of multi-stemmed trees, tall grass and shrubs as well as stones from the ice age era.

The lawn invites for relaxing time in the park while enjoying and exploring the orchard, seating plinths and beds along the railway tracks.

By the hills, old trees and large depressions to rainwater which gives this area of the park a special flora. The courthouse near the hills furthermore provides a gathering point and outdoor classroom for school classes.

The fenced-in fairy-tale forest is a small wild area for smaller children to climb trees, explore wicker huts and a labyrinth made out of plants. (Kildevældsparken – Klimakvarter Østerbro, n.d.)

Furthermore, we identified educational value in the shape of an overview of birds that can be found in the park in an illustrational manner. Thereby, any age group can identify and explore the diversity of birds that can be found on site (Picture 11).

Picture 11 – Kildevældsparken

Finally, we visited the smallest nature-based initiative so far, where at the corner of Helsingborggade and Bellmannsgade, several plant beds have been introduced to liven a grey stretch of sidewalk. The metal beds feature shrubs and perennials of different heights to introduce variety (see picture 12). The green corner creates a nice, but rather small and inconspicuous intervention in the urban design (Helsingborggade – Klimakvarter Østerbro, n.d.).

Picture 12 – Helsingborggade

One of our collaborating partners, Kultur Ø, contributed to the creation of another greening initiative - the Grønne Plads (green square) in front of the local community centre Østerbrohuset. The square was fitted with plant beds with berry bushes and flowers such as roses and climbing wisteria. The community is encouraged to co-create this space by volunteer gardening, planting vegetables, or simply to meet, exchange seeds and advice in a friendly atmosphere (Kultur Ø, n.d.).

‘Det Vilde Røde Hus’ (the wild red house), a sculpture and a meeting space, has been created in 2021 by Kultur Ø together with local citizens, volunteers, schools, and renowned sculptor Thomas Dambo. The House is built out of recycled materials and is surrounded by a green garden fitted with flower beds. The area aims to create an cozy and welcoming space, encouraging open-air activities, meeting and learning in nature (Picture 13). Kildevæld Kulturcenter is responsible for the facility, however, the idea is that it is continuously developed and maintained by the citizens, networks and associations (Om Det Vilde Røde Hus, Kultur Ø, n.d.).

Picture 13 – Det Vilde Røde Hus, source: Om Det Vilde Røde Hus | Kultur Ø, n.d.)

Miljøpunkt Østerbro organizes guided tours around the Klimakvarter to raise awareness of the importance of Nature-based Solutions for climate adaptation in an urban space and how these solutions can be replicated on a smaller scale, e.g. in gardens, green roofs or raingardens (Miljøpunkt Østerbro, n.d.). Another initiative of theirs, in collaboration and with funding from the Copenhagen Municipality biodiversity fund, is providing advice to selected housing associations on how to get started with local greening (Picture 14). This advice includes setting up green roofs, community gardens, or biodiversity-friendly urban meadows. Furthermore, they conduct workshops with the housing associations on how neighbours can get involved to contribute to raising the urban biodiversity with their own small greening projects (Miljøpunkt Østerbro, n.d.).

Picture 14 – Visit on a housing association urban farm on Jagtvej, source: Miljøpunkt Østerbro, n.d.

3.6. State of the art conclusion

The study of existing solutions in cities around the selected Transformations together with existing initiatives in Østerbro show inspiring approaches for a sustainable future in urban planning. Additionally, the solutions in Østerbro are already heading in the right direction with a number of Nature-based Solutions already implemented to show residents what is possible in their neighbourhood. Therefore, we are positive about the likelihood that residents of Østerbro will be interested in spreading sustainable local solutions.

In addition to a broader understanding of the current situation, this analysis of the state of the art also provides the basis for our design process, which we will describe below. To design our solution, we take inspiration from the initiatives described above to create a list of urban solutions that participants in our workshop can choose from to map them out, discuss and understand how they relate to the urban fabric and how they can contribute to the well-being of citizens and non-human nature in their future visions for a sustainable Østerbro.

4. Process

4.1. Introduction

In this section, we describe the process of designing our workshop by utilizing the methods and theories described in the project design accompanied by research into the state of the art. Firstly, we will describe our internal design process followed by testing of our workshop proposal in two workshops with citizens. The workshops were complemented by semi-structured interviews. Building on participatory visioning with the public, we aim to represent a variety of interests and values and to create ownership of the visions.

4.1.1. Argument for positive futures

As we based our project on the Six Transformations, we find that its more useful to set bold, optimistic targets instead of just exploring different futures with no direction. For the design of the workshop, we therefore decided not to explore probable (negative) scenarios, but instead focus on visions of a preferable future. By that, we want to prompt visions and thoughts of a utopia, which can “provide direction for actions and behavior; more so, they create identity and community” (Wiek and Iwaniec, 2013, p.1). The elements used in the workshop all aim to make these positive futures and visions discussable by using easy to understand language in combination with visuals.

Coming back to Candy’s (2010) three types of futures, we see our approach as a tool to close the gap between what is probable and preferable. To enable sustainable transition towards a preferable, sustainable future, a positive vision must first be created. Figure 9 illustrates how we see a version of the three futures figure with the Six Transformations as pathways leading towards a preferable state. The multiple lines suggest that there is no one pathway to a sustainable future, and that all of the Transformations must be addressed at some point in time – but not necessarily in a particular order. The important element is that they all lead towards the preferable, without exploring negative scenarios.

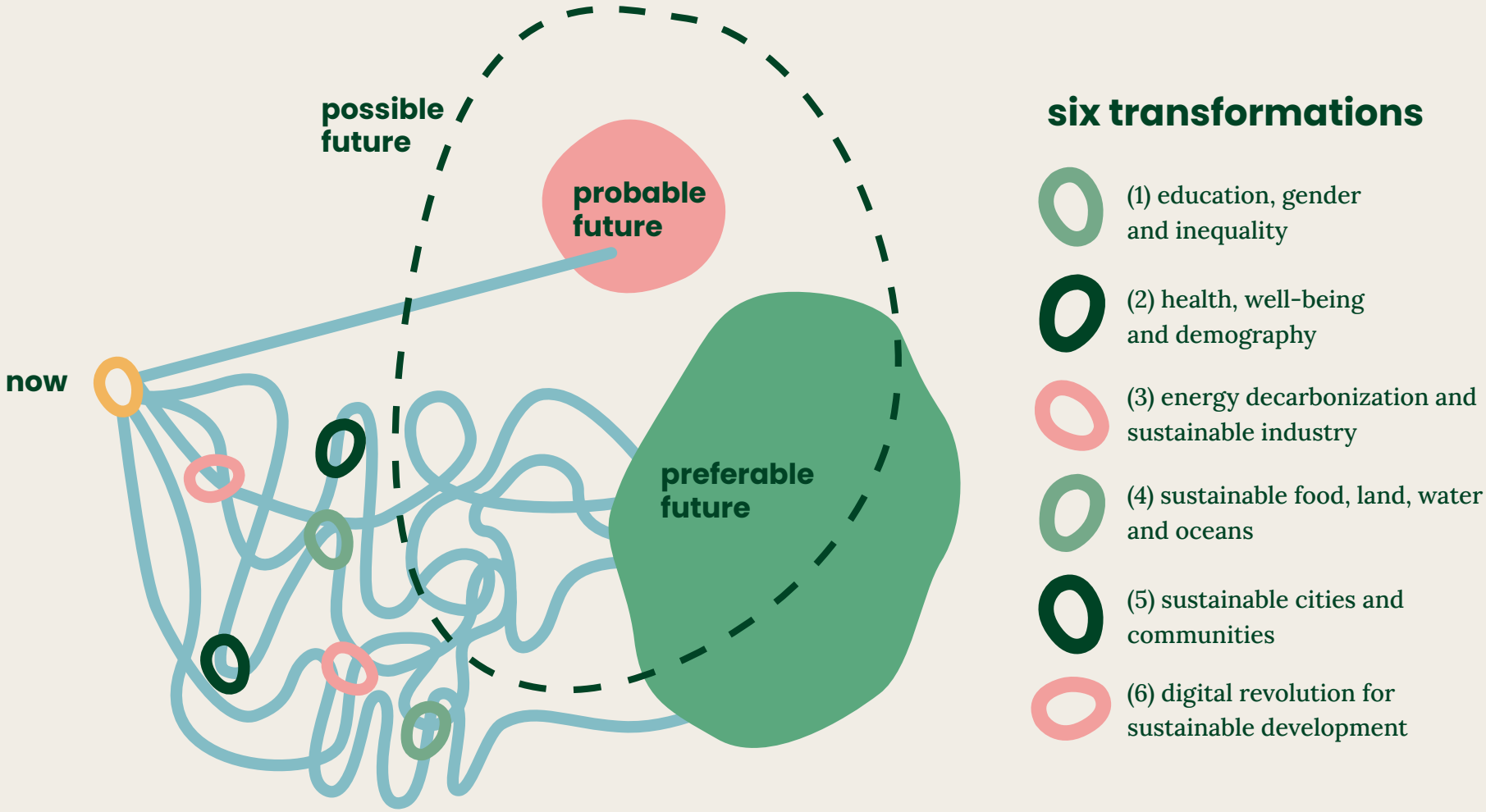


Figure 9– Futures with Six Transformations Framework, source: authors, based on Candy, 2010

4.1.2. Double Diamond

To frame our design project, we use the Double Diamond model. Starting with the diverging phase which covers the exploration and understanding of our research area (discover), to subsequently converging into focusing on a problem formulation (define). With the second diamond, the development phase starts which results in diverging again as a variety of solutions in the selected focus area are developed. Finally, the process narrows down in the deliver phase that involves testing the various solutions to arrive at a final one (Ball, 2019). Figure 10 shows the specific steps in this design project within the phases of the Double Diamond model. Though the Double Diamond may seem linear, our design process went through several iterations by way of early prototyping of the workshop and coming back to refine the earlier steps.

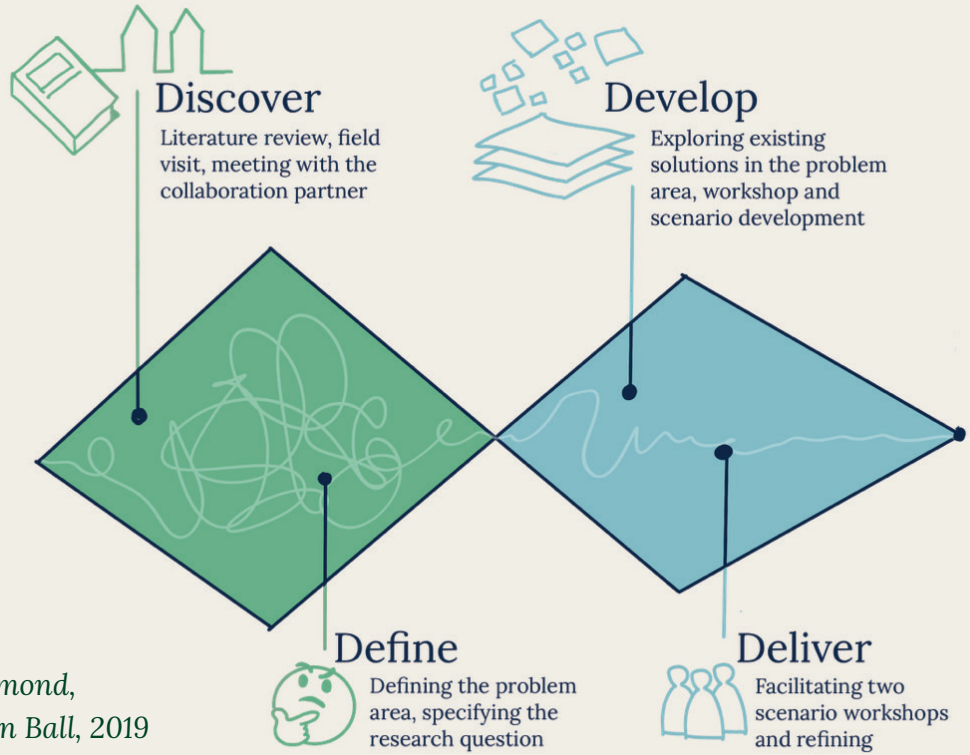


Figure 10 – Double diamond, source: authors based on Ball, 2019

4.2. Designing the workshop

Based on the research we conducted into existing visioning and scenario-making methods, we have decided that we aim for our solution to fulfil the following goals:

- To spark imagination, inspire people to freely explore alternative futures and develop a personal relationship with their future, picture themselves living in an alternative future scenario.
- To qualify participants to discuss sustainable futures, providing them with a shared syntax and a systemic perspective on urban sustainability, to consider inter-relations in the socio-technical-ecological system.
- To allow them to creatively express their visions of a preferable future, foster an idea of what this future looks like to them, a sense of ownership of this vision, and how they can communicate it to others.

According to guidelines set by Garduño García and Gaziulusoy (2021), as well as Gouache (2022) described in the project design (Section 2), we furthermore aimed to create a visioning activity that is engaging and inclusive of people from all knowledge backgrounds. We created a list of basic criteria that an ideal workshop should meet:

- Easy to understand language,
- Highly visual,
- Adaptable to different contexts and flexible in terms of facilitation,
- Enjoyable,
- Based on personal narratives of the future.

How we approached these goals and criteria in the design of our final solution is described in the following sections. The workshop framework that we developed consists of three steps followed by a discussion.

The first step aims to set the scene and frame the rest of the workshop with several visions of a more sustainable future 10 years from now. After a brief introduction to the workshop, participants are presented with illustrations and narratives.

The second step is a mapping exercise that aims to structure the knowledge of the participants on the various solutions and the interrelations in the system.

The third step allows participants to be creative with developing their own visions. Afterwards, the workshop concludes with a feedback discussion.

To contextualise the content of our workshop, we decided to incorporate places in Østerbro in the narrative and illustration. Therefore, we named specific locations, such as Fælledparken, Poul Henningsens Plads, local metro station names and characteristic buildings in the narrative. We based the illustrations on Østerbro using Google Maps as inspiration.

Picture 15 – Illustration and inspiration picture, source: authors and Google Maps

Visible especially in the illustration for Transformation 2 (Picture 15), we aimed to retain the urban character with the shape of buildings, street width and realistic vegetation. This helped us create scenarios that were more grounded in the context, creating a more tailored, immersive scenario that would enable the participants to imagine solutions targeted to their neighbourhood.

4.2.1. Scenario illustrations

The scenario illustrations were designed based on the Transformations 1, 2, and 4 (Figures 11-13). The aim of the illustration is to inspire the participants to imagine different sustainable futures that combine social and environmental sustainability in line with Nature-based Thinking. By providing this visualisation of a potential future, we are aware of the limitations of potentially influencing the participants’ ideas. However, we see great potential in utilising this method to engage the participants in imagining their own positive and green future, especially when working with people who do not yet have an idea of what a sustainable future can entail. We find that the illustrations and narratives we created help convey the idea that sustainability is a broad topic that goes beyond typical portrayals of product-oriented sustainability and combines social and environmental sustainability.

To connect the illustrations to the rest of the workshop into a more coherent story, we included in them some elements from the narratives and solutions from the solution cards, such as illustrating people doing the same activities as the characters in the narrative or including the solutions as elements of urban design.

Figure 11 – Transformation 1 - Education, gender and inequality, source: authors

Figure 12 – Transformation 2 - Health, well-being and demography, source: authors

Figure 13 – Transformation 4 - Sustainable food, land, water and oceans, source: authors

4.2.2. Scenario narratives

The narratives work in tandem with the illustration to fulfil the first of our goals – to engage the participants of the visioning workshop and inspire imagination. The developed narratives were the outcome of research in the selected Transformations and the imagination of us as a team to create a story that people could relate to. The narrative is told from the perspective of a person living in a scenario that includes several solutions of the Transformation (Appendixes 01 - 03). The aim of the narrative was to prepare the participants with the right mindset, picture themselves in the position of a future citizen of Østerbro, but to also inspire them to imagine their own vision of a future that corresponds to their assigned Transformation.

The narratives and illustrations primarily serve as inspiration, but it is also up to the participants whether they choose to use the narratives in any other way, e.g., to come back to these narratives in the mapping exercise. Therefore, we told the participants after reading the narrative that the mapping exercise does not need to relate directly to the narrative nor the illustration. We see the scenario narratives as high fidelity elements, as they show a detailed view of the future where Nature-based Thinking/ Solutions and the specific Transformations are concurrent.

In line with Candy (2010) we furthermore aim for this narrative to tell a larger story by the use of smaller, suggestive elements, and letting the participants fill in the blanks themselves. Candy refers to them as ‘experiential synecdoches’ (Candy, 2010). One example of this technique that we have used in the narrative of Lukas (Transformation 4) which mentions a popular farmers’ market occupying the area that used to be by a large parking lot. This small element carries with it the implication of the future

society’s changed relationship with cars and buying food, and the changes in urban design that would follow (Appendix 03 Narrative 3).

4.2.3. Solutions and missions

The second step takes the shape of a mapping exercise, where participants can learn from each other and from the workshop materials in order to foster a more systemic view on the socio-technical-ecological system.

The extensive research phase enabled us to categorise the selected information into different main groups within the transformations. To structure the solutions that have potential in each of the Transformations, we chose 2-3 main aspects of each:

- Transformation 1 (Education, gender and inequality) - education, encouraging equality, and city designed for community activities
- Transformation 2 (Health, well-being and demography) - mental health and physical health
- Transformation 4 (Sustainable food, land, water and oceans) - food production and biodiversity

These main aspects were chosen by us following the descriptions of key interventions into each Transformation (Sachs et al., 2019), and as a result of our research into solutions that are applicable in our context. During this process, we noticed that the solutions often overlap, having potential in more than one main aspect (Figures 14-16).

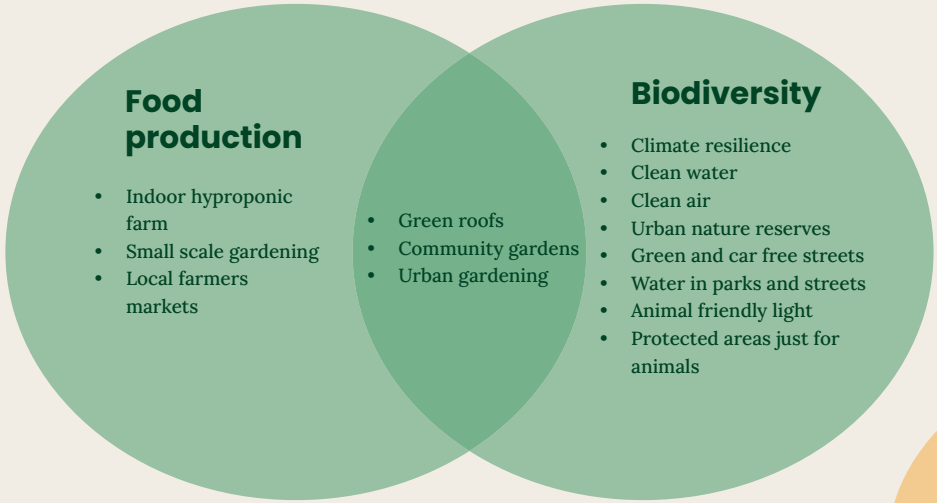


Figure 14 – Food production and biodiversity, source: authors

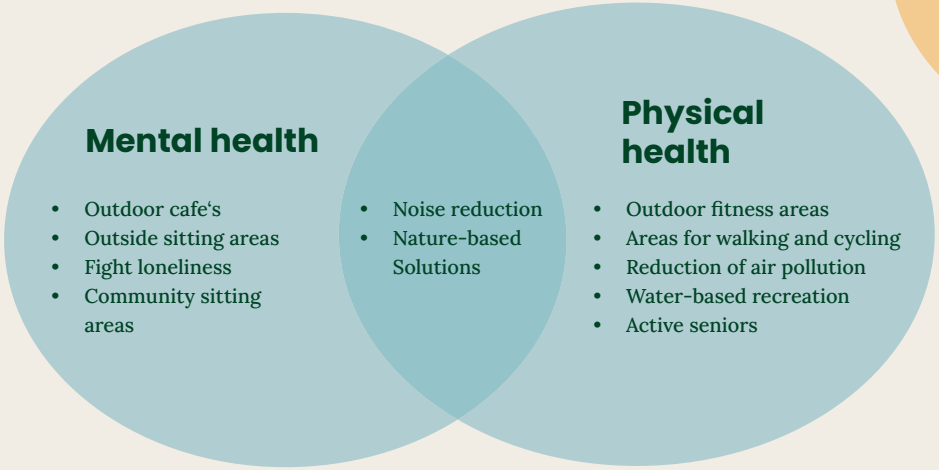


Figure 15 – Food production and biodiversity, source: authors

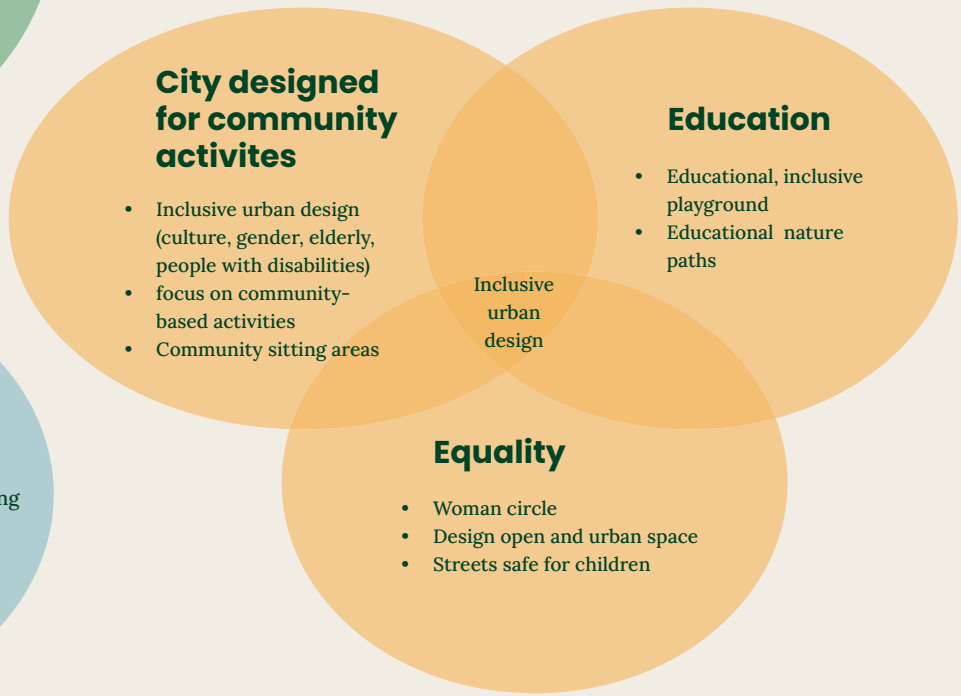


Figure 16 – Education, city designed for community activities and equality, source: authors

During the research phase, we realised the solutions we identified as potential interventions in each of the Transformations were not on the same level of ambition. One example of that is ‘urban wildlife’, which started out as just another potential solution in Transformation 2. In time, we realized that as much as it can be considered a solution that can e.g., contribute to people’s mental well-being, it is also a larger goal by itself, which can and should be supported by other interventions. That is why we decided to reframe them into missions.

This categorization inspired us to incorporate a mapping exercise in our workshop, in which the participants are asked to select potential solutions for the missions. Thereby we aim to create knowledge transfer and to facilitate discussions to create a shared understanding on sustainability across the participants. Furthermore, it can help us to understand what the citizens of Østerbro prioritise in their neighbourhood.

We tested this exercise idea by quickly prototyping it using post-its in Miro, to map the different solutions to the missions. By that, we were able to identify strengths and weaknesses of the list of ideas and it helped to choose the final missions and solutions for the workshop.

The different missions and solutions are physical illustrated pieces which can be put together as a collage (Appendixes 04-05). Thereby, they can also function as boundary objects between the participants. We, as facilitators, intentionally left the participants with much freedom in mapping the solutions, only indicating that not all solution cards must be used, and that some solutions might apply to more than one mission. As can be seen in the following sections, the different groups had a different approach to this exercise, even going as far as to create their own color-coding system that was drawn on the cards. Participants were also provided with blank cards to add their own ideas.

After this exercise the groups are asked to present the different outcomes to other groups and defend the decision they have made.

4.2.4. Newspaper

The third step of the visioning workshop is a creative exercise for groups to develop a shared vision of the future. In order to encourage the creativity, we decided to develop a layout of a local newspaper published in the future, precisely on the 8th of April 2032. We created frames for three headlines, one for advertisement and one for a picture. The name of the newspaper is ‘Østerbro Living’.

In this part of the workshop, participants have the opportunity to finally put together their own vision based on the inspiration from the narratives and illustrations, as well as the systemic perspective and knowledge gained from the mapping exercise. This part of the workshop is also the one most directly connected to the local context - participants are encouraged to think of specific places in Østerbro that could be transformed based on their own knowledge. This makes the final vision to be more personal, with proposed interventions located in areas with which participants have an emotional connection.

4.3. Test of the initial workshop framework

In order to test our workshop framework, we decided to involve two groups of citizens in Østerbro. The first workshop was conducted with schoolchildren and the second one with adult citizens. In the following sections, we will describe each workshop including all the described steps accompanied with continues reflection on the process and the behaviour of the participants.

4.3.1. Workshop 1

The first workshop took place in the Randersgades Skole in Østerbro with 16 children from the 5th grade as participants. We were invited to conduct our workshop by an art teacher, who also helped us with facilitation and when translation to Danish was needed. The class was divided into four 4-person groups, which were already assigned before the workshop. Therefore, we did not need to lose any time in shaping groups. The workshop duration depended on the timetable of the students, which resulted in 2 45-minute sessions with a lunch break in between. We facilitated the first two steps (narratives, illustrations and mapping exercise) of the workshop before and the last step (newspaper) after the break. However, we decided to stay flexible during the workshop depending on how the students understood and progressed with the tasks. One important concern we had for the workshop was the level of English the students were used to, and whether they would understand the tasks and the working of the narratives and cards. Luckily, for most of the workshop the level of English that we chose was appropriate, and for the few unfamiliar words, the children could rely on translations and explanations from the teacher and from their native English-speaking classmate.

We gave out the narratives and illustrations to groups (Picture 16). The groups were assigned workshop material corresponding to each of the Transformations as follows:

- Group 1 - Transformation 2 (Health, well-being and demography – narrative of Camilla)
- Groups 2 and 3 - Transformation 4 (Sustainable food, land, water and ocean – narrative of Lukas)
- Group 4 - Transformation 1 (Education, gender and inequality – narrative of Salma).

Picture 16 – Workshop 1 Narrative and picture

In this section we refer to the groups according to the name of the character in the corresponding narrative (Camilla, Lukas, Salma). The participants looked at the illustration and discussed which of the narrative elements they can see in it. Sentences from group 4 such as: “this must be the off-road wheelchair” or “do you think this is maybe the woman with the child from the story” showed that they looked for similarities to the narrative.

After the participants read through the narratives and looked at the pictures, we handed out the mission and solution cards. Each Transformation has a different set of three missions, but the solution cards are the same, regardless of Transformation. This way, we aim to simplify the set of materials and the preparation time needed before the workshop to sort the cards. Additionally, having access to all solutions from the start encourages finding new, creative connections without suggesting there is only one good answer, as well as facilitates the understanding of presentations from the other groups, as participants don’t have to read through a whole new set of solutions that their peers used.

Below we describe the process of the mapping exercise in each of the groups and a summary of discussions they had while presenting their results to others.

Group 1 – Camilla (Transformation 2)

Missions: fight loneliness, active seniors, mental heatlh

Figure 17 – Workshop 1 Group 1 Camilla, source: authors

Group 1 – Camilla (Transformation 2)

Group Nr 1 – Camilla had interesting decisions when mapping the solutions to the missions. For instance, their approach to fighting loneliness was through bringing nature in people’s lives. They argued that by picking flowers, people will feel less lonely, and the community aspect (community gardening) was connected to the fact that people are feeling happier when working in a community.

In the mission active seniors, this group added the farmers market solution, as they imagined retired farmers having a place to meet with former colleagues, which could inspire the seniors to start farming again and to be more active.

The third mission, mental health, entailed the most unconventional pairing for us: clean water for mental health. Their argumentation was that bacteria in the water can lead to damage of the brain and thereby affect the mental health of people. Finally, they started to see connections between fighting loneliness and mental health when mapping noise reduction as they could argue for both pairings.

Group 2 – Lukas (Transformation 4)

Missions: Urban wildlife, sustainable food, active healthy sea, lakes and canals

Figure 18 – Workshop 1 Group 2 Lukas, source: authors

Group 2 – Lukas (Transformation 4)

This group had some intriguing discussions about their mapping. As they chose open urban space for urban wildlife, they realised that animals and citizens may interfere with each other. Therefore, they found the solution in providing the open urban space for citizens during the day and in the night the animals can take over the space. In their imagination, people in the park still need to stay silent during the day to not disturb the animals. We were glad to see that the students were looking for solutions to enable humans and urban wildlife to coexist.

Unfortunately, both groups struggled to stay in English when meeting and discussing their mappings. Therefore, we sometimes needed to rely on body language, ask for translations or to try to grasp the words that we know. The discussion seemed very calm and positive. They seemed to be satisfied with the mapping of the other groups. Sentences such as: “I think you selected the solutions very well” (Group 1 to Group 2) confirmed this observation.

Group 3 – Lukas (Transformation 4)

Missions: Urban wildlife, sustainable food, active healthy sea, lakes and canals

Figure 19 – Workshop 1 Group 3 Lukas, source: authors

Group 3 – Lukas (Transformation 4)

Most of the discussion in group 3’s presentation centred around water. The group claimed that ‘the ocean is restricted, but people’s access to the ocean is also restricted’, arguing that although sea-based recreation can have negative impacts on sea life, people should still have access to water to understand it and learn to take care of it.

While discussing the sustainable food mission, the group focused most on the local aspect of local farmers’ market. They argued that local food is more sustainable, as people do not need to drive far to transport it.

Group 4 – Salma (Transformation 1)

Missions: Education, Equality, City designed for community activities

Figure 20 – Workshop 1 Group 4 Salma, source: authors

Group 4 – Salma (Transformation 1)

One participant of this group was from the US, so the whole group was encouraged to stay in English when discussing. Therefore, we were able to observe that in the first exercise they engaged actively with the illustration after reading the narrative. They tried to find overlaps between the two, and tried to find Salma and her son on the picture.

Group 4 was the one most focused on technological solutions and voiced their surprise that the cards didn’t reflect their approach. One participant even stated that ‘science is better than nature’ and argued that cities shouldn’t strive for car-free streets, as in 2032 everyone will drive electric cars. However, they were also interested in the educational nature path solution, saying that ‘it is nice to learn in nature’.

When discussing the equality mission, the group argued that local farmers’ markets are shutting down because most people in cities have access to more convenient shops and supermarkets, and that encouraging farmers’ markets in the city can help promote equality. They also included the wildlife-oriented solution cards in this mission, stating that equality between humans and animals should be part of the conversation.

Picture 17 – Workshop 1 Newspaper 1

For the third part of the workshop, we gave out a blank template for the “Østerbro Living” newspaper, dated 8th of April 2032 (Picture 17). When introducing this exercise, we asked for the students to focus on making their headlines resemble actual news and that they should be as precise as possible to make them about Østerbro. We suggested to bring in some numbers as well as specific places in Østerbro that they may have in mind when thinking about a more sustainable future. Finally, they were asked to present in 2 minutes their newspaper to the other groups (Picture 18). The outcomes from this exercise will be presented on the next pages (Pictures 19-22).

Picture 18 – Workshop 1 Newspaper 2

Group 1 – Camilla (Transformation 2)

Headline 1: Every country in the world has access to clean water

Headline 2: 500 new nature reserves since 2022! Breaking news!

Advertisement: Plant based steak only 7 kr.

Pictures: local farmers market, clean water, urban nature reserves

Picture 19 – Workshop 1 Group 1 Camilla – Newspaper

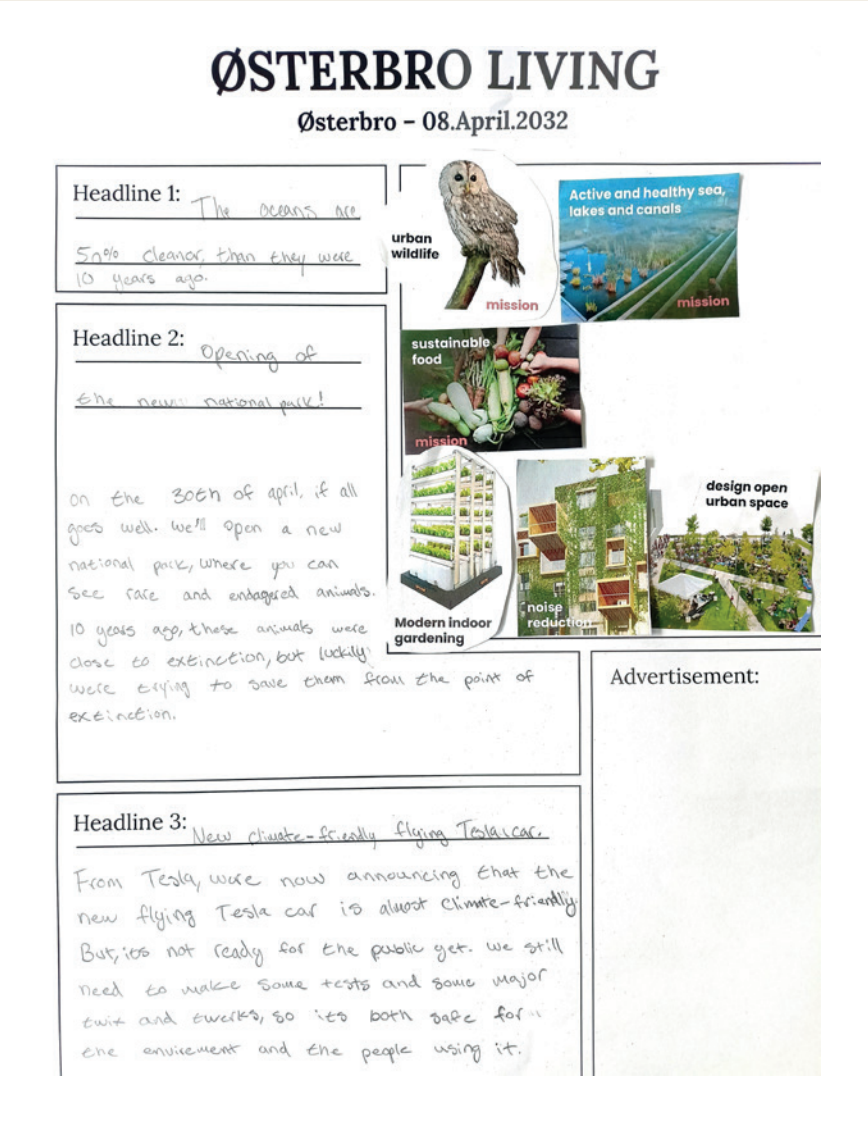
Group 2 – Lukas (Transformation 4)

Headline 1: The oceans are 50% cleaner, than they were 10 years ago.

Headline 2: Opening of the new national park, on the 30th of April, if all goes well, we will open a new national park, where you can see rare and endangered animals. 10 years ago, these animals were close to extinction, but luckily we were able to save them from the point of extinction.

Headline 3: New climate-friendly flying Tesla. From Tesla, we are now announcing that the new flying Tesla car is almost climate-friendly. But, it is not ready for the public yet. We still need to make some tests, so it is both safe for the environment and the people using it.

Picture: urban wildlife, active and healthy sea, lakes and canals, sustainable food, modern indoor gardening, noise reduction, open urban space.



Picture 20 – Workshop 1 Group 2 Lukas – Newspaper

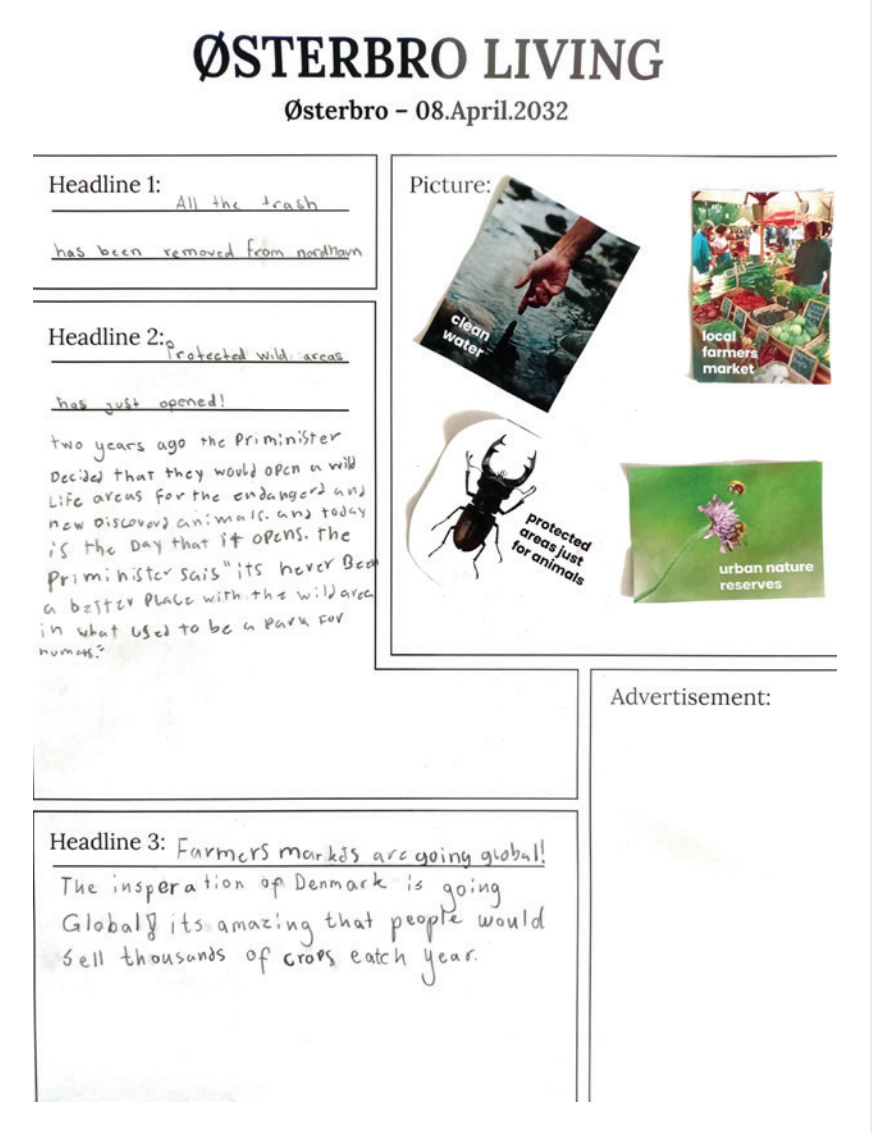
Group 3 – Lukas (Transformation 4)

Headline 1: All trash has been removed from Nordhavn

Headline 2: Protected wild areas has just opened! Two years ago the prime minister decided that they would open a wild life area for the endangered and new discovered animals and today it the day that it opens. The prime minister says: "it never been a better place with the wild area in what used to be a park for humans."

Headline 3: Farmers markets are going global! The inspiration of Denmark is going global! It is amazing that people would sell thousands of crops each year.

Pictures: clean water, local farmers market, protected areas just for animals, urban nature reserves.



Picture 21 – Workshop 1 Group 3 Lukas – Newspaper

Group 4 – Salma (Transformation 1)

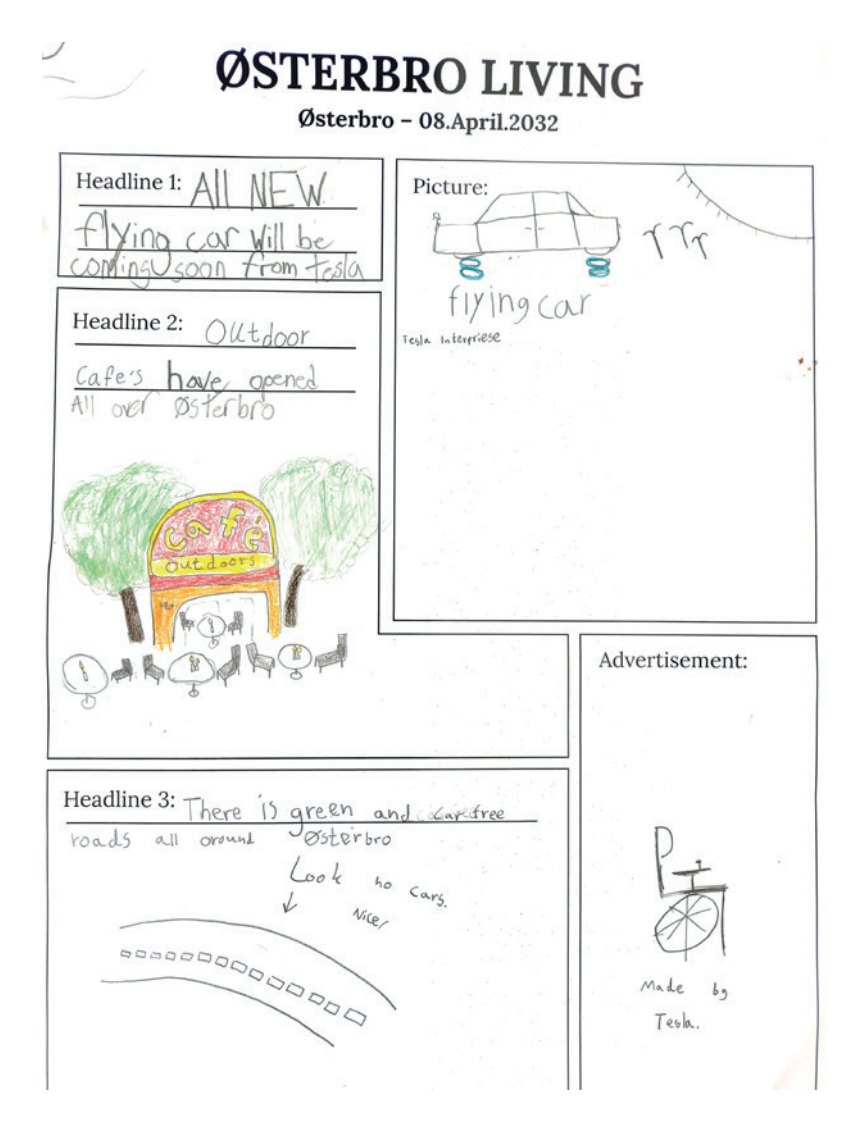
Headline 1: All new flying car will be coming soon from Tesla

Headline 2: Outdoor Cafés have opened all over Østerbro

Headline 3: There is green and car free roads all around Østerbro (illustration of car free street, “look no cars, nice”

Advertisment: New off-road wheelchair made by Tesla

Pictures: Illustration of a flying car by Tesla



Picture 22 – Workshop 1 Group 4 Salma – Newspaper

Reflection

In addition to our observation of the workshop, we decided to arrange a follow-up interview with the teacher. In this section we will elaborate on further observations together with the main takeaways from the teacher framed around the three steps of the workshop: narrative and picture, mapping exercise (Pictures 23-27) and newspaper. Furthermore, we include the planned adjustments to the workshop within the reflection.

Narrative and picture

We observed that in each group, one of the children read the narrative out loud to their group. However, the teacher suggested to provide one text per student so they can read it by themselves. Her argument was that the children may understand the text better because they can take the time they need to process the information. The teacher furthermore suggested to improve the connection between the narrative, illustration and the mapping exercise.

Mapping exercise

Firstly, we noticed that our explanation sometimes was not enough – the students asked the teacher for the specifics again, such as whether they should map all the solutions to the missions or only the solutions that fit to the missions. Consequently, we will focus on a better introduction of each exercise in the next workshop. Furthermore, we noticed that the mission cards got sometimes lost in the solution cards, so we planned to make them bigger for the next workshop to make them stand out more.

Many of the students noticed that solutions could apply to more than one mission, but still connected them to only one. For instance, they were discussing how community gardens can be good for mental health but also to fight loneliness. The students also reflected on their choices while mapping out the solutions. For example, the solution: Noise reduction – was moved from loneliness to mental health because they think that noises “can be annoying” so it affects the mental health. For the next iteration of the workshop, we aim to encourage the participants more to visualise the connections, map them out on the table, rather than just forcing the solutions to fit three distinct categories, to think more in terms of ‘connections’ rather than ‘categorization’.

The perception of the teacher of this exercise was very positive. She could see that the exercise fostered deeper conversations around sustainability. However, she also observed that they needed some time to understand the content as it was in English. She stated that “once they understood it, they were able to engage in a discussion very nicely.”

Picture 23 – Workshop 1 Mapping 1

Picture 24 – Workshop 1 Mapping 2

Picture 25 – Workshop 1 Mapping 3

Picture 26 – Workshop 1 Mapping 4

Picture 27 – Workshop 1 Mapping 5

Newspaper

The first thing we noticed is that the children used the pictures from the solution and mission cards and glued the cards to their newspaper as pictures. This was not something we anticipated, but we appreciated their creative approach to the task.

We noticed that the time for this exercise did not seem long enough, as all groups wanted to continue as long as possible with their newspaper.

The follow-up interview revealed that the teacher decided to continue the project with the students for the rest of the school year. She let the children finish the exercise with the newspaper and now they students are asked to turn their idea of Østerbro in 2032 into an architectural model. The children added more ideas and drawings to the newspaper (Appendix 07). To develop the sculptures, the children were asked to chose the location they were portraying, the overall goal of the project, the audience, the material that will be used to design the sculpture, a sketch and the importance of the project (Appendix 08). The topics that were covered by the students were for example sustainable land and water by greening areas, local production of food, social sustainability through the outdoor cafés. We are, unfortunately, unable to show the finished architectural models in this thesis, as they are to be finished after the day of the hand-in. However, we received pictures of the process (Appendix 08 – Process pictures) together with the quote: One student asked another „what is your future?“ and he replied „making the school grounds more sustainable!“.

General observations and feedback

One of our concerns for the facilitation of this workshop was finding the balance of guiding the participants without influencing their ideas too much. For instance, when students were talking about futures that are mainly technology-driven, we were not sure whether we should guide them towards a more environmental and social sustainability approach. In the end, we concluded that the design of the workshop itself as well as the materials (which don’t include almost any technology-based solutions) should provide enough framing, so that the facilitators don’t need to interfere with the participants thought process. We find that outright telling participants that their idea of a technology-based pathway to sustainability isn’t as ‘correct’ as the one suggested by us would be counterproductive in this case.

Additionally, the teacher told us that she helped the students quite a lot with guiding their process. She described that she intervened when they were off topic and she explained again what their task was. However, this was more connected to how the students understood the tasks, rather than to the contents of their discussions.

Overall, we were glad that the teacher was happy about our work and got excited about the educational value for the children. She also noticed that some of the children were going outside of their comfort zone, took initiative and were more active in the workshop, even though they rarely spoke out in her classes usually. In the interview, the teacher mentioned that she found the workshop very inspiring and a great example of a lesson. Furthermore, she stated:

“I came home happy on that day”

4.3.2. Workshop 2

The second workshop was held in the Øbro Jagtvej Library in Østerbro with seven women who live in different parts of Copenhagen - Østerbro, Nørrebro and Sydhavn. The workshop took two hours. With the seven participants, we created three groups (one with three and two with two participants). The first two steps were performed in another way than the first workshop. Taking the feedback from the first workshop, we provided the participants with more printed versions of the narratives and illustrations.

Subsequently, we gave them the same set of solution cards, adding one more solution card called climate resilience, which we excluded from the previous workshop, as we assumed that would be too difficult for the age of the participants. Another addition to the solution cards were empty white cards that the participants could use to create additional solutions. Furthermore, we handed out new, larger mission cards and explained the exercise to them in a more precise way than in the first workshop.

In the following section we will describe selected takeaways from the mapping exercise and discussion.

Group 1 - Camilla (Transformation 2)

Missions: fight loneliness, active seniors, mental health

Figure 21 – Workshop 2 Group Camilla, source: authors

Group 1 - Camilla (Transformation 2)

In the fight loneliness mission, the participants mentioned several community activities that already take place or that could potentially be organised in the neighbourhood. They stated that we lost touch with our neighbours and that providing monthly community activities would create a sense of community, encourage getting to know more people from the neighbourhood. Furthermore, they argue that this could help create the motivation to have a “better” neighbourhood and to maintain it.

For the mental health mission, we found it especially interesting that the participants have connected it to climate resilience. They argued that people should be able to adapt to the change mentally.

Multiple solutions were mapped between missions - urban nature reserves, water-based recreation, clean air, educational nature paths between active seniors and mental health. The group stated that they see it as a great motivation to go out in nature also for elderly people. Under active seniors, we found the argument for inclusive urban design interesting, as they argued that if people find it easy to move around, they are more likely to move around.

The discussion after the presentation was focused on community activities - one of the participants pointed out that, as a foreigner, they perceive the Danish culture as individualistic: “The older you are, the more isolated you get”, so her question was how community activities for older people could be implemented. The answer from the group was that “Danes are crazy about associations and clubs”, so they often participate in community activities. However, usually not with their neighbours, but they prefer to be around people when it has been organised by someone.

By creating a meeting point between neighbours across age groups, monthly community activities could be a useful event in this context. Furthermore, it can create a sense of community from a young age. Existing initiatives in Sweden, Denmark and Spain were mentioned as solutions for bringing seniors and children together. Finally, they emphasised that they found it more valuable to place the solutions in the middle of all the missions as they create value for more than a singular problem.

Group Salma (Transformation 1)

Missions: Education, Equality, City designed for community activities

Figure 22 – Workshop 2 Group Salma, source: authors

Group Salma (Transformation 1)

The Salma group understood the three missions as related mostly to their narrative. When explaining the choices of solutions to the missions, they took the perspective of either Salma or her son. They found overlaps between the different missions in the educational and inclusive playgrounds, woman circles and clean air. Furthermore, they connected protected animal areas with education – as they assumed that “if you see those protected areas (...) you become curious and you want to learn why those animals are important for the community”.

They also mapped out all gardening activities connected to community activities and education. During the discussion, all groups noticed that the solutions of clean air and woman circles seem to be in the middle of most missions, so they conclude that “Everybody needs air, and everybody needs women”. When asked about connecting animal friendly light and clean water with equality, they argued for creating justice across species.

Group Lukas (Transformation 4)

Missions: Urban wildlife, sustainable food, active healthy sea, lakes and canals

Figure 23 – Workshop 2 Group Lukas, source: authors

Group Lukas (Transformation 4)

This group developed a colour-coding system for mapping their solutions to the missions (Picture 28). Every mission had a colour, and the solutions which could fit several missions got different colours drawn on them to express their relations. This shows that groups had different ways of expressing their way of thinking and creating a shared understanding within the group.

The group pointed out that more green spaces in the urban environment are needed, as they are “good for people, good for the food system, good for wildlife”. Educational nature path was considered a solution that fits all missions, as they argued that people need to understand the issues to be able to help.

In the discussion with the other groups, they identified the trade-off of water-based recreation – that people going into the water can disturb wildlife. A group member from another group furthermore saw a connection between modern indoor gardening and urban wildlife, as soil worms and other animals would potentially live in the soil.

Picture 28 – Workshop 2 Group Lukas – Mapping

Newspaper exercise

The newspaper exercise was presented to the participants in the same way as to the students (see section 4.3.1.). The outcomes of this exercise are shown below.

Group Lukas (Transformation 4)

Headline 1: Research breakthrough in the mental health support field linked to the therapeutical qualities of seaweed recollection.

Headline 2: It has been 5 years since Copenhill shut down its burning trash facilities – now it functions as a natural reserve for this very specific weird kind of bird! People are happy.

Headline 3: Food import keeps dropping as more and more people keep growing their own food in their own gardens!

Advertisement: Remember to pick up the latest composting equipment at your nearest municipality centre! (We stopped burning trash a while ago after all)

Picture 29 – Workshop 2 Group Lukas – Newspaper

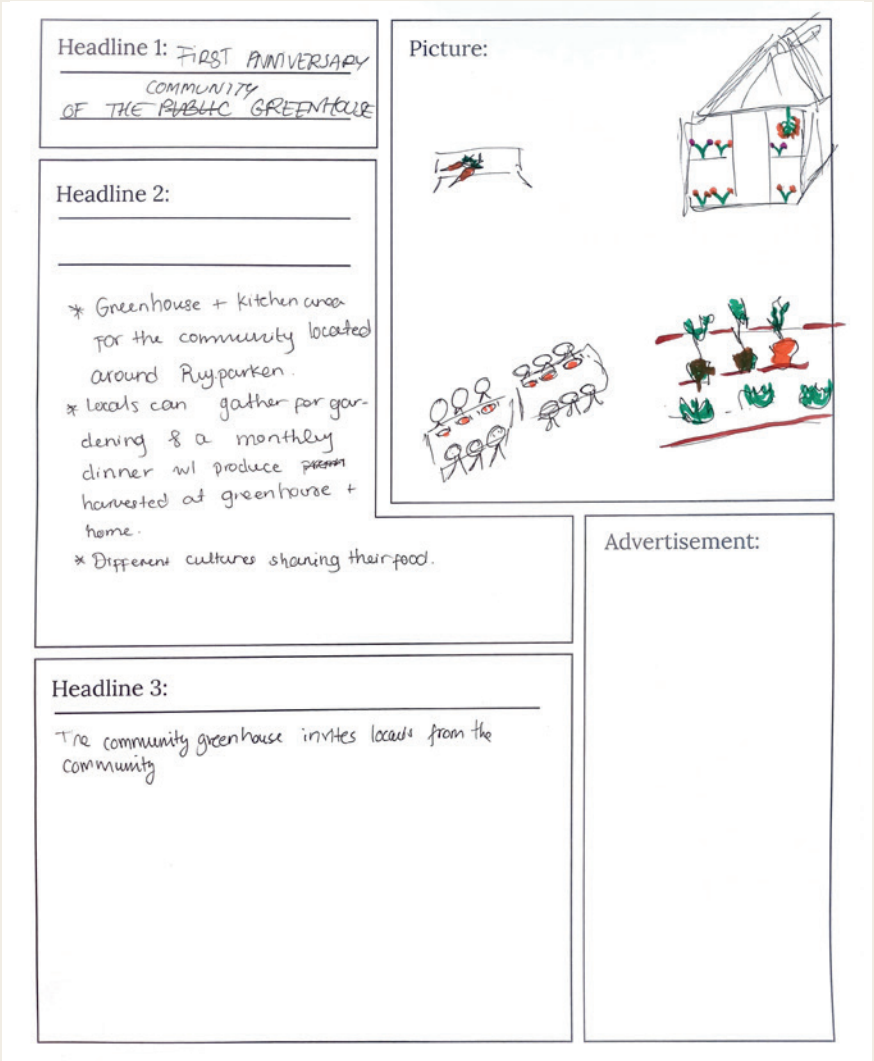
Group Salma (Transformation 1)

Headline 1: First anniversary of the community green house.

Headline 2:

- Greenhouse + Kitchen area for the community located around Ryparken.
- Local can gather for gardening and a monthly dinner with produce harvested at greenhouse + home
- Different cultures sharing their food

Headline 3: The community greenhouse invites locals from the community



Picture 30 –Workshop 2 Salma – Newspaper

Group Camilla (Transformation 2)

Headline 1: The green behind the concrete – Nordhavnstippen reserve opens today

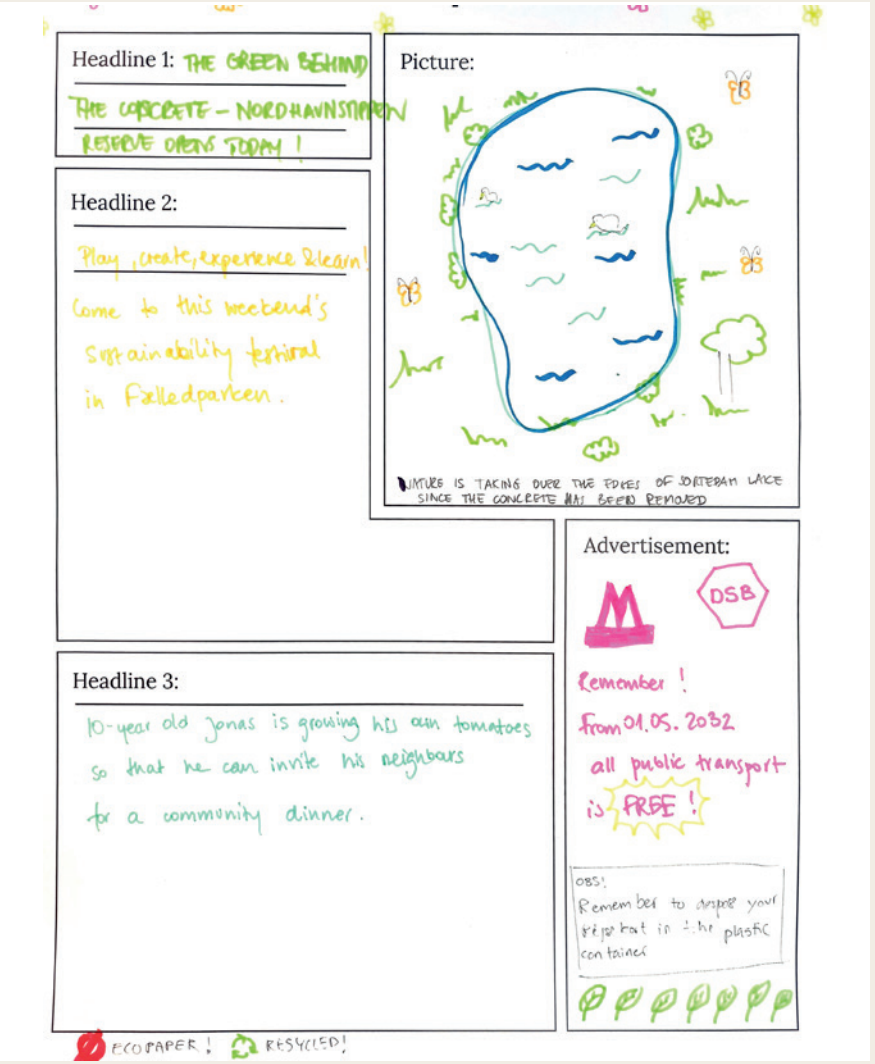
Headline 2: Play, create, experience and learn! Come to this weekend's sustainability festival in Fælledparken

Headline 3: 10-year old Jonas is growing his own tomatoes so that he can invite his neighbours for a community dinner

Advertisement: Remember! From 01.05.2032 all public transport is free!

OBS! Remember to dispose your Rejsekort in the plastic container.

Picture: Nature is taking over the edges of Sortedam lake since the concrete has been removed.



Picture 31 – Workshop 2 Group Camilla – Newspaper

Reflection

In this section, we will provide again an overview of our observation complemented by the feedback discussion directly after the workshop. Furthermore, we conducted more detailed interviews with three of the participants to gain a better understanding what we could improve (Appendix 09). The main takeaways from their perspective are described in this section.

Narrative and picture

When asking the participants directly after the workshop what they liked about the exercises and what they would improve, they mentioned that to do the mapping exercise and newspaper, they didn’t really need the narrative or the illustration. Nevertheless, they suggested to put the picture together with the narrative, or to include labels in the picture to strengthen the relation between the two.

The interviews revealed furthermore that the illustration was not really used by the participants. The narrative, however, had an effect, particularly on Participant A (Appendix 09 – Follow up Interview with Participant A). She could empathise with the narrative (Lukas) as it made her think of herself. Unfortunately, it resulted in negative emotions of jealousy towards Lukas, as she states it was very realistic and it could already be her life today. Participant A also recommended to create a stronger connection between the mapping exercise and the narrative. While Participant B described that the narrative helped her to be more creative and to get into the right mindset for the exercise. Consequently, we combined the picture and narrative on the same page and added more connections between the mapping exercise and the narrative (Appendix 10).

Mapping exercise

Participant B mentioned in the interview that the mapping opened her view on sustainability as she does not work with sustainability every day. She stated that: “I have a great interest in sustainability. The different solutions made me think about what else is there, so I opened up to other solutions”.

However, she also described that her group members did not understand some terms. Thus, a little explanation of some of the solutions would have been beneficial for the overall understanding, as some people are not so familiar with certain terms. We found it interesting that this point was raised in the second workshop and not in the first, but we understand it as the adult participants’ need to gain a deep understanding to what they were working with. The children did not exhibit that need, as they were content with understanding the cards just enough to finish the tasks.

Participant A stated that the mapping exercise transformed her existing knowledge by mapping new information in another way. Furthermore, she said that she felt she has a more structured knowledge after this exercise. She also liked that each group received the same set of solution cards, stating that “everyone is talking about the same things - but in a different context”. Participant B mentioned that she liked to hear in the presentations how the solutions are used in another context.

Picture 32 – Workshop 2 Groups discussion mapping

Picture 33 – Workshop 2 Groups mapping exercise

Newspaper

In contrast with the children who started the exercise right away, the participants of the second workshop took a longer time to begin. The participant started the exercise with discussions of realistic timeframes or feasible locations for interventions and other constrains. The Lukas group, for example, asked us questions such as: “how realistic does it have to be?”, to which we responded that they can choose the level of ambition. This indicated that some participants may need some more framing of the exercise. The Camilla group found their own way of framing, as they started by writing down ideas on the empty solution cards and placed them on the newspaper to create a structure. After they agreed on a structure and topic for their newspaper, they wrote it directly on the paper.

Participant A stated that she found it difficult to envision something that is not realistic. She asked for a more concrete framing that would help her - such as titles for the newspaper or a certain topic to guide the creative process. Overall, all interviewees stated later that the newspaper was the most challenging exercise, and participant A and B did not feel ‘creative enough’. Participant A and C suggested that extra material such as prompts could support the creative process in imagining the future. Participant C stated:

Picture 34 – Workshop 2 Newspaper exercise

“Maybe help the people who are not that creative: maybe give them a set a card with interesting questions or maybe a drawing that can prompt them to write something”.

However, participant A also said that she had the impression that “the presentation of newspapers at the end was a bit playful so I felt like the inner children came out of the participants. Almost no one really took it seriously. People acted freely and it was nice to see“. Therefore, we see that even though this participant

felt not creative enough, she perceived that the rest of the group enjoyed the openness and creativity of the exercise.

Participant C enjoyed the freedom of the newspaper, even though it was challenging, and she described it as a “very visual way of presenting what could be important enough in the future. I do also think that it is a difficult exercise”. She furthermore stated that “The newspaper made me think in a different way and it is an exercise that I did not knew before. So, I think it makes you come up with new ideas”.

Consequently, we aim to find a balance in guidance and freedom in the newspaper exercise. Furthermore, we see the responsibility of the facilitator to react to the different groups and their individual struggles with this exercise. The facilitator should, therefore, be flexible to provide suggestions during the process of designing the newspaper.

Another aspect we noticed is that the missions and narratives were influencing the topics of the newspaper. We do not necessarily see it as a downside. In future test runs of the workshop, we would find it interesting to switch the order of exercises around to see how it would influence the outcomes.

Picture 35 – Workshop 2 Newspaper presentation

General observations and feedback

We were able to see that participants gained new knowledge and transformed their existing knowledge through the combination of interacting with the workshop material and the discussions. Furthermore, we identified that they overall liked the outline and content of the workshop, but all three interviewees suggested to get more guidance throughout the process.

One aspect that has also been mentioned in the first workshop is to provide a better introduction to the exercises. Two of the three interviewees furthermore indicated that it would be interesting to make the workshop with decision makers, politicians and different organisations. Participant B stated that “involving people that are working for different organization could help to make them think in new ways and make them more ambitious in their work”. The same two participants furthermore suggested to make the workshop with larger groups.

4.4. Discussion

By testing our workshop, we were able to identify strengths and weaknesses of our design proposal.

According to the participants, the narrative enabled participants to get into the right mindset and supported their process in imagining how the future could look like. However, we were not able to observe nor document any noteworthy effect from the illustration on the visioning process. More insight is needed to see whether using the illustrations in a different way, putting more focus on them, or strengthening the connection between the illustration and the narrative could change that.

As a result of our workshop, we could see that we reached the goal of qualifying the participants to discuss the future of their neighbourhood. Furthermore, we were able to create jointly constructed future visions in the shape of newspapers. In an ideal situation, the involvement of people from different backgrounds would have enriched discussions and potentially lead to different knowledge creation and more transformed knowledge.

The overall feedback we received was positive - the structure of the workshop, as well as the materials we have prepared were met with approval of the participants. The printed elements themselves were proven useful, however, the facilitation was criticised for not being precise enough. A better introduction to the exercise complemented with supportive guidance would have been beneficial for understanding the elements of the workshop and to become more creative in the newspaper exercise. As the level of assistance highly depends on the involved participants in terms of background, age, and personality, the facilitator needs to stay flexible in order to react to the needs of the participants to find the right balance of freedom and restrictions.

Another aspect that could be improved is the comprehension of the words used in the context of sustainability. Therefore, we aim to add a list with definition of the terms and some explanation for participants to ensure comprehension of the elements (Appendix 10 – Definition for some of the cards). In addition, we see the responsibility of the facilitator to support the workshop participants with the expert knowledge in this area. One area where the need for more guidance is needed is the newspaper exercise. Although some participants enjoyed the openness of creating their own news (Appendix 09 – Interview with Participant C), we recognize the need for assistance for others who might need it more. For the third test of the visioning workshop, some more optional materials will be available as prompts to make it easier to imagine alternative scenarios.

Furthermore, as already mentioned, we missed some information when involving the children as they switched to Danish quite often. Therefore, it would have been very useful to have a Danish speaking group member to ensure that no information is lost. Throughout the work, we kept encountering challenges because of the language barrier. In addition to difficulties in workshop facilitation, we had to rely on the limited number of documents available in English or on automatic translation when researching existing solutions and ongoing initiatives in Copenhagen.

Although the second workshop was successful enough with the participation of 7 people, more insights would have been obtained by involving a bigger and more diverse group. This requires more organisational effort to gather a group of relevant actors with the willingness and time to put into participating. One other consideration for the diversity of the group is that we are aware that the workshop is in its current form inaccessible to people with visual or hearing disabilities. This is a significant disadvantage of the workshop design, as we discuss issues of inclusivity in the visioning process, which people with disabilities could contribute greatly and should obviously be included. To also enable people with these types of disabilities to take active part in visioning activities, alterations to the workshop need to be introduced.

The small size of the group in the second workshop was potentially because of the timing of the workshop being shortly after Easter break. While we sought to involve different disciplines by involving also decision makers and members from Miljøpunkt and Kultur Ø, the schedule unfortunately did not allow to involve more than one member from Miljøpunkt on the workshop day. However, we aim to make another involvement with the Miljøpunkt board after the hand-in of the thesis to get their perspective on the workshop. The involvement of Miljøpunkt should only be seen as a one more step in the right direction, as it is necessary to involve even more actors in order to challenge power structures.

5. Six Transformations Visioning Workshop

This section is a full description of the final design of the Six Transformations Visioning Workshop after the feedback from the two test runs has been implemented. This description refers to a general version of the workshop, which allows for flexibility with how it is facilitated, the length and choice of materials, depending on the context, the size of the participant group, allocated time, etc.

Six Transformations Visioning Workshop

Steps	Name	Content	Material	Quantity	Estimated duration
1	Introduction	Formation of groups		Min. 1 group per selected transformation	5-10 Minutes
2	Context scenario	Setting the stage	Narrative, Illustration	One per transformation	5 Minutes
3	Mapping exercise	Mapping out the inter-connections in the system	Solution cards	Min. three per mission	15-20 Minutes
			Mission cards	Min. three per transformation	
		Presenting to the other group and arguing for the ideas	Solution and Mission cards	To min. one other group	5-10 Minutes
4	Newspaper	Handing out of the newspaper and introduction	Newspaper	One for each group	5 Minutes
		Filling out the newspaper			20 Minutes
		Presentation of newspaper		To all groups	2 Minutes per group
5	Feedback round				5 Minutes per group

Figure 24 – Six Transformations Visioning Workshop: source, authors

The first step of the workshop is the introduction, which requires the formation of groups for each of the transformation and handing out of the contextual narratives and illustrations. The duration of the introduction, reading and looking at the illustration is about 15-20 minutes, depending on the number of participants.

The next step is the mapping exercise. The participants get different missions and solution cards corresponding to their Transformation. They are asked to map them out according to which solutions could answer the missions in their opinion, bearing in mind that there is no single ‘right’ answer and that the solution cards can be connected to one, multiple, or even none of the misisons. This exercise takes around 15-20 minutes depending on the qualifications of the participants, as well as the time that is available. The facilitators should monitor the progress that participants are making and be ready to adjust the time accordingly if they decide it would be beneficial to the workshop outcomes. The involvement of children of the fifth grade showed for example that this exercise can take slightly longer for them. The aim of the mapping exercise is to communicate the complexity of sustainability, foster a systemic perspective, create a shared understanding of solutions for the missions and potentially encourage discussions within the groups on the applicability of solutions in their environment.

Once the mapping is finished, the participants are asked to present their mapping to minimum one other group and explain their choices. Thereby the decisions of each group are qualified and a shared knowledge between groups can be created.

The third exercise is to create a newspaper of the future (around 10 years from the time of the workshop). The participants receive an empty newspaper with different text, picture and advertisement boxes. The task is to fill out these newspapers according to their vision of the future in their environment (neighbourhood, city, town, etc.). Our tests were contextualized in Østerbro. Therefore, we named the newspaper Østerbro Living and we asked the participants to create headlines, pictures and advertisement that are as concrete as possible. In our case, this meant relating the content to certain locations in the neighbourhood that the participants had a particular connection to, or ones that they thought should be transformed to be more sustainable. Once the participants are done with filling out the newspaper, which requires around 20 minutes, they are asked to present the outcomes to the rest of the groups. Thereby we create the opportunity of sharing different visions of the future.

This framework is designed to be adaptable to different contexts. While our context of a sustainable future of Østerbro shaped the workshop in its narrative, visualisation, missions and solutions cards, it can be used in a different context of sustainability. In order to adjust this framework to fulfil the goals of another topic, it requires knowledge in the field of sustainability, some knowledge of the context, and a creative team to design the steps 2 and 3. This workshop is designed within the Six Transformations Framework, so it should be seen as the fundamental guidance of design of the mentioned steps. One example of adapting the workshop could be, therefore, putting the focus on different Transformations, such as Transformation 3 (Energy decarbonisation and sustainable industry) and 6 (Digital revolutions for sustainable development), which we left out from our version as they didn’t closely relate to the Østerbro context. The newspaper exercise can be used in any other context because of its low fidelity. However, it requires a small introduction for the participants to communicate what the frame of content of the newspaper should be.

The final step of the workshop is the feedback round. By asking the participants what they take away from this workshop, what can be improved or what they liked the most, the workshop can be further developed and enhanced according to the participants’ experiences.

The presentation of the workshop as a finished product can be executed in two ways – with included facilitation, or as a printable toolkit.

The workshop as described above can be understood as a product-service system, where we offer not only the design of the workshop materials, but our competencies as Sustainable Design Engineers to facilitate and frame the workshop in different contexts for organisations, NGOs and decision makers. This execution of the workshop is more applicable to professional settings, as part of conferences or community consultations by municipalities. For this approach, it is important to gather a diverse group of relevant actors and enough time for deep exploration of topics. By being present as facilitators with knowledge on sustainability, transitions of socio-technical-ecological systems and futures thinking, we can aid in the flow of the workshop, answer questions, encourage a more in-depth discussion. This also means that the workshop design and materials can be adapted by us to fit the context.

In the next section, we will describe the second application of the workshop: the printable toolkit for schools.

5.1. Toolkit for schools in Østerbro

The second execution, as a printable toolkit, is less modifiable, but with potential to be used more widely. One example of applying this version is in a classroom context, inspired by the test at Randersgade Skole and the interview with the teacher (Appendix 09). The toolkit consists of a guide for the facilitation, the narrative and illustration, the different mission and solution cards and the newspaper (Appendix 10). This toolkit then can be shared around different schools which are interested in making sustainability a part of their curriculum. Providing such a ready-made workshop design that fits within the time of two standard lessons can be a convenient way to introduce the discussion of sustainability and futures to schools. In the interview, the teacher pointed out that although she considers the workshop an engaging and valuable lesson for her students, teachers usually would not have the time or energy to design such a workshop themselves, which is why we consider this toolkit a valuable educational tool.

We see a great potential in involving children and teens in visioning activities as we observed their great imagination, especially in creating the newspapers. Furthermore, as the future generation, they can influence and guide the implementation of this vision. We hope that by creating this toolkit, we can encourage the students’ interests in sustainability and providing them with the knowledge to discuss the topic with different actors to challenge power relations in the current system.

5.2. Publishing the Newspaper

The newspaper exercise had the aim to create a common vision within the groups and was shared with the participants of the workshop through presentations. However, these visions should be shared with more people, communities and decision makers to inspire discussion around the future, to create a shared understanding of the citizens’ visions and to encourage the communication of future visions to local decisionmakers.

In order to share the visions gathered from the workshops, we decided to take the outcomes of the newspaper and create one big newspaper of future Østerbro 2032 (Figure 25). Next to the visions of the participants, we also added a project description and to highlight that if someone is interested in shaping this vision today, they can join to the events and discussions of Miljøpunkt Østerbro. Thereby we aimed to sustain the outcome of the project to continue outside the frame of our thesis. While we aimed to publish the newspaper page in one of the

local newspapers, the request for publishing was unfortunately declined. As an alternative, we decided to print the newspaper and hang them in different locations in Østerbro, such as the library, cafés and schools, to share it with as many people as possible (Picture 36).

Picture 36 – Publishing the newspaper

PROJECT

We are Caro and Agata, two Sustainable Design Engineering master's students from Aalborg University. Together with Miljøpunkt Østerbro we are working on our thesis about visions for a more sustainable Østerbro. In workshops with citizens (5th graders from Randersgade School and citizens of Copenhagen), we developed this newspaper of future Østerbro in 2032.

If you want to make this future a reality, come and see what Miljøpunkt Osterbro is planning on:

miljopunktosterbro.dk or on their facebook page: Miljøpunkt Østerbro

ØSTERBRO LIVING

Østerbro – 08.April.2032

The content of this newspaper has been created by the participants of the visioning workshops.

BREAKING NEWS!

Every country in the world has access to clean water

5

It has been 5 years since Copenhill shut down its burning trash facilities – now it functions as a natural reserve!

People are happy.

50

The oceans are 50% cleaner, than they were 10 years ago

500

500 new nature reserves since 2022!

EVENTS OF THE WEEK

Play, create, experience and learn! Come to this weekend's sustainability festival in Fælledparken

The green behind the concrete – Nordhavnstippen reserve opens today

Opening of the new national park, on the 30th of April, if all goes well, we will open a new national park, where you can see rare and endangered animals. 10 years ago, these animals were close to extinction, but luckily we were able to save them from the point of extinction.

Protected wild areas has just opened! Two years ago the prime minister decided that they would open a wild life area for the endangered and new discovered animals and today it the day that it opens. The prime minister says: "it never been a better place with the wild area in what used to be a park for humans."

Østerbro news

All trash has been removed from Nordhavn!

There is green and car free roads all around Østerbro.

Outdoor Cafés have opened all over Østerbro.

Nature is taking over the edges of Sortedam lake since the concrete has been removed.

Good Food news

Farmers' markets are going global! The inspiration of Denmark is going global! It is amazing that people would sell thousands of crops each year.

Research breakthroughs in the mental health support field linked to the therapeutical qualities of seaweed recollection.

Food import keeps dropping as more and more people keep growing their own food in their own gardens!

First anniversary to the community green house.

10-year-old Jonas is growing his own tomatoes so that he can invite his neighbours for a community dinner.

Greenhouse + Kitchen area for the community located around Ryparken.

Locals can gather for gardening and a monthly dinner with produce harvested at the greenhouse + home.

Different cultures share their food.

The community greenhouse invites locals from the community.

Technology

All new flying car will be coming soon from Tesla.

New climate-friendly flying Tesla. From Tesla, we are now announcing that the new flying Tesla car is almost climate-friendly. But, it is not ready for the public yet. We still need to make some tests, so it is both safe for the environment and the people using it.

Advertisment

Remember to pick up the latest composting equipment at your nearest municipality centre! (We stopped burning trash a while ago after all)

New off-road wheelchair made by Tesla.

OBS! Remember to dispose your Rejsekort in the plastic container.

Figure 25 – Final newspaper: source, authors

6. How is our solution sustainable?

6.1. How we understand sustainability

Our main understanding of sustainability is the effort to build a world and a future where no one gets left behind – including the future generations. In the urban context of Copenhagen, we understand it as the ambition to build liveable spaces that not only exist within the limits that our planet can provide, but also positively contribute to the citizens’ health and well-being – combining social and environmental sustainability. This is why we decided to use the Six Transformations as our guiding framework. The SDGs require bold, structural changes of how our society and lifestyles are structured, and the Six Transformations provide a guide on how these changes might come to fruition in practice in the social, economic and environmental dimension.

We call for more consideration for relations between humans, technology, and non-human nature to build alternative pathways for sustainability in cities, in line with Randrup et al. (2020). By taking Nature-based Thinking as a guiding mindset for creating our visions of a sustainable future, we aim to move away from the economically driven planning approaches of today. Instead, we search for ways in which synergies can be found in the socio-technological-ecological system, where humans and non-human nature can benefit, creating healthy, resilient communities, sustainable governance, and space for natural processes.

6.2. Sustainability needs foresight

To enable a sustainable transition of current socio-technical-ecological systems such as the city of Copenhagen, we need to create knowledge about the current system, about what an alternative system could look like, and finally, knowledge about how to create the pathway to this alternative system (Pohl and Hirsch-Hadorn, 2007). Creating knowledge about alternative systems can in other words be seen as visioning a world that goes beyond the solutions of today.

By creating scenarios of more sustainable futures based on three of the Six Transformations, as well as by creating the workshop to empower citizens to create their own visions for their neighbourhood, we contribute to creating knowledge about these alternative future systems. By co-creating futures, participants get a chance to practice their imagination, gain more understanding of the shortcomings of the current system, and even be inspired to act towards making these futures become reality (Johnson et al., 2012).

6.3. Sustainability needs collaboration

Sustainable transitions demand collaboration at all levels of society, from individuals, through communities and organizations, to policymakers, politicians and leaders. Gaziulusoy and Ryan (2017) point out that the agency and power to create visions that drive these transitions are not distributed equally in society. Garduño García and Gaziulusoy (2021) furthermore highlight that currently, sustainable transitions are locked behind a knowledge barrier and discussed between selected groups of experts and policymakers – making the public a ‘passive victim’ of transitions designed for them, but without them. There is a need for more participatory processes that give agency to a wider public and to underrepresented groups – not only governments, but NGOs, community organizations, citizens of all ages. Including diverse stakeholders in these deliberations aims to create a wider array of alternative futures, which reflect the diversity of values that people hold, how they interact with the city, and what they expect from the future (Gaziulusoy and Ryan, 2017).

Our solution aims to democratize this process of creating visions of sustainable futures, qualifying workshop participants of all ages or knowledge backgrounds to discuss the future of their neighbourhood, put forward their own visions and priorities, encourage them to share that vision with others. While the scenarios and narratives aim to create shared syntax and language, the mapping exercise aims to make the participants understand and communicate the differences and dependencies of each player. The mapping furthermore aims to produce and share new knowledge across the participants and transform existing knowledge (Star, 1989).

Eventually, our hope is that by participating in the visioning workshop, citizens would be empowered to seek out opportunities to act toward their preferable future, communicate it to decision makers and their community to initiate the change that is needed.

6.4. Sustainability needs a systemic approach

To make our solution comparable to others we decided to place our project in the context of the Design for Sustainability (DfS) innovation framework by Ceschin and Gaziulusoy (2020) (Figure 26). This will explain the scope of our design intervention and which perspective we take on framing the design problem.

The framing of our design problem we see in between human-centric and Earth-centric. From the human side, the goal of our project is to urge people to envision and pursue sustainable futures. We aim to challenge existing power structures when it comes to visioning by democratizing visioning practices, qualifying citizens to develop a systemic perspective on sustainability. By including the Six Transformations Framework and Nature-based Thinking, we aspire to move away from anthropocentric design, including in our solution care the concerns of non-human nature. However, we understand that much more is needed to truly transcend this anthropocentric perspective – in our case, the participants of the workshop are still only human and will ultimately create visions that are beneficial to them, even if non-human nature also co-benefits from them.

In scope of the design intervention, we place ourselves in the socio-technical-ecological systems level. Even though our workshop has for now only been used and tested with local communities, its flexibility allows it to be used for radical interventions that challenge the structure and relations within entire socio-technical-ecological systems.

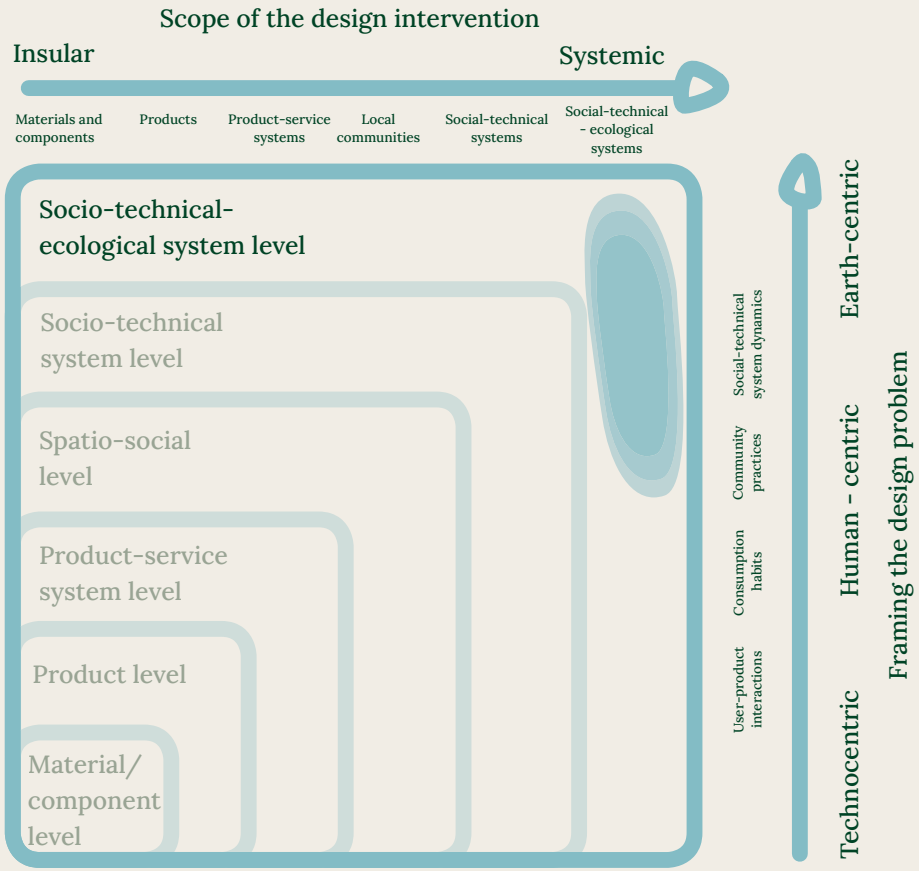


Figure 26 – Placement in the Dfs Framework, source: based on Ceschin and Gaziulusoy, 2020

As our design proposal is primarily focused on aiding a sustainable transition, we will additionally reach out to Gaziulusoy again and elaborate on our project’s placement in the “Rough Process Guide for (Design for) Transitions” (Gaziulusoy, 2020), as this covers the aspect of future visioning.

The Rough Process Guide for (Design for) Transitions sees designing for transitions in 5 steps (Figure 27). The first step of analysing the current socio-technical system by mapping out the problem, analysing stakeholder concerns and relations is then followed by the second step of co-creating radical alternative visions of the future. After that, the third step is backcasting and developing transition pathways. The fourth step covers the implementation of experiments, ending with the fifth step which is observing, reflecting, learning and reframing. This approach partially follows Pohl and Hirsch-Hadorn‘s (2007) concept of creating three types of knowledge (systems, target and transition knowledge), and expands it with the practical steps 4 and 5. We see the Six Transformations Visioning Workshop as a guide to assist the development of a co-created vision (step 2).

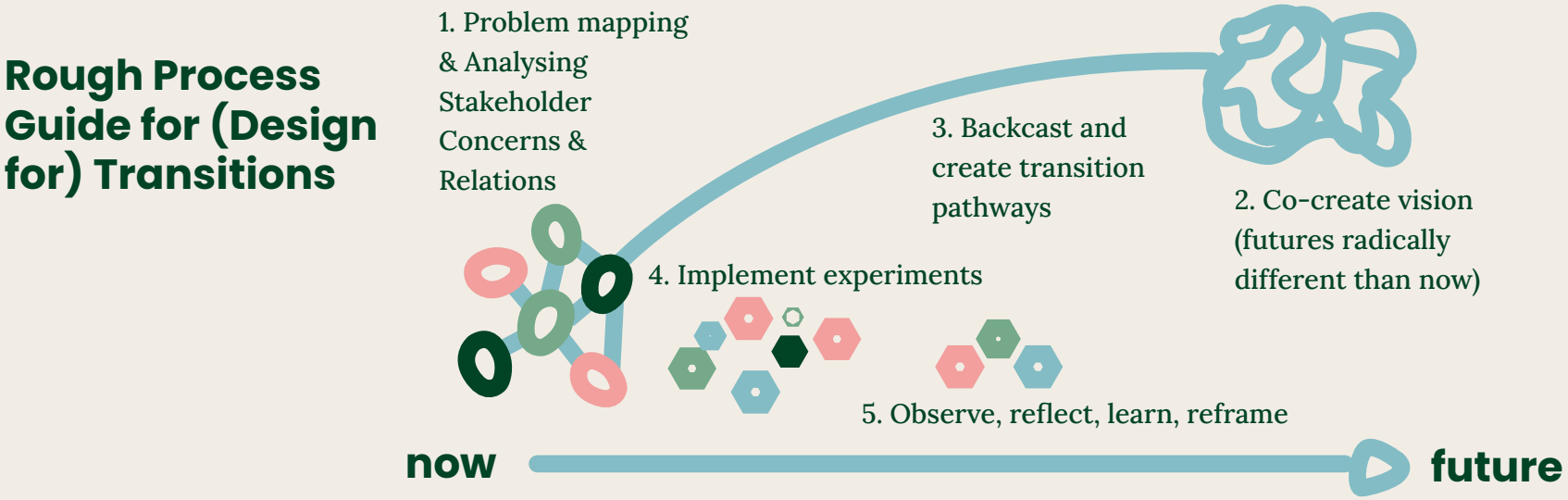


Figure 27 – Rough Process Guide for (Design) Transitions, source: based on Gaziulusoy, Idil (2020)

7. Opportunities for further study

7.1. Broadening of the participatory approach

In line with Garduño García and Gaziulusoy, (2021), we see it pertinent to include people from different backgrounds in the workshop setting to encourage an interdisciplinary conversation about futures.

While the focus of our user involvement was on citizens including school children, the next step is to test our workshop with Miljøpunkt, which we plan on doing on the 8th of June, 2022. We see this involvement as relevant, as they are bridging the gap between policy makers and citizens, and their knowledge and experiences in urban development contribute to the knowledge co-production with citizens. The participation of members of Miljøpunkt would help to create interest in the topic and thereby possibly carry the implementation of the created visions further.

Furthermore, we see great potential in involving policy makers from the municipality together with organisations such as NGOs, local CSOs, and citizens to cultivate a culture of long-term envisioning to enable the urban sustainable transition. The interdisciplinary involvement could help shape decisions in the future supported by organisation in power which is having the resources to implement those visions.

7.2. Further development of the workshop material

Taking the feedback from the workshop into account we see potential in developing the workshop further. For example, our interviewees pointed to the need to design prompts that can help the process of imagination in the newspaper exercise.

Furthermore, as highlighted in the workshop discussion section, there is still much to be done in terms of the accessibility of the workshop. We focused on developing an inclusive visioning process that can be performed and understood by people of all ages and knowledge backgrounds, but the obvious next step would be to design a version of the workshop that accommodates people with visual or hearing disabilities.

Finally, we see potential in involving experts in the fields of the Six Transformations in order to add more relevant solutions and missions to the portfolio.

7.3. Testing of toolkit idea

To test the validity of the developed toolkit for schools (Appendix 10), the next step would be to hand out the toolkit to schools in Østerbro and to observe the performance with another class, letting the teacher facilitate on their own. Furthermore, we see great potential in adapting the toolkit to another context, such as another neighbourhood or city. The consequent next step would, therefore, be a redesign of the elements such as the narrative and the newspaper.

7.4. Explore the Six Transformations further

With this project, we intended to provide the basis for incorporating the Six Transformations Framework in a visioning workshop. While our focus was on the Transformations 1, 2, 4, and 5, we see a great potential in exploring the other Transformations, (3) Energy decarbonization and sustainable industry and (6) Digital revolution for sustainable development, in the context of sustainable urban development. Furthermore, in order to enhance the Six Transformations Visioning Workshop, we see potential in expanding the topic of mobility as it is one of the pillars of transformation 5 and it has a great impact on the quality of life in the city.

7.5. Investigate further art interventions

We shared the visions developed by the citizens with a broader audience by creating and distributing the newspaper (see section 5.2.). The exploration of further art intervention to share visions in the urban area could create great value in generating interest in more actors. One idea, for example, is a window that has an illustration of the vision of citizens, decision makers and other actors painted on. This window could be placed in an area in the public space to show how the future could look differently through the window (Picture 37).

Picture 37 – Window of the future, source: authors

7.6. Analysis of ecology of futuring methods in Copenhagen

We have analysed several existing scenario-based workshops that are used by e.g., the European Commission. As we intended to create a solution that would be adaptable to different contexts, we tested the flexibility of the method by involving two very different audiences in the context of Østerbro. Nonetheless, in order to make the most of placing our workshop in the setting of Copenhagen, we see great potential in analysing the actor network within the city and the methodology of creating future insight used by local actors. By understanding the position of our solution in the ecology of existing futuring methods used by e.g. the municipality or local CSOs in Copenhagen, other windows of opportunities for the shape of the workshop could open. This analysis would, however, be significantly easier when performed by a Danish speaker in order to understand the available information, as our research was somewhat hindered by having to rely on automatic translation.

8. Conclusion

This section aims to provide insight to the research questions that read:

How can we, as Sustainable Design Engineers, develop a scenario method to make sustainable futures discussable?

How can it be used to collaboratively create a sustainable vision for Østerbro?

This thesis contributes to the field of Sustainable Design Engineering by addressing the ‘crisis of imagination’ of alternative sustainable futures through design means. Basing on the Six Transformations Framework and Nature-based Thinking, we have developed a new visioning workshop, which can help communities envision a preferable future for their neighbourhoods. To ensure that we create an inclusive deliberation space where the priorities of citizens can be voiced regardless of background, knowledge culture and age, we adhered to the following criteria:

- Easy to understand
- Highly visual
- Adaptable to different contexts
- Flexible in terms of facilitation
- Enjoyable
- Based on personal narratives of the future.

Through the workshop design, we aimed to qualify the participants of the visioning workshops to talk about the sustainable future of their neighbourhood, arming them with shared vocabulary and concepts, as well as by giving them materials to help adopt a systemic perspective and understand interrelations in the system. Furthermore, our goal was to inspire the participants to develop a more personal relationship with their future, through placing themselves temporarily into an alternative future scenario.

We contextualized our solution in the Copenhagen neighbourhood of Østerbro by including recognizable locations in the narrative scenarios and illustrations, as well as calling upon the participants’ knowledge of the area to collectively imagine how these places could be transformed in 10 years. Although we focused on Østerbro in the current version of the workshop and both of our tests with citizens were conducted in the neighbourhood, we have designed the method in a way that allows for adjusting it to different contexts, creating a basis for future work on alternative applications.

Even though at first our goal was to co-create new visions of a future Østerbro, we consider the most important outputs of the workshops to actually be the discussions that ensued in the process. The final visions developed in the shape of newspapers give us a glimpse of how citizens imagine a preferred state,

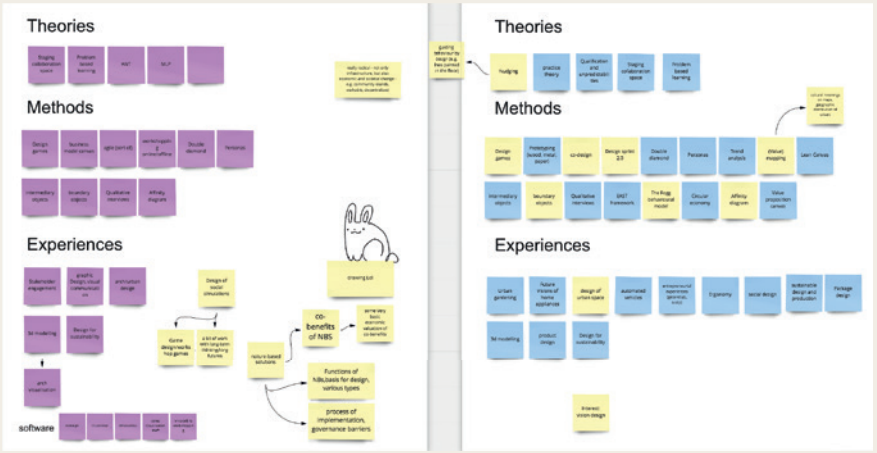
but the conversations show that our solution helped qualify the participants to voice their opinions on how that state could be reached, what elements of the urban environment can contribute to it, how they understand interrelations in the socio-technical-ecological system.

Our process can be seen as contributing to the creation of the three types of knowledge to contribute to a sustainability transition, as called for by Pohl and Hirsch-Hadorn (2007). Through our state of the art research, we contributed to creating systems knowledge, to understand the current situation in Østerbro as well as the existing and emerging methods and urban interventions that can be applied to it. Participants in the Six Transformations Visioning Workshop created systems and target knowledge by discussing what they would like to see in their neighbourhood’s future and co-creating their visions. It can also be argued that some transformation knowledge was created through these discussions – by comparing the preferred scenarios to their current reality, the participants (especially participants of workshop 2) discussed the scenarios’ plausibility, practicality of implementing the interventions, and what obstacles are currently in the way to achieving them.

By letting the citizens take ownership of the visions, we hope that we inspired them to consider taking their visions further, communicate them with their network, and thus contributing to making these visions become reality.

8.1. Implications for Sustainable Design Engineers

Before we describe the implication for the field of Sustainable Design Engineering, we would like to come back to one exercise we did at the very beginning of this project. In order to get an overview on all learned theories and methods from our previous educations and the Master program, we mapped them out in Miro.



Picture 38 – Mapping of knowlegde and experiences, source: authors

By that we were able to get an understanding from each other’s backgrounds and, most importantly, identify gaps in knowledge and align our interests for our thesis. This let us combine SDE

knowledge with other academic and practice-based knowledge that we bring into the field – industrial design, art, architecture and game design. Creating an intersection of sustainability, design (hands-on approach) and design for sustainable transition can therefore be seen as the approach throughout the design process.

Through our design proposal, we facilitate the co-creation of knowledge between actors who are citizens of Østerbro. We accomplish that by giving them building blocks to understand the systemic nature of urban design and interventions for sustainability in their neighbourhood. At the same time, we also create knowledge about design through our process of designing a new visioning workshop and showing how a collaborative exercise for urban sustainability can be developed.

We contribute to the infrastructure of imagination tools with a novel method that can be used by communities to co-envision different sustainable futures. We are enriching the landscape of future scenario-based workshops, as they all work towards the same goal. Regular citizens are often excluded for the sustainable transition processes and our contribution aims to democratise the development of sustainable urban futures.

One important insight we would like to emphasize here is that throughout this design project, we didn’t work in an entirely familiar context. None of us are residents of Østerbro. Although we have visited the neighbourhood many times, we conducted desk research about the district, had meetings with two Østerbro-based organisations, and had a field visit to Klimakvarteret, our knowledge about how residents of the neighbourhood understand and interact with their area was foreign to us. The content, facilitation and outcomes of the workshops might have been different if we based the design in a setting more familiar to us. However, that was an important learning moment for us as designers, as we will not always have the luxury of working in a familiar context. This is why we found the two tests of the workshop significant, as they showed us the importance of designing the workshop in a way that encourages the participants to exchange knowledge with us and with each other. When designing a workshop that pertains to a specific context, prior research of that context is of course always necessary. However, the advantage of participatory design is that we get the chance to tap into their knowledge to create a synthesis of the knowledge worlds.

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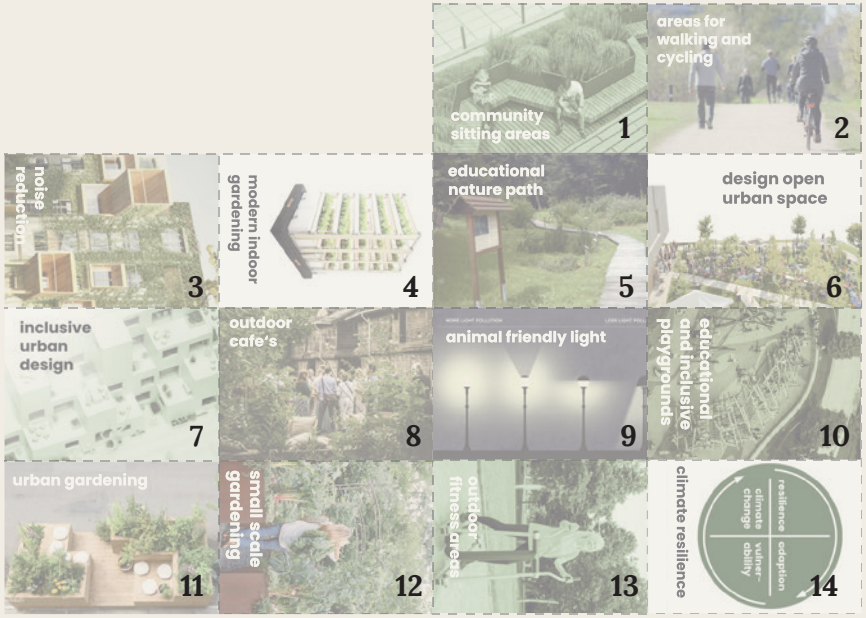

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Figure 2 - Three types of futures
and Figure 9 – Futures with Six Transformation Framework, source: authors, based on Candy, 2010

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Figure on page 35

Figure 5 – Figure by Hatzilacou

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Figure 6 – Selected Six Transformations

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Figure 7 – Transformed corner

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Figure 26 – Placement in the Dfs Framework

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Figure 27 – Rough Process Guide for (Design) Transitions based on Gaziulusoy, Idil (2020)

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Picture 1 – Singapore’s Biophilic Town Framework

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Picture 5 – Bryggervangen

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Picture 10 – Skt. Kjelds Plads

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Picture 13 – Det Vilde Røde Hus

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