



# **Applying Doughnut Economics in Small scale Urban Development Projects**

The Case Study of Future School, Tomelilla, Sweden

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# Summary

The relationship between the economy and urban is inevitable, the urban economy is the economy of today which is intertwined with many aspects like housing, urbanization... But in the 21st century what kind of economy do we need; The doughnut drawn by Raworth is a radically new compass for guiding humanity in this century. Attention to staying within the planetary boundaries while considering the social foundation for society is the main purpose of Doughnut economics. Hence, Doughnut aims to ensure that humanity does not overshoot the ecological ceiling and is left falling short of life's essentials humanity, consequently, humanity can continue to develop and thrive for the next generations. The application of doughnut economics in urban development projects has garnered significant media coverage, but there remains a notable gap in academic research regarding its implementation in urban development. This research examines various definitions of the Doughnut model by comparing them to previous projects, literature, cities, and scholars who have utilised this approach. It critically analyses the newly released book, "Doughnut for Urban Development," within this thesis. Additionally, it explores how Tomelilla municipality applies Doughnut thinking in their development process, particularly focusing on the future school project, to identify challenges in implementing this idea in small-scale projects. Through document analysis, sorting, and interviews, the research uncovers unknown aspects of integrating Doughnut thinking into small-scale urban development projects. Considering all the indicators introduced in Doughnut for urban development makes this idea difficult to apply globally, especially in small-scale projects or poor countries where the accessibility for all measurement and assessment tools would be difficult or impossible otherwise, we must sacrifice one element of a goal for the gaining of another goal. In addition, the lack of empirical examples and critical thinking in many foundational issues in Doughnut makes it unclear for developers, planners, and designers. Moreover, the lack of specific evaluation or definition in some indicators of doughnut economics uses in urban development can increase the risk of misunderstandings of the concepts. Considering these matters in addition to the complexity of implementing and assessing the idea seems daunting. Even though these matters can be considered barriers, this comprehensiveness reflects the importance of evaluating every project from a multifaceted perspective. Ultimately, the research argues that the most essential consideration for any development project, regardless of scale, is often the option of not building at all, and to reach this goal the involvement of politicians who support these new approaches is crucial.

Keywords: Doughnut Economics, Urban Development, Circular Economy, Tomelilla, Critical Theory.

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I spent hours to find the best acknowledgement, reflecting on numerous individuals who have significantly influenced my life's journey. Selecting just one or two persons to acknowledge is challenging, especially when you are forty.

I wish to extend my heartfelt appreciation to all who have left their impact on my life, whether through positive or negative experiences, including those who have supported or challenged me. From each interaction, I have learned valuable lessons on navigating and prospering in life. Indeed, to thrive, we require the collective impact of both positive and unfavourable experiences.

# 1. Introduction

## 1.1. Background

### 1.1.1. Disconnection

The challenges posed by climate change and the depletion of resources call for a reassessment of new economic models governing the production, development, and utilization of goods and services. This necessitates a holistic and interdisciplinary restructuring, as well as a critical examination of conventional economic, business, and management constructs (Kassier, 2024). The author also argues that the climate crisis, resource depletion, and escalating social disparities are unfolding in systemic patterns that exceed national borders. The urgency of these crises and challenges underscores the imperative for systemic change as Landrum (2018) asserted that environmental degradation persists despite businesses' growing adoption of sustainability practices. Moreover, Dyllick & Muff (2014) elaborate that although major companies are increasingly embracing sustainability management and initiatives, a significant disparity exists between their efforts and the overall impact of their activities, termed a "big disconnect." Environmental degradation is nonetheless on the rise while an increasing part of companies asserts to be operating sustainably (Hmeidi et al. 2023). These arguments indicate that historical economic models and isolated state policies have contributed to global market failures, shared resource exploitation, and a lack of accountability for social and environmental externalities (Kassier 2024). As argued by Rockström et al. (2009), there is an urgent need for transition to more sustainable economies if we are to safeguard planetary integrity.

Consequently, the need for a new economic model seems crucial to solving the big disconnection and saving the planet and ecological economic frameworks have the potential to facilitate sustainability transitions (Raworth, 2017). This thesis aims to investigate the implementation of the idea of Doughnut Economics in urban development by focusing on small-scale projects. My involvement and interest in this issue originated while I was working on the Future School project in Tomelilla as part of the strategy design group. The emerging challenges during this project prompted me to examine this matter more critically in my thesis.

### 1.1.2. System Transition

Acknowledging the shortcomings of our current system to address mounting sustainability challenges adequately, there is a demand for a fundamental shift in the functioning of human societies towards sustainability, often referred to as sustainability transformation (O'Brien & Sygna 2013; Weinstein Turner & Ibáñez 2013; Feola 2015; Stoddard et al., 2021). There are several definitions of

transformation. According to the IPCC (2022), transformation is considered a “change in the 10 fundamental attributes of natural and human systems”. Indeed, there is a consensus that transformation signifies a “major, fundamental change” in contrast to “minor, marginal, or incremental change” (Feola, 2015). In this research, the seven ways of thinking presented by Raworth (2018) in the Doughnut economics approach will be considered as a fundamental shift from traditional economic thinking and practice.

In addition, the role of the Doughnut in urban development is recognised as a connector between the changemakers in sustainable transition (Janusek, 2023). Consequently, in this research, the movement towards a safe and just operating space which is considered in the Doughnut is viewed as a positive effect.

### 1.1.3. Sustainable Development Goals

According to the IPCC report (2022) More than half of the world's population currently lives in urban areas, and this proportion is projected to rise to almost 70% by 2050. Recognizing cataclysmic events affecting urban growth such as frequent typhoons, flooding, wildfires and droughts, cities with weak, infrastructure, and the catastrophic consequences of accelerating climate change as Wars and other conflicts have spurred migration seems crucial. Consequently, the Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. The UN Sustainable Development Goals (SDGs), the Paris Climate Agreement and the Sendai Framework for Disaster Risk Reduction underlined the interconnections between the economic, social, and environmental challenges cities face. They emphasized the need for integrated, place-based solutions that leave no one behind (Espey et al., 2023). The core of this initiative lies in the 17 Sustainable Development Goals (SDGs), representing a pressing call to action for all nations, whether developed or developing, to collaborate globally (Figure 01).



Figure 01. Sustainable Development Goals. Source: SDGS (2024)

These goals acknowledge that eradicating poverty and addressing other forms of deprivation must be accompanied by efforts to enhance healthcare and education, diminish inequality, promote economic advancement, combat climate change, and safeguard our oceans and forests.

#### 1.1.4. Economy and Urban Development

One of our time's most complicated and greatest puzzles is the connection between urbanization and economic development (Turok et al., 2023). The relationship between the economy and urban seems inevitable, the urban economy is the economy of today which is intertwined with many aspects like housing, urbanisation... The importance and codependent of macro- and microeconomics for decision-making in planning argued by Lichfield (1968) moreover Goodall (1972) emphasized the link between urban planning (and urbanization in particular) and economics in his book *The Economics of Urban Areas*. The relevance between the approach of urban planning and reformation in economic thinking could alter the approaches of planners and decision-makers in new urban developments (Hasan, 2022). The world's population growth will occur in cities over the next few decades although the most growth will happen in Asia and Africa, consequently anticipating the urbanization growth impact on residents' standards of living and well-being seems crucial for governments to take appropriate actions (Turok et al., 2013).

#### 1.2. Problem statement

The doughnut economics model is a new phenomenon in the world. Doughnut economics emerged around 2012 by Kate Raworth, contributing to discussions surrounding sustainable development and its conceptualisation and attainment (Raworth, 2012). It is a holistic framework for rethinking the economy within the social and ecological foundations (Raworth, 2018). Furthermore, the discourse on doughnut economics can be situated within the broader framework of the reformist circular society discourse (Hasan, 2022). The potential for the Doughnut model to instigate change varies according to its implementation across diverse levels (Turner and Wills, 2022). Doughnut Economics is rapidly gaining traction in urban planning. Several cities are trying to use the tools and concepts of Doughnut Economics to help bring a thriving future. However, the relationship between the foundational principles of the Doughnut Economics model and the urban development process warrants scrutiny through a critical view. Indeed, there are still unclear definitions for different aspects of the solid social foundation (inner ring of the doughnut) and planetary boundaries (outer ring of the doughnut) part of the doughnut. Consequently, Doughnut's thinking has been subject to criticism for its

perceived deficiency in providing concrete examples of downscaling the Doughnut model and its application within contexts (Krauss, 2018). Local and global connections are one of the most important issues that developers face, and the question is how they will deal with it and in this case, what plan municipalities or developers have for dealing with this issue. In addition, the lack of empirical examples and critical thinking in many foundational issues in Doughnut makes it opaque for scholars and planners. These issues can lead development projects that focus on climate change and sustainability to the risk of greenwashing and misunderstandings of the concepts. Therefore, it is imperative to delve deeper into instances where Doughnut Economics is put into practice to elucidate the transformative capacity of Doughnut Economics in urban development projects.

### 1.3. Purpose & Research Questions

This thesis aims to investigate different principles of Doughnut economics being utilized in small-scale urban development projects. By reviewing different projects, books articles, cities, and scholars, who used this method before. In addition, by focusing on the new book recently launched by Doughnut Economics Action Lab; Doughnut for Urban Development will be investigated with a critical view in this thesis. Moreover, through conducting an exploratory case study of Future School in Tomelilla municipality, the lack thereof will be investigated to understand and evaluate the downscaling of the Doughnut economics to the small-scale development project. To address challenges towards global goal attainment and to gain a clearer understanding of how Doughnut economics can be employed in small local-scale urban development projects, the following research questions were designed:

**RQ1:** How can doughnut thinking be operationalised in small-scale urban development projects, what challenges and opportunities their face?

**RQ2:** How can cities use the doughnut core concepts and tools in their urban development?

**RQ3:** How do the local governments - from villages to megacities - adopt the tools and concepts of Doughnut Economics to help bring these items to the globe?

**RQ4:** What kinds of aspects should be considered in a small-scale doughnut urban development project?

**“To meet the Paris Agreement’s goal of keeping global temperature increase to well below 2°C, the global economy should aim to achieve net zero CO<sub>2</sub> emissions by 2050.”**

**IEA**

## **2. Methodology**

### **2.1. Research Design**

The research project aims to investigate “Doughnut economics” presented by Kate Raworth as a new alternative macroeconomic model and how to develop cities fit for the 21st century based on the principles of the Doughnut Economy. Both qualitative and quantitative methods will be used in the process of conducting and investigating this research. In addition, some part of this research approach is an explorative case study research on a qualitative and quantitative basis. Flick (2007) has stated that qualitative research leads to exploring and providing deeper and richer insights into real-world issues. Therefore, various methods of this attitude have been used, including observation, interview, literature review, archive studies, and mapping. Kevin Ward (2013) mentioned in his book that GIS " may simply be a way to produce representations of your research results" Thus it could be a helpful way for the research to show my analysis of the city. Moreover, I aimed to uncover unexplored facets of the doughnut economics model as applied to urban development projects. I plan to achieve this by rigorously testing various ideas and hypotheses throughout the research. By experimenting with different approaches and strategies, I hope to reveal novel insights and innovative applications of the doughnut economics framework in addressing urban challenges and promoting sustainable development.

In summary, document analysis was undertaken to discern pertinent social and ecological dimensions relevant to the research. This comprehensive review allowed me to identify key factors and considerations essential for informing my research and guiding my approach to urban development within the context of doughnut economics thinking. Document analysis is conducted to identify relevant social and ecological dimensions for the case studies.

### **2.2. Literature Review**

My thesis journey began with a critical examination of the existing literature review. This review process provided valuable insights into the connection between Doughnut Economics and urban development. However, that lack of critical literature made it difficult but by helping the DEAL (Doughnut Economics Action Lab, 2024) website I could find a few useful articles and theses related to the topic. Moreover, by searching the keywords related to my topics like Doughnut economics, Circular economy, urban development, greenwashing, neoliberal development, Sustainable development, etc on Malmö University Library, Diva portal, and ResearchGate, I gathered many articles and a thesis. After a thorough review of the articles, I employed a screening and scanning approach to identify the most relevant ones. I then delved deeper into these articles, extracting key phrases and terminology to

solidify my understanding. Apart from this, I got some suggestions and insights from my supervisor to find the right articles. To fully grasp the current state of Doughnut Economics research, I conducted a comprehensive literature review. This review encompassed not only the core principles of the model but also existing critiques. This two-pronged approach allowed me to pinpoint any research gaps and identify potentially valuable methodologies and theoretical frameworks that could be applied to my study.

### 2.3. Case Study

Working with a case study helped me attain a holistic understanding of implementing the Doughnut in a small-scale project. As Flyvbjerg (2013) argue, the case study is an important and necessary method in the social sciences. its value persists even when compared against the broad spectrum of methodologies available. Since the Doughnut model is reliant on social factors, using a case study offers a distinct research advantage. This method allows for a more in-depth exploration of the social dynamics at play during the model's implementation. The Future School in Tomelilla was chosen as a case study for several reasons. While writing my thesis, I was simultaneously a member of the strategic design team for the Future School in Tomelilla. It could help me to delve deeper into the topic and to find the unknown aspects of the doughnut economics model implemented in a small-scale project. Moreover, Tomelilla is the first municipality that started to integrate the concepts of Doughnut Economics into its development (Hassan, 2022). However, my focus is on Tomelilla I tried to investigate several other cases like Amsterdam and Copenhagen in this research to find unknown empirical aspects of the doughnut in urban development.

### 2.4. Semi-structured interviews

There are three main types of interviews used in research: fully structured, semi-structured, and unstructured. Each has its strengths and weaknesses, making them suitable for different research goals (Robson & McCartan, 2016). I considered semi-structured interviews appropriate for my thesis because I focused on my research questions, so I had a clear idea about my questions. Additionally, being a part of the strategy design team allowed me to make observations to complete the data from the interviews. However, I received several answers from the email, and I used one of them. Even though there were several limitations such as useless answers or some of the respondents being too busy to reply. In sum, a series of interviews, helped me to achieve a deeper understanding of a particular phenomenon in Tomelilla which I used in different parts of my thesis.

## 2.5. Workshop

Workshops are considered an important tool by DEAL, they provide different templates for workshops with various approaches that are useful translations of these tools as part of their Doughnut Unrolled toolset (DEAL, 2024). However, we didn't use these templates, but the main aim was to find the participant's ideas about the future school in Tomelilla and whether they know the Doughnut or not. To actively engage residents, we facilitated a workshop in Tomelilla Kulturhuset. Although to actively engage politicians, city planners, and officials from Tjänsteman in Tomelilla municipality in the design process, we facilitated a series of meetings and workshops with their participation but my focus here is on the workshop with residents. However, I bring some perceptions and comments I received during the meetings and workshops with the decision-makers. These collaborative sessions served as forums for open dialogue, idea generation, and collective problem-solving. The insights, perspectives, and proposals shared during these interactions were carefully documented and integrated into the narrative of my research. I am going to compare some of these ideas and thoughts with the principles of doughnut economics to find distinctions and difficulties that stand in the way of doughnut economics foundations.

## 2.6. Survey

Surveys are a popular choice for researchers due to their affordability, ability to gather data from a large population quickly, and relative ease of administration (Gürbüz, 2017). Moreover, surveys may seem straightforward at first glance; However, valid results depend on the researcher having a clear understanding of the circumstances where surveys are suitable and the constraints on inference in interpreting and generalising from survey findings. Questionnaires and interviews are very widely used social research methods for collecting data from and about people. Competence in their design and implementation can reasonably be expected from a real-world researcher. The primary means of gathering information is using questionnaires, and it is crucial to craft them thoughtfully to ensure the acquisition of top-notch data. To understand the demands and ideas of students in Tomelilla, where the project intends to be implemented the survey was conducted. The survey was structured to include quantitative and qualitative inquiries, aiming to delve into students' perspectives on the future of schooling. 143 students from two schools in Tomelilla participated in the survey. The data was collected and analysed statistically to identify patterns, and relationships between needs, demands and their relation to the Doughnut thinking, and finally conclude the student population we were studying. It's important to note that one school in Iran participated in filling out the survey. Due

to time constraints, I won't be discussing the results specific to that school in this thesis.

## 2.7. Observation

Observation can be used as a method to understand urban places and spaces. Observation is not just looking around, it's a considered assessment of what is happening. In observing the site plan and the existing building we mainly used memory and pictures to record what was happening. When observing it is important to not only record what's going on but to also analyse and interpret the material (Bryne, 2021). In observing the existing buildings and infrastructures, I mainly tried to identify where and what kinds of problems the existing buildings how can the municipality use them in the future school or why they are going to demolish some of them.

**The 'four lenses' explore a holistic vision of how urban development could help build neighbourhoods and buildings that are homes for thriving people in thriving places while respecting the well-being of all people and the health of the living planet.**

### **3. Theoretical framework**

#### **3.1. Method**

##### **3.1.1. Strategy for Database Exploration**

The primary objective of the literature review entails an exploration of extant scholarly works through a manual inquiry spanning diverse academic journals, theses, and repositories such as Mau Library and Google Scholar. This effort is embarked alongside the scrutiny of relevant data and documents, aiming to assess the feasibility, potentialities, and limitations inherent in the application of Doughnut Economics principles within the context of small-scale urban development projects. Keywords such as "Doughnut Economics framework/model," "urban development," "sustainable development goals," "greenwashing," "circular economy," and "development" were strategically employed to guide the retrieval process. Their selection aimed to facilitate the identification of challenges pertinent to local urban development endeavours predicated upon the principles of doughnut economics.

##### **3.1.2. Criteria for Literature Review Selection**

A literature review as a tool for exploring definitions and examining the implemented project will play an essential role in the process of my research. Consequently, reviewing the titles, abstracts, and conclusions of articles, research, and book reports have chosen relevant documents and data. The main language of most pieces of literature was English however several data and documents were chosen in Swedish. In addition, the survey was conducted in Swedish and translated into English.

#### **3.2. Circular Economics**

As Alvarez et al. (2022) explain the processes conducted by workers in linear economics-based organizations are based on using the materials only in one direction, to receive the final product using the raw materials while waste from the resulting is thrown away without any additional action. In contrast, recovery and valorisation of waste are two fundamental elements of the circular economy in its management approach. This means materials can be reused in the supply chain. Enhancing the products, components, and materials' value over time and mitigating absolute resource use, waste, and emissions are the aims of the circular economy (Bocken et al., 2023). Transitioning to a circular economy has a crucial role in mitigating environmental degradation, consequently applying circular economics could qualify an initiative to become sustainable over time (Hmeidi & Ryberg, 2023). In addition, achieving innovation for a circular economy necessitates comprehensive and interconnected alterations in

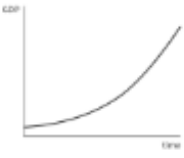





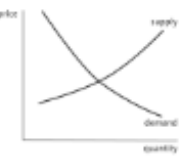





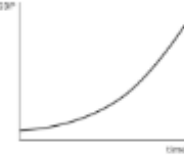
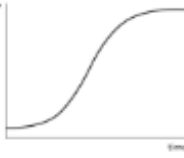
both a company's business model and its fundamental operational activities (Bocken et al., 2023). Although many companies, projects or governments cannot achieve true sustainability, shifting the strategy and system towards the circular economy can be an important step towards achieving sustainable goals. Everett (2022) argues the Circular Economy is an alternative economic model that concentrates on economics and the environment while the current framework lacks integration of the social aspect. The author also mentions that Combining the Circular Economy with additional concepts, such as the Doughnut Economy creates a more holistic, sustainable approach that aligns with the three pillars of sustainable development: social, environmental, and economic. This combination fosters the development of a future Circular Economy closely linked to the socially focused Sustainable Development Goals (SDGs) and provides a comprehensive economic model that is more sustainable for future generations. In summary, this research aims to explore and illuminate the overlooked dimensions of urban development projects by integrating the principles of Doughnut Economics within the framework of the Circular Economy. By doing so, it seeks to provide a more comprehensive understanding of how these economic models can be applied to foster sustainable urban development projects.

### 3.3. Doughnut Economics: A Compass for Human Prosperity

But in the 21st century what kind of economy do we need; this is a question considered by Kate Raworth to find a new economic model that humanity can thrive in the 21st Century. Doughnut Economics by Kate Raworth (2020) is considered a compass for human prosperity in the 21st century. The needs of all people within the means of the living planet are the main aim of doughnut economics where Kate Raworth suggests Seven Ways to Think Like a 21st Century Economist.

The seven ways of transformation are as follows: Change the goal, see the big picture, nurture human nature, get savvy with systems, design to distribute, create to regenerate, and be agnostic about growth (see Figure 02).

## Seven ways to think like a 21st century economist

Seven Ways to Think:	From 20th-Century Economics	To 21st-Century Economics
1. Change the Goal	 <p>GDP</p>	 <p>the Doughnut</p>
2. See the Big Picture	 <p>self-contained market</p>	 <p>embedded economy</p>
3. Nurture Human Nature	 <p>rational economic man</p>	 <p>social adaptable humans</p>
4. Get Savvy with Systems	 <p>mechanical equilibrium</p>	 <p>dynamic complexity</p>
5. Design to Distribute	 <p>growth will even it up again</p>	 <p>distributive by design</p>
6. Create to Regenerate	 <p>growth will clean it up again</p>	 <p>regenerative by design</p>
7. Be Agnostic about Growth	 <p>growth addicted</p>	 <p>growth agnostic</p>

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Figure 02. Seven Ways to think like a 21st-century economist. (Source: Raworth, 2022)

The doughnut drawn by Raworth (Figure 03) is a radically new compass for guiding humanity in this century. It consists of two concentric rings, a social foundation of human well-being and an ecological ceiling of planetary, and between these two rings is the safe and just space for humanity where humanity can thrive. Attention to staying within the planetary boundaries while considering the social foundation for society is the main purpose of Doughnut economics. As shown in Figure 04, proposed by a team of scientists quantified in Stockholm Resilience Centre (2023) nine processes that regulate the stability and resilience of the Earth system have been transgressed in recent years.

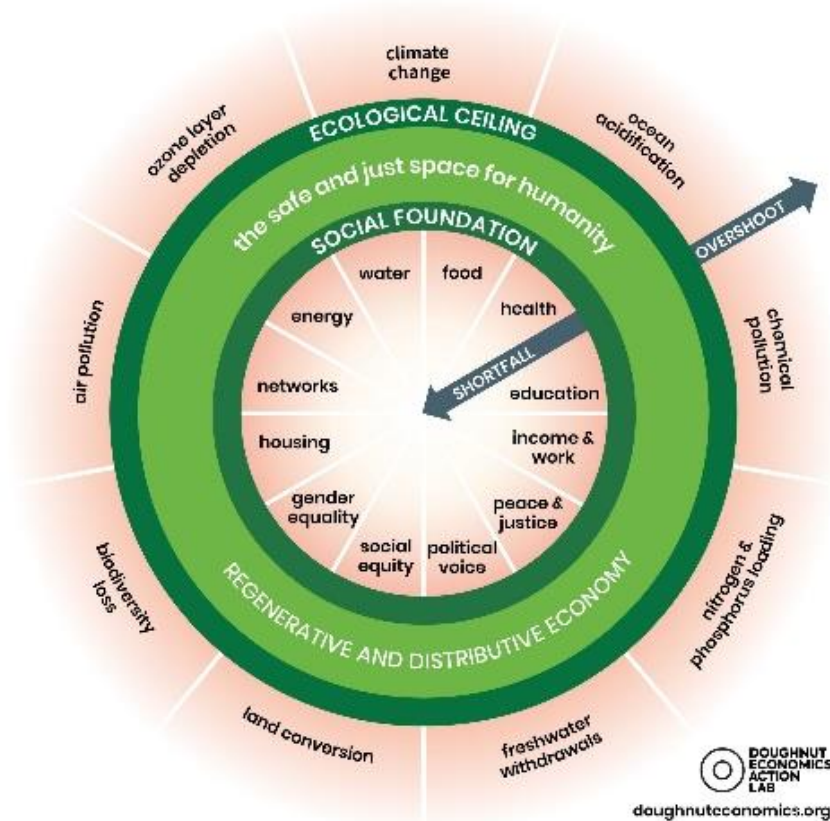


Figure 03. The Doughnut of social and planetary boundaries. (Source: Raworth, 2022)

Hence, Doughnut aims to ensure that humanity does not overshoot the ecological ceiling and is left falling short of life’s essentials humanity, consequently, humanity can continue to develop and thrive for the next generations. Today the world is far from the Doughnut goal. Figure 05 shows the situation of social foundation and ecological ceiling which is driving toward climate breakdown and ecological collapse. The social foundations consist of Energy, Water, Food, Health, Education, Income and work, Peace, and justice, Political voice, social equity, Gender equality, Housing, and Networks which are the 9 goals and priorities in the UN Sustainable Development, accordingly, every human being should have a minimum standard of living.

Additionally, Earth's ecological ceiling comprises nine planetary boundaries. Earth system scientists have identified these boundaries to

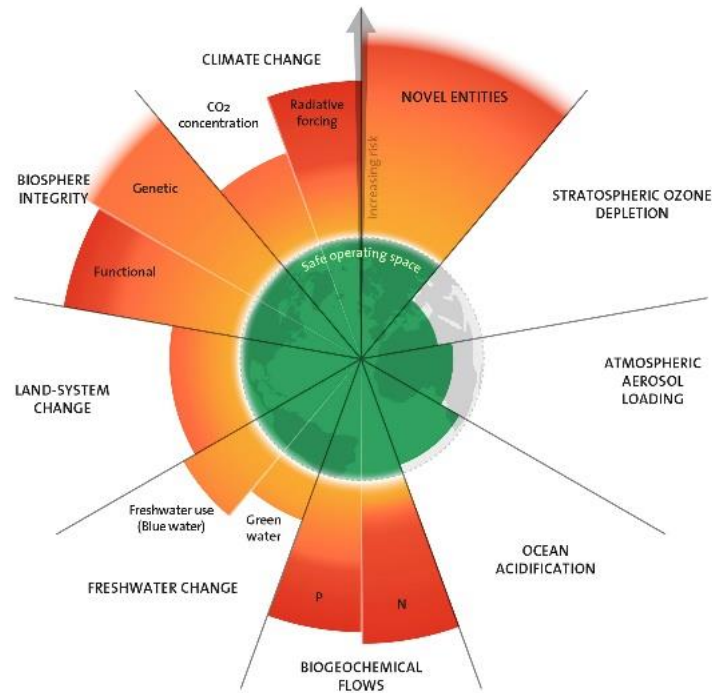


Figure 04. The 2023 update to the Planetary boundaries. Licensed under CC BY-NC-ND 3.0. Credit: "Azote for Stockholm Resilience Centre, based on analysis in Richardson et al 2023". (Source: Planetary boundaries - Stockholm Resilience Centre)

delineate the planet's critical life-supporting systems and establish the global thresholds of pressure that these systems can safely withstand (United Nations, 2015). These boundaries include ozone layer depletion, climate change, ocean acidification, chemical pollution, nitrogen and phosphorus loading, freshwater withdrawals, land conversion, biodiversity loss, and air pollution. Since the industrial revolution had a catastrophic effect on global environmental change, industrialized societies have historically had more responsibility for climate change (Rockström et al., 2009).

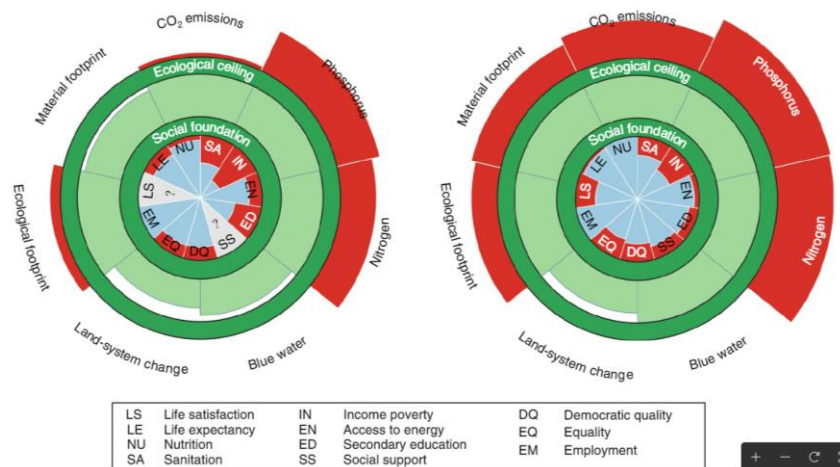


Figure 05. Global performance relative to the doughnut's safe and just space (Source: <https://goodlife.leeds.ac.uk/>)

### 3.4. Sweden's Position in Doughnuts

Sweden is recognized as a global leader in decarbonization, with ambitious targets to reduce greenhouse gas emissions by 59% by 2030 compared to 2005 levels, aiming for a net-zero carbon economy by 2045. It was the first country to implement carbon pricing, boasting the world's highest carbon price, which has proven effective in driving decarbonization efforts. The nation predominantly relies on hydro and nuclear power for its electricity, supplemented by an increasing contribution from wind energy. Bioenergy-based district heating and heat pumps are the primary sources of heating. However, the transport sector remains a significant emitter of greenhouse gases, largely dependent on oil. Sweden is actively supporting industrial decarbonization and is pioneering projects such as hydrogen-based steel production, marking significant strides towards achieving its decarbonization goals (IEA, 2021). In addition, emissions from the operation of homes and buildings currently contribute only a small fraction of overall emissions, the production phase of buildings represents approximately 21% of Sweden's total greenhouse gas emissions (Figure 06). This encompasses emissions from construction machinery and transportation of materials, as well as emissions generated in the manufacturing of materials like cement and steel. These emissions are not categorized as part of the housing sector emissions and can occur both domestically and internationally. Sweden, positioned as a global north nation, appears to exceed the

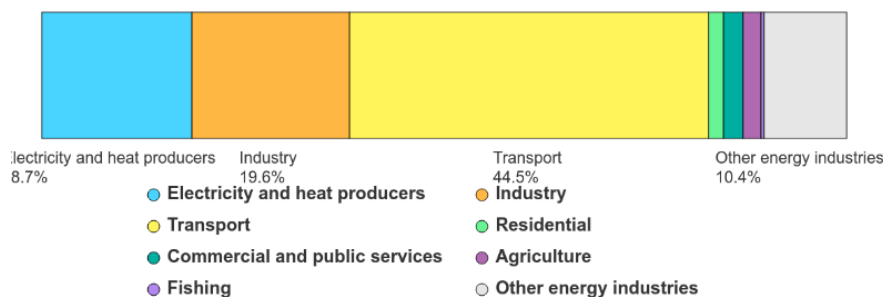


Figure 06. Co2 emission by sector, Sweden,202. Source: International Energy Agency. Licence: CC BY 4.05

ecological limits (Figure07). Moving within the Doughnut's boundaries from both sides simultaneously, striving to advance the well-being of all individuals while safeguarding the health of the entire planet, presents a significant contemporary challenge. The National Board of Housing, Building, and Planning in Sweden has projected a requirement for constructing more than 700,000 homes between 2015 and 2025, marking a substantial demand compared to the current housing supply. This surge in housing needs is putting significant pressure on municipalities to quickly deliver numerous affordable dwellings. However, there's a concern that this urgency might result in solutions where not all sustainability aspects are adequately considered

during planning and construction. Therefore, it's crucial to prioritize long-term sustainable solutions amidst the construction boom.

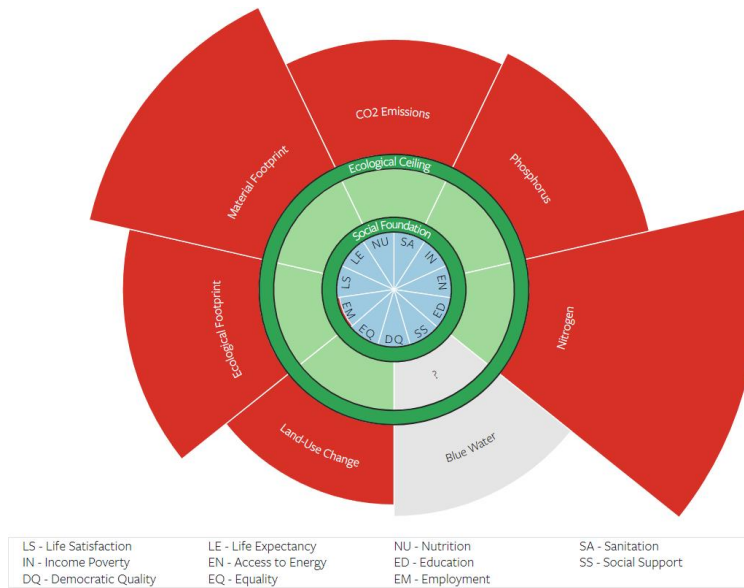


Figure 07. Sweden's performance relative to a safe and just space for three countries in 2015 (Source: <https://goodlife.leeds.ac.uk/>)

### 3.5. Doughnut Economics and Urban Development

The process of designing, planning, and constructing cities or urban areas is called urban development. Constructions of residential and mixed-use developments are considered in urban development. Approximately 42% of the world's yearly carbon dioxide emissions are from the built environment. Out of the overall emissions, around 27% annually stem from building operations, while the embodied carbon of specific materials like cement, iron, steel, and aluminium contributes an extra 15% annually. Additionally, three-quarters of the infrastructure that will exist in 2050 has yet to be built. From 2020 to 2060, the world is expected to largest surge in building and

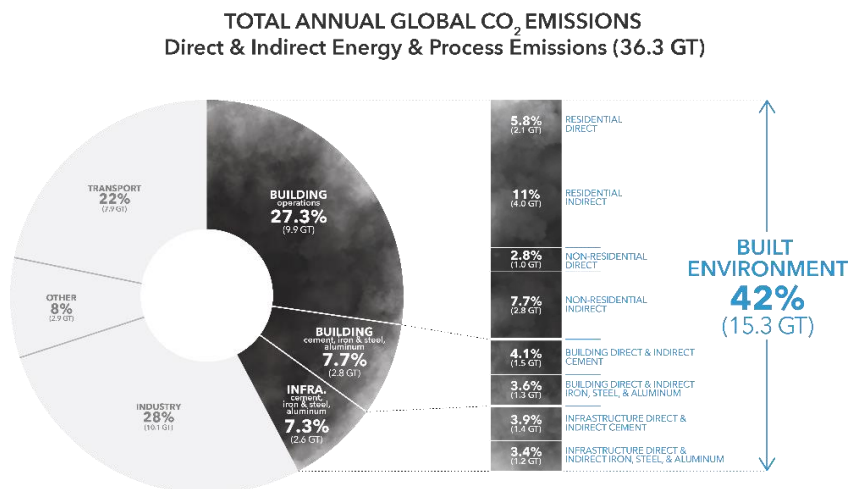


Figure 08. Analysis & Aggregation by Architecture 2030 using data sources from IEA & Statista.

infrastructure growth, approximately 2.6 trillion square feet, 241 billion square meters (architecture2030, 2023). Also, in Sweden, Boverket suggests the implementation of limit values for climate emissions from buildings presented in 2027 for the construction sector. These limits would then undergo two phases of reduction, to further lower them by 2035 and 2043 (Boverket, 2023).

These facts show urban development projects need a new way of thinking to deal with climate change and global warming. Considering ecological and social aspects of urban development seems crucial.

### 3.5.1. Doughnut for Urban Development

considering changing the goal from endless GDP growth to thriving as a most important aspect of Doughnut Economics (Bjørn et al., 2023) and implementing this idea in urban development projects could be the starting point for reaching this goal. Doughnut for Urban Development is a manual that aims to provide developers and other building industry actors with support for the application and practice of Doughnut principles in urban development (Bjørn et al., 2023). It includes 96 impact areas and presents a holistic approach within planetary boundaries. Chapters on urban development consist of social foundation, ecological ceiling, planetary boundaries, and business design. As shown in Figure 09 the inner ring, is the social foundation that categorizes the 12 original social dimensions by the principles of connected, inclusive, equitable, and responsible urban development which represents the minimum social standards required for human well-being. The outer ring compasses the ecological ceiling with an

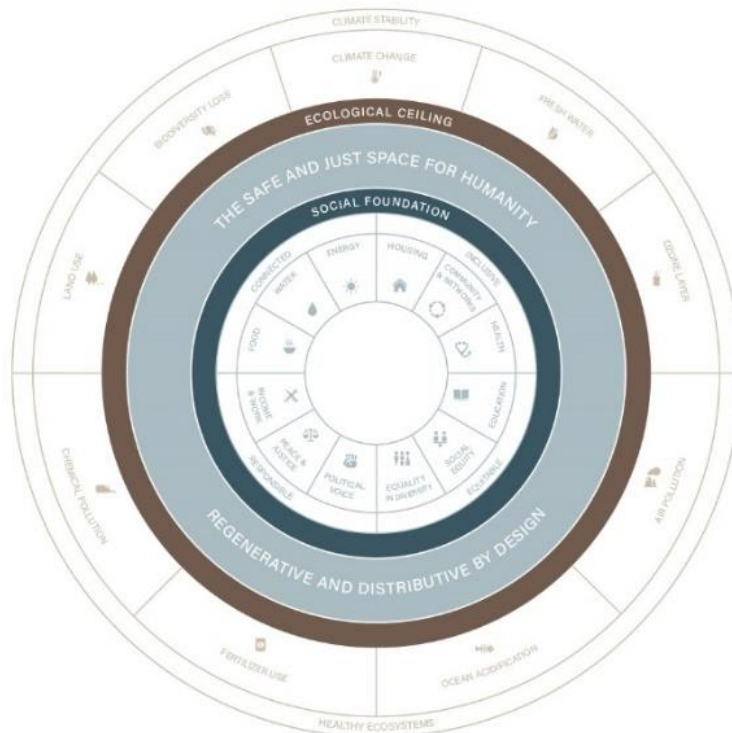


Figure 09. The Doughnut for Urban Development. (Source: Bjørn, et al.)

additional ring which indicates the two core Earth systems of climate stability and healthy ecosystems. The outer ring represents the ecological limits of the planet. In addition, the safe and just space for humanity is located between these two rings (Bjørn et al., 2023).

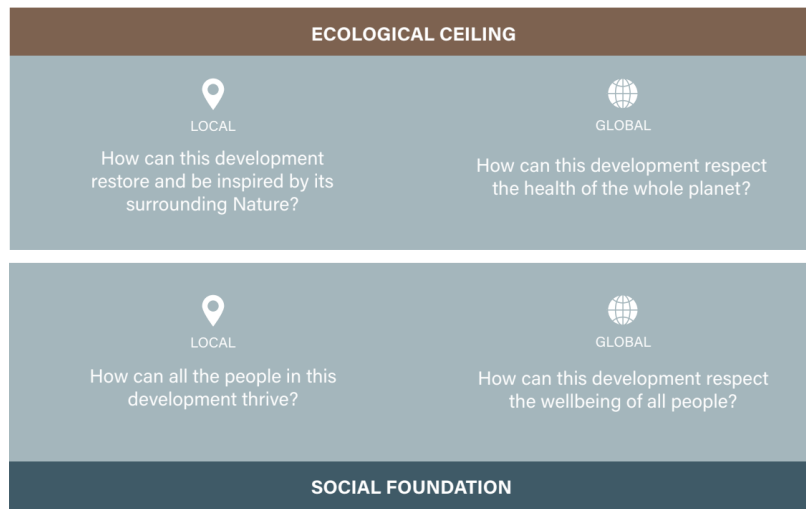


Figure 10. Unrolling the Doughnut into four lenses: local-social, local-ecological, global-ecological, and global-social.

As mentioned before Doughnut visualizes its goal that, all the people on the planet, nations, cities, districts, neighbourhoods, or buildings could meet their needs. To achieve this purpose in urban development, “four lenses” (Figure 10) can be employed by actors in many ways to practice holistic and interconnected thought processes. The local-social lens focus is identifying the fundamental elements of a thriving life to provide a basic standard of well-being for all. At the same time, the local-ecological lens emphasizes the pursuit of urban development strategies that aim to replicate the ecological benefits found in their most healthy surrounding natural habitat. The global ecological lens's focus exposes the whole planet's connection to every place through the energy it uses and tries to identify how actions and lifestyles can influence Earth’s life-supporting systems worldwide. Lastly, the global social lens directs attention to the effects of local actions on individuals and communities worldwide. It illuminates how actions and decisions made in any given location can positively or negatively influence the lives of people across the globe (Bjørn et al., 2023).

### 3.5.2. Indicators and Thresholds

To have optimal impact rather than simply underestimating negative impacts The Doughnut for Urban Development promotes developers to apply three levels of impact based on EU Taxonomy (European Commission, 2020):

1. Minimum Safeguards (MS): This is regarded as the basic standard for what is ethically and legally necessary within a specific impact zone, particularly concerning local law.

2. Do No Significant Harm (DNSH): A contribution within an impact area that aims to completely eradicate significant negative effects. Although the activity may still result in minor adverse impacts, measures have been taken to control and minimize material adverse effects.

3. Substantial Contribution (SC): It's a constructive contribution within an impact area that is genuinely regenerative. It doesn't just aim to sustain; rather, it actively improves the desired social outcome. In addition, Doughnut for Urban Development strives to offer a holistic guide that captures the global effects of urban development and the intricate relationships between them. Moving the urban development sector towards regenerative practice to restore climate stability and healthy ecosystems is another aim of the doughnut for urban development. To reach these goals it presented 48 social impact areas across the Doughnut's original 12 dimensions and 48 ecological impact areas two core Earth systems of climate stability and healthy ecosystems (Bjørn et al. 2023).

### 3.5.3. Social Foundation

Social Foundation for the Doughnut of Urban Development includes 48 social impact areas including 24 local and 24 global impacts to steer urban development towards a safe and just space for humanity (Figure 11). These impact areas are split across 4 categories: Connected, Inclusive, Equitable and Responsible. For each of the impact areas, they gathered relevant indicators, tools, and benchmarks in pursuit of practical application for industry actors.

The first ring shows the importance of oscillating between designing for social impact locally and social impact globally in doughnut thinking.

The second ring consists of 48 impact areas while each dimension includes 2 local and 2 global impact areas.

These are direct extensions of the 12 dimensions.

The 4 categories located in the fourth ring consist of Connected, inclusive, responsible, and equitable together with the 12 dimensions in the fifth ring that make up the social foundation of the Doughnut for Urban Development.

The last ring encompasses 12 social dimensions derived from the socio-economic SDGs. These dimensions consist of Food, water, and energy. Acknowledging the interdependence between urban development and its ecosystems underscores the significance of approaching these areas from a holistic perspective.

Housing, Community & Networks, and Health play vital roles in building inclusive cities. Key facets of social advancements, such as promoting political voice, peace & justice, and ensuring income & work opportunities, are central to accomplishing responsible urban development (Bjørn et al. 2023).

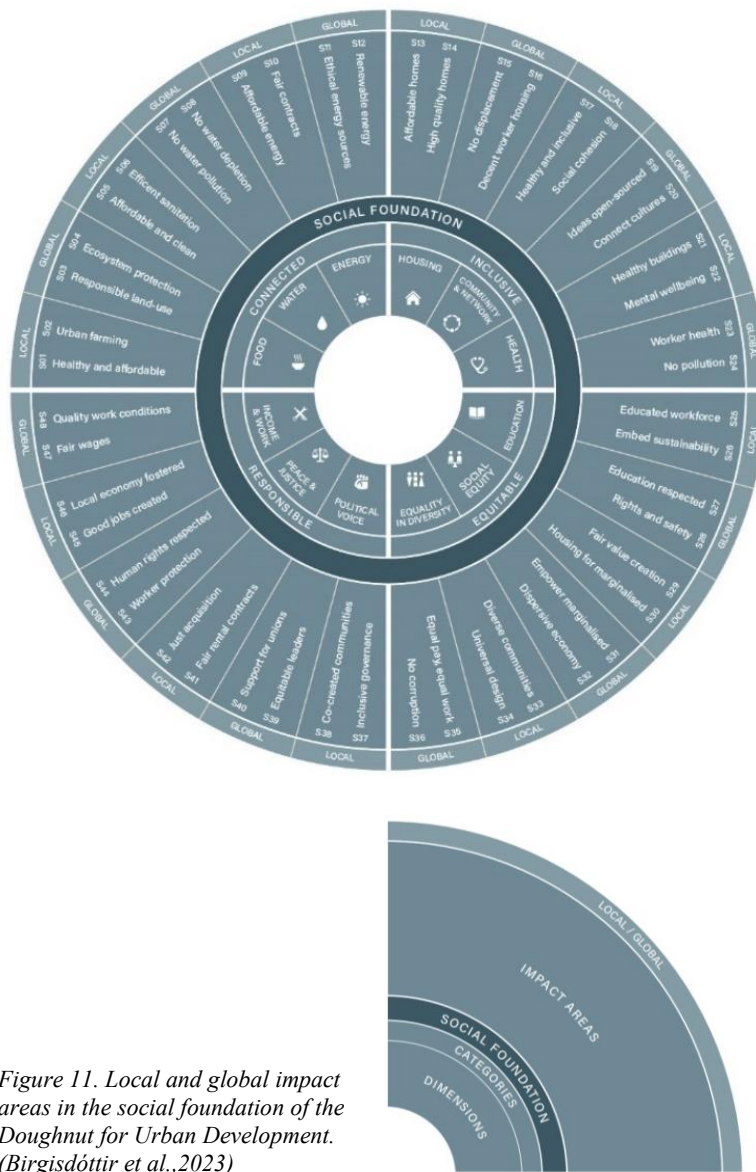


Figure 11. Local and global impact areas in the social foundation of the Doughnut for Urban Development. (Birgisdóttir et al.,2023)

### 3.5.4. Ecological Ceiling

The Doughnut framework for Urban Development introduces an ecological ceiling alongside the concept of Planetary Boundaries. This framework defines 24 local and 24 global impact areas within the core Earth systems of climate stability and healthy ecosystems (Figure 12). These 48 impact areas collectively form the ecological ceiling of the Doughnut for Urban Development, aiming to align urban development with a safe and equitable space for humanity. Ultimately, these impacts serve as guidance for developers seeking to integrate Doughnut principles into their upcoming projects.

The planetary Boundaries framework is the starting point for the ecological ceiling which describes how urban development contributes to transgressing all nine, interconnected planetary boundaries. Like the social foundation, the first ring in the ecological ceiling of the

Doughnut for Urban Development insists on both global and local aspects of the doughnut. The stability of the climate is endangered by the high levels of carbon dioxide and other greenhouse gases in the atmosphere. Simultaneously, the global climate become stabilised by Ecosystems. Consequently, climate stability and healthy ecosystems organize the 48 impact areas located in the second ring.

healthy ecosystems on the bottom and climate stability on top of the third ring shape the third ring. Land use, Biodiversity loss, Climate change, Freshwater, Ozone layer, Air pollution, Ocean acidification, Fertilizer use, and Chemical pollution are the 9 planetary boundaries in the ecological ceiling. The last ring is the ecological ceiling of the Doughnut for Urban Development which is made up of 2 categories and 48 ecological impact areas (Bjørn et al., 2023).

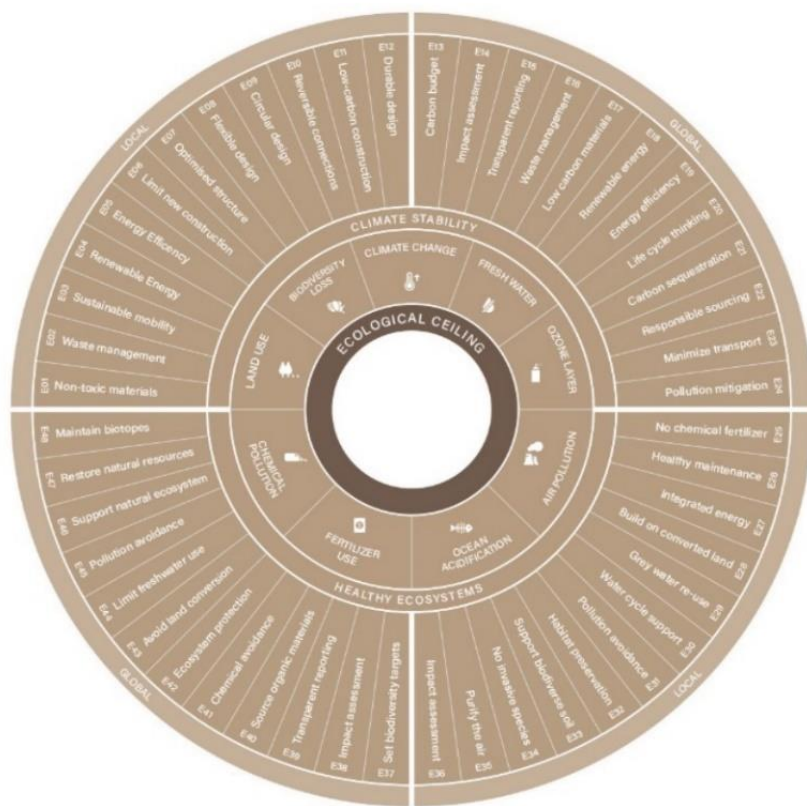


Figure 12. Local and global impact areas in the ecological ceiling of the Doughnut for Urban Development. (Birgisdóttir et al., 2023)

### 3.5.5. Reduction roadmap

The level of carbon measurement of 421 parts per million (ppm) in May 2022 showed an unprecedented increase rate Since the Industrial Revolution (Stein, 2022). The surge in carbon levels is due to human activities, particularly the emission of greenhouse gases. This phenomenon stands as the primary cause of global warming and is largely responsible for the climate change impacts observable in the present day. The building sector is pivotal in reducing global carbon emissions, with the Net Zero by 2050 report suggesting a potential 97% reduction in direct CO<sub>2</sub> emissions by 2050, despite increased activity.

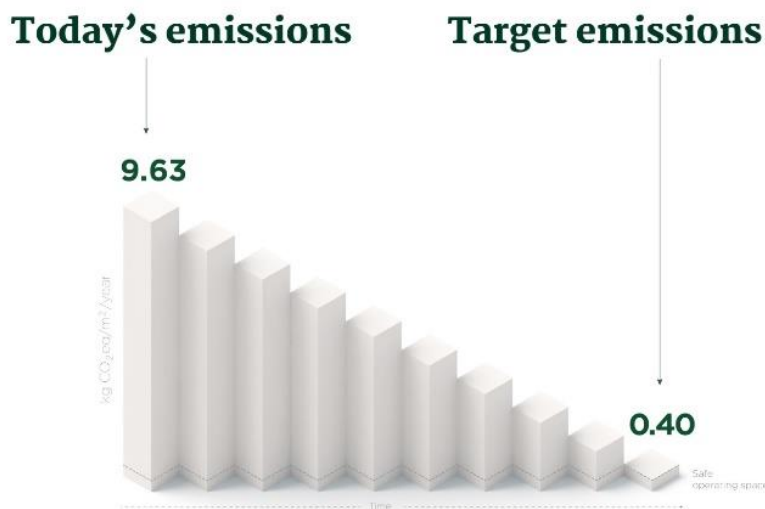


Figure 13. The Reduction Roadmap is expressed in a stepped, linear reduction pathway and assumes a constant rate of construction. The vertical, y-axis represents the embodied carbon footprint of building materials, expressed in CO<sub>2</sub>eq/m<sup>2</sup> per year. The horizontal x-axis represents time, beginning in 2020 and extending until the target level is reached. Today's median emission level is 9,6kg CO<sub>2</sub>eq/m<sup>2</sup> per year and is the starting point. The target emission level is 0,4 kg CO<sub>2</sub>eq/m<sup>2</sup> per year is the ending point.

The Reduction Roadmap, an Earth-shot project, translates the Paris Agreement and climate boundaries into specific targets for Danish housing projects, aiming to align the sector with the agreement's goals. The carbon budgets outlined in the Paris Agreement for a scenario aiming to limit global warming to 1.5°C have been utilized to establish a safe timeline for implementing the required reductions (Reduction Roadmap, 2022). Developed through cross-sectoral collaboration, the Reduction Roadmap identifies the status, goals, and necessary emission reduction rates. It serves as a science-based tool for transformation, urging commitment to the Paris Agreement and highlighting the need for the construction industry to address its share of emissions to limit global warming impacts. The roadmap exemplifies a top-down approach that formulates reduction targets by modelling them based on Danish building industry construction trends, or more precisely, by employing emissions grandfathering principles (Bjørn et al., 2023).

Recently Wingårdhs together with Krook & Tjäder and Chalmers University of Technology, went through the conclusions and started the discussion about - Is the Housing Authority right now ruling against Sweden's climate pledge in the Paris Agreement?

### 3.5.6. LCA

Life cycle assessment (LCA) is a method used to assess the environmental impacts linked to a product over its life cycle (Iyyanki et al., 2017). It includes five product lifecycle steps which are called cradle-to-grave. The five steps consist of Raw Material Extraction, Manufacturing & Processing, Transportation, Usage & Retail, and Waste Disposal (Ecochain, 2024).

#### • **Product Life Cycle**

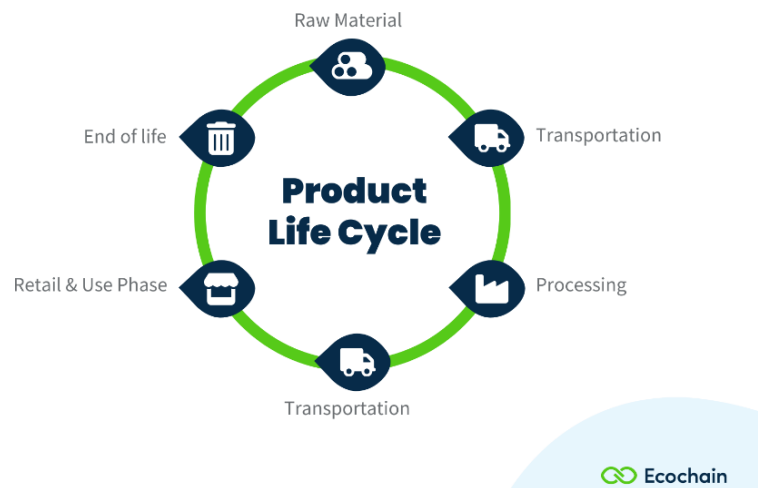


Figure 14. Life cycle assessment. Source: Ecochain, 2024

By using the allocation of these principles and Life Cycle Assessment it is possible to “Down-scaling” and translate the planetary boundaries from the global level to the urban development scale. In addition, it helps quantify the environmental impacts of products and processes, enabling you to make informed decisions and improvements in the sustainability of companies.

In practice, building LCAs is often carried out with dedicated tools, such as OneClickLCA, the Danish tool LCAByg, or Ecochain Mobius. These tools include precalculated environmental impacts for construction products and processes and only require the user to enter information on the building’s dimensions, energy use, and material content. LCA is an essential tool for calculating building impact. As described above, there are many ways to use LCA to inform the design process. LCA enables us to pursue carbon reduction goals set through allocation. However, it's important to note that typical building LCA tools may not always encompass the same scope as the project targets set for allocation.

### 3.6. Doughnuts in small-scale urban development projects

In implementing the UN Sustainable Development Goals (SDGs) urban sustainability plays a crucial role at the local level. Saiu et al. (2022) argue that the focus on significant interventions and large-scale projects and infrastructures might neglect the collective beneficial effects of widespread smaller urban transformations at the neighbourhood level. Furthermore, researchers have embraced sustainable development as a dualistic approach that seeks to harmonize the needs of humanity with those of nature to achieve both social and financial outcomes (Rosenzweig, 2004). Hence, Downscaling the Doughnut as a sustainable way of thinking in small-scale urban development projects to help citizens thrive while the goal for urban development is mostly based on growth can be considered a sustainable development way.

Raworth mentions in Doughnut Economics Action Lab (DEAL, 2024) that it is time to "Turn the ideas of Doughnut Economics into action". While alternative methods of reforming economic thinking may not appear tangible enough for application in urban development projects, the implementation of (Bjørn et al., 2023). Doughnut Economics principles seem appropriate for such contexts (Hassan, 2022). However, there is insufficient research on how to operationalize the Doughnut economics principles in small-scale urban development.

### 3.7. Critiques and Limitations

#### 3.7.1. Doughnut Economics from a critical standpoint

Even though the concept of Doughnut Economics is gaining rapid traction among scholars, economists, politicians, and developers, several aspects of it remain unclear. While some scholars and researchers have criticized the Doughnut, there is a noticeable lack of critical analysis specifically regarding its application in urban development. Doughnut Economics is often associated with the concept of a circular economy, and as such, some critiques regarding circularity apply to this idea. Bocken et.al (2023) argue in their article that innovating for a circular economy is not clear. They also suggest that enhancing experimentation capabilities can accelerate innovation endeavours within companies. In addition, there are always tensions between different goals, tensions will occur when urban development trade-offs have to choose to involve sacrificing one part of a goal for the reaching of another goal (McNeill et al. 2012; Bowen et al., 2017). Numerous scholars have directly criticized Doughnut Economics. Among these critics, Horwitz (2017) is the most sceptical one. He asserts that the doughnut model ignores the political determination necessary for its implementation and raises doubts about its practical implementation. In addition, Milanovic (2018) asserts in the book

review of “Doughnut Economics: Seven Ways to Think Like the 21st-century Economist” that the book fails to convince for three reasons: First: The Doughnut Economics model fails to face the reality that everybody in the globe is to be “allowed” to achieve income equality at the level of affluent countries would necessitate a significant increase in world GDP, a challenge for which Raworth offers no solution or not to mention it. Second: While the book has various examples of innovative "green" practices, their importance is not adequately assessed. The last reason is the interpretation of current global capitalism within Doughnut Economics, in my opinion, is wrong. It is expansion into personal lives is viewed as reinforcing a self-centred, materialistic society, contrary to Raworth's ideals. In conclusion, there is a notable absence of experimental experience, especially concerning the application of the Doughnut concept in urban development projects.

### 3.7.2. Behavioural changes

In 2022, there was a lack of mandatory building energy codes and standards in more than 110 countries which means more than 2.4 billion square meters of buildings Without fulfilling any criteria related to energy performance (IEA, 2021). To solve the existing problems and reach net zero emissions by 2050, global annual investments in clean energy will have to increase to approximately \$4 trillion by 2030 (IEA, 2021). In addition, some researchers believe that voluntary actions, nudges, or financial motivations will not be sufficient, and they insist on mandatory standards for appliances. Despite these codes and regulations, residents need to change their behaviour, particularly in the cities. More than half of the global population currently lives in urban areas, a number expected to rise to nearly 70% by 2050 (IPCC, 2021). Without sustained support and citizens' participation, attaining net zero emissions by 2050 is unattainable. Behavioural changes, especially in advanced economies like opting for walking, cycling, or public transport instead of using cars, or choosing not to take long-haul flights, contribute approximately 4% to the cumulative emissions reductions according to our pathway (IEA, 2021). In sum, behavioural changes have a pivotal role in reducing energy demand, taking pressure off new low-carbon electricity sources, and ensuring that biofuel production remains within sustainable boundaries. These behavioural changes can also have significant effects on citizens' expectations and needs concerning urban development projects.

### 3.7.3. Rebound Effect

To reach out to real sustainable life where everyone can thrive, we face several problems. Politicians, decision-makers, and scholars talk about sustainability every day while we are still far from the sustainable goals defined by the UN. One notable aspect among these considerations is the Rebound Effect. Systemic reactions to sustainability-driven actions that persistently nullify the expected outcomes and impede progress toward sustainability transitions are called the Rebound effect (RE) (Guzzo et al., 2023). Predicting the outcomes and design implications before implementation is consistently difficult. The gap in time between executing sustainability-focused measures and the reappearance of rebound effects is the reason Castro et al. (2022) characterize rebound effects as a consequence of counter-intuitive systems in their article. For modelling and simulating the occurrence of rebound effects, we need first to define problems. One of the most important sectors facing these problems is the construction sector which includes housing nutrition, mobility, and consumables. Today, in the EU, the construction sector accounts for 40% of all extracted materials, 40% of energy consumption, generates 40% of waste annually and contributes to 33% of all greenhouse gas emissions (Sizirici et al., 2021). Instead of destroying, degrading, and making polluting, and fragmenting nature, urban developments can choose to design for clean outdoor air and regenerate healthy ecosystems by implementing ambitious nature-based solutions (Birgisdóttir et al., 2023). As mentioned in the Reduction Roadmap (2022), to achieve net zero by 2050 we need to change citizens' behaviour. Behavioural changes have a crucial role in providing around 4% of the cumulative emissions reductions in our pathway. Therefore, collecting data from residents and bringing them into the design strategy has a pivotal role which can prevent rebound effects. By integrating insights from behavioural sciences, sustainable design principles, and interdisciplinary frameworks, designers can develop holistic solutions and foster a transition towards a more sustainable future. Designing with a holistic approach, Human behaviour, embracing circular design principles while the world is still only 7.2% circular, meaning that only 7.2% of the total yearly material inputs in the economy rely on secondary materials cycled back as input (Circle Economy, 2022), Education and Awareness, and collaborating with policymakers to embed sustainability principles into regulations and standards are several strategies that designers can prevent rebound effects through implementing in their design strategies.

In conclusion, helping expand the mental models of designers and decision-makers while deeply accounting for the mental models of other individuals acting in the system is fundamental to understanding the RE occurrence. Recognizing the Rebound Effect within design processes is crucial yet often overlooked. Neglecting this issue can have negative results in achieving sustainable urban development.

### 3.7.4. Urban Mirage, Neoliberal Development

Crucial for the success of urban policies are planning frameworks, which are instrumental in translating policy visions into actionable plans and enhancing their impact (Urban Times, 2016).

liberalism is one of the policies implemented in urban planning. However, it changed its shape throughout history, while its definition changed many times. Neoliberalism and post-neoliberalism are some of them and recently after the 2008 crisis in the field of urban regeneration, it changed its concepts to green regeneration which can become the future cornerstone of economic growth according to Beaten (2017) so we have a new variation of neoliberalism. However, Baeten (2012), as cited by Baeten (2017), argues that planning practitioners and planning theorists don't use the term neoliberalism for contemporary planning while he thinks it exists." While in some articles we see the use of various forms of liberalism such as neoliberalism or post neoliberalism which seems to be widely used.

Neoliberal planning can be conceptualized as a restructuring of the interaction between private capital owners and the state, aimed at rationalizing and advocating for a growth-first approach to urban development (Sager, 2011). The state's role in promoting markets, prioritizing capital, and safeguarding private property rights is evident (Weaver, 2016) in this process. Baeten mentions in his article *NEOLIBERAL PLANNING* (2017) that neoliberalisation changed its shape slowly over time and space although it happened very fast in many countries. However, the 2008 financial crisis showed another face of neoliberalism. Fields (2017) mentioned in his article the role of the 2008 financial crisis in the financialization of urban space, particularly of housing. The 2008 financial crisis affected many countries such as Sweden, leading Sweden to hasty urban development. Simultaneously, urban regeneration, particularly green regeneration, is positioned at the forefront of crisis mitigation strategies by several prominent international institutions (Baeten, 2017). According to the World Bank (2013), cities have the potential to become global engines of green growth. Similarly, the United Nations Environmental Program (2011) asserts that cities can and should take a leading role in greening economies. Furthermore, the OECD (2013) is convinced that urban policies are pivotal for achieving national environmental and green growth goals. As Joss (2009) suggested, If the urban green economy or the development of eco-cities, indeed emerge as the primary drivers of economic growth as advocated by these influential organizations, we may be entering a new form of neoliberalism where urban (green) planning assumes a central role. Nonetheless, certain scholars argue that neoliberalism fosters economic inequality, benefiting small elite and multinational corporations while disadvantaging the majority of the poor (Goonewardena, 2007). furthermore, Golubchikov (2017) believes that neoliberalism sometimes could hide more than it reveals.

In sum, the challenge lies in maintaining the integration of economic, environmental, and social considerations in land use decisions, especially when economic priorities take importance and social and environmental concerns are incorporated to align with a profit-maximizing agenda (Baeten 2012).

### 3.7.5. Economic Growth & Sustainable Development

The world economy now largely revolves around urban areas and is heavily reliant on them. A majority of the global population resides in cities, marking the first instance in history. Additionally, there is notable growth in the physical footprint of cities. Considerably the world's population has yet to experience the benefits of development, whether urban or otherwise. This growth of cities has brought about a heightened and concerning realization that the globalization driving growth has led to increased inequality within societies. Growth emerges as a goal that revokes other considerations, contrasting with the conventional spirit of seeking a balance that typically pervades planning approaches (Baeten, 2012). Moreover, the effects of human-induced climate change are becoming more evident, underlining the urgent necessity for urban populations to adopt more sustainable lifestyles (Brooks et al., 2012). Degrowth is considered one of the most important transformational ideas to drive the transition and handle essential sustainability challenges and cities have a crucial role in serving as a spot for social, economic, and ecological transition experiments (Khmara et al., 2023). In essence, the concept of degrowth proposes that we can live well with less (D'Alisa et al., 2014). Furthermore, the degrowth concept is asserted in response to the current environmental crisis and widespread social injustices on a global scale. According to its followers, this is the only possible scenario on a planet with limited resources (Research & Degrowth, 2010). As an example, in the realm of urban development, "doughnut cities" embrace the doughnut economic model, which prioritizes respecting both planetary and social boundaries (Raworth, 2018). She also raises the question of where endless GDP growth would take us. Political, financial, and social systems have developed a dependency on GDP growth, relying on it for stability and progress. There's a growing need for these systems to shift towards a more neutral stance, becoming agnostic towards GDP growth instead. It doesn't imply neglecting GDP, but rather creating an economy whose ambition is for people and the planet to thrive, "[...] whether GDP is going up, down, or holding steady." (Raworth, 2018). Several cities have implemented the idea of Doughnut and circular economy, but the results are still unclear.

### 3.7.6. Greenwashing

World Economic Forum (2021) argues that "Greenwashing could slow our progress towards meeting climate and social goals". Accordingly, they define greenwashing as a 'green' or 'sustainable' practice or products while disregarding their overall impact on climate change and the Sustainable Development Goals, such as biodiversity preservation or environmental pollution. Moreover, two ways are considered for implementing greenwashing, Selective disclosure, by highlighting the positive aspects of a product's environmental performance while hiding or downplaying its negative impacts, and Symbolic actions, by making claims that focus on minor ecological issues without being backed by substantial actions to address larger ecological concerns (WEF, 2021).

Many developers, entrepreneurs, and architects realized that sustainability marketing can lead to gains and profits for their businesses. Emphasizing "green" principles and narratives can attract and satisfy consumers who prioritize environmental concerns. In addition, real estate developers are increasingly adopting not only green building construction, but also broader strategies and actions related to urban greening. However, their motivations and role within this broader urban greening dynamic have not been thoroughly examined (García et al., 2022). Additionally, Tateishi (2015) believes that a more feasible and pragmatic approach for capitalists is to engage in the greenwashing of their urban development projects. This tactic allows them to sustain capital accumulation and manage over-accumulation crises effectively. Consequently, this matter also may lead municipalities toward integrating "green" principles into their development processes, potentially increasing the risk of greenwashing. In sum, to identify greenwashing UN Climate Action (2022) introduces several tactics that are more obvious than others:

- 1- Asserting that a company is progressing towards reducing its polluting emissions, despite lacking a credible plan.
- 2- Intentionally providing vague or non-specific information about a company's operations or the materials it uses could be seen as a tactic of greenwashing.
- 3- Utilizing intentionally misleading labels such as "green" or "eco-friendly," which lack standard definitions and can be easily misinterpreted.
- 4- Suggesting that a minor improvement has a significant impact or promoting a product as superior simply because it meets minimum regulatory requirements are tactics commonly employed in greenwashing.
- 5- Highlighting a single environmental attribute while disregarding other impacts.
- 6- Stating that a product avoids illegal or non-standard practices that are irrelevant to its actual environmental impact.

7- Presenting the sustainability features of a product separately from the broader activities of the brand.

This organization also suggests several ways to recognize and avoid greenwashing such as Learning more, spending wisely, considering a product's lifecycle, and looking for transparency and accountability.



### 3.8. Previous research and implementations: Amsterdam, Copenhagen

Several Pioneering places are trying to use the tools and concepts of Doughnut Economics. Local governments ranging from small villages to large cities are implementing the tools and concepts of Doughnut Economics to help bring about a thriving future.

Approximately 40 additional places worldwide have already started exploring the possibilities the Doughnut model presents internally.

The journey of implementing the Doughnut in every single place starts with the dream question: How can our place be home to thriving people, in a thriving place while respecting the well-being of all people and the health of the whole planet?

To make the Doughnut a shared compass used by all stakeholders of the region, “Brussels Donut” has begun implementing this concept in Brussels, to imagine the future. The city of Glasgow also started to participate in the Thriving Cities Initiative. Barcelona (Spain), Yerevan (Armenia), El Monte (Chile), Leeds, Birmingham and London (England), and Glasgow (Scotland) are among other cities that trying to utilize the idea of the Doughnut in their city. However, the most known city that implemented the idea of the Doughnut is Amsterdam (DEAL, 2024). The aim of implementing Kate Raworth's idea in Amsterdam was to show how societies and businesses contribute to economic development while respecting the limits of the planet and the community. Endorsed the Amsterdam Circular 2020-2025 strategy on April 8, 2020. The newly adopted strategy encompasses a wide number of measures targeting businesses, the city itself, and its residents. These measures span from waste reduction and efficient resource management to promoting circular construction practices (European Union, 2020). According to the City of Amsterdam (2022), the strategy focuses on 3 value chains:

#### Food and organic waste streams

Ambition 1: Short food chains provide a robust sustainable food system.

Ambition 2: Healthy and sustainable food for the people of Amsterdam.

Ambition 3: High-quality processing of organic waste streams.

#### Consumer goods.

Ambition 1: The City sets the right example by reducing its consumption.

Ambition 2: Using what we have more sparingly.

Ambition 3: Amsterdam makes the most of discarded products.

#### Built environment.

Ambition 1: The transition to circular development requires a joint effort.

Ambition 2: The City sets the right example by formulating circular criteria.

Ambition 3: A circular approach to the existing city.

After Amsterdam, the Copenhagen City Council decided that the capital should work towards becoming a 'doughnut city'. Despite Copenhagen's ambitious climate plan, CO<sub>2</sub> emissions from the heating sector and road traffic are behind schedule. The city heavily relies on the burning of partially imported biomass, which has raised concerns about its sustainability. Consequently, 32 domestic and international NGOs have urged the city government to phase out this practice. By adopting the Doughnut principles politicians hope to be ensured of their responsibility for emissions associated with imports and consumption. Furthermore, a Copenhagen doughnut model will establish goals and frameworks for various environmental aspects as well as welfare domains like health, social care, community development, and employment opportunities. By avoiding the approach of a project conceived and dictated behind the thick walls of City Hall, and instead opting for a model that is developed, discussed, evaluated, and continually adjusted through close interaction with the citizens of Copenhagen, the city has the potential to become as a model for the green transition of the entire nation (information, 2020).

**To keep biodiversity within the planetary boundaries, the biodiversity intactness index of habitats needs to be maintained above 90% (Scholes & Biggs, 2005).**

## **4. Empirical Findings**

### 4.1. Presenting Empirical Data

As I mentioned in Methodology, qualitative research methods will be employed to gather non-numerical data, while quantitative research methods will be utilized for gathering numerical data. Drawing upon my background as an architect, I will leverage various programs to generate visual aids such as maps and diagrams, which will enhance the comprehension and communication of the empirical data. The thesis will incorporate figures, charts, graphs, and sketches to present the findings. Furthermore, semi-structured interviews will be conducted to gather additional insights and viewpoints on the subject. Moreover, by narrative storytelling regarding my experience during the project when I participated in several meetings and lectures, I seek to uncover unexplored facets of implementing the Doughnut in urban development projects. The overall presentation of empirical data will be meticulously structured, ensuring clarity and informativeness, thus facilitating a comprehensive topic analysis.

### 4.2. Case Study

To clarify and find various empirical aspects of the Doughnut and its implementation in Small Scale urban development projects I used the Future School project in Tomelilla as my case study. The Future School project in Tomelilla served as a case study to empirically analyse the model's various aspects.

#### 4.2.1. Tomelilla

Tomelilla is a small city in the south of Sweden, 13,712 people live in Tomelilla municipality, of which 6,915 are men and 6,797 are women, according to the latest statistics, about half-life in the countryside and one of the smaller towns (Tomelilla kommun - folkmängd, invandrare, skatt och valresultat | Sverige Statistik (Sweden statistics, 2022)). There are 11,444 people with a Swedish background and 2,268 people with an immigrant background living in Tomelilla municipality. That is, 16.5% have an immigrant background (Sweden Statistics, 2022). Moreover, Tomelilla municipality had a tax rate of 31.79% in 2023, which places it 43 out of all 290 municipalities ranked by lowest tax (Sweden Statistics, 2023). Tomelilla municipality is part of Österlen and stretches from Linderödsåsen in the north to the slättlandskapen in the south. Tomelilla municipality is a rural municipality with scattered buildings where nature is always close at hand. The central town of Tomelilla was added in the 19th century with the arrival of the railway. The triangular square became a place for trade and the town grew to what it is today (Österlen, 2022).



Figure 15. Situation of Tomelilla in Sweden and Skåne region.

#### 4.2.2. Decision makers

In the 2022 parliamentary election, Tomelilla municipality voted for the Sweden Democrats as the largest party with 37.2% of the vote. The Social Democrats became the second-largest party and received 23.3% of the vote. They were followed by the Moderates with 17% (Figure 16).

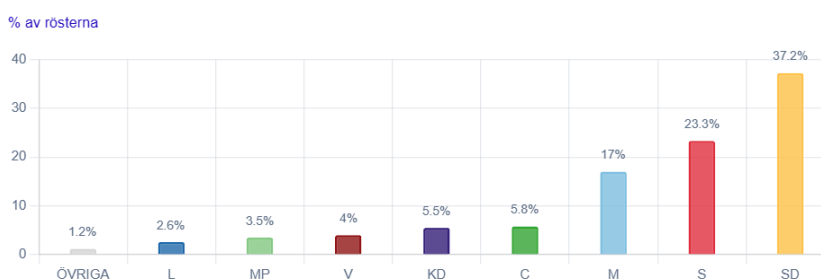


Figure 16. Tomelilla kommun i riksdagsvalet 2022

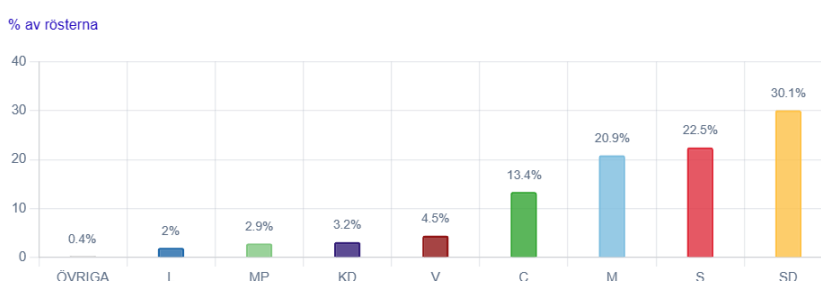


Figure 17. Tomelilla kommun i kommunalvalet 2022

Various political bodies govern the municipality. The administration works on behalf of politicians. During the 2023–2026 term of office, Tomelilla municipality is politically governed by the Moderate Party, the Centre Party, the Liberals, and the Christian Democrats in a minority (Figure 17). Locally, the municipal council (Kommunfullmäktige) holds the highest decision-making authority, functioning akin to a local parliament with representatives elected by residents. It determines municipality-wide visions, plans, goals, and budgets annually. Additionally, the municipal executive board (Kommunstyrelsen), is responsible for leading and coordinating municipal affairs. The board oversees implementation, follow-up, and evaluation, including financial management and supervision duties. Boards, committees, committees, and councils (Nämnder, utskott, beredningar och råd) are tasked with implementing council decisions and may have decision-making power in specific areas, often preparing matters for consideration by the council or executive board (Tomelilla Municipality, 2024).

Now Britt-Marie McQueen is CEO and/or municipal director in Tomelilla municipality. During the project, I participated in several meetings together with Wingårds and WHEN!WHEN! at Tomelilla municipality. Among these, I participated in meetings with politicians and civil servants (Tjänstemannen). However, the politicians chosen from different parties with different ideologies had a common view

regarding the move to sustainable development. Their information about Doughnut Economics seemed good however the depth of their knowledge wasn't clear. Another issue that I will mention here is they hope the Doughnut can help them to make a good reputation for Tomelilla consequently people are encouraged to move to Tomelilla instead of leaving the city. Now the number of leaving and moving to the city is almost equal. But they hope by implementing different development projects in the city people move to Tomelilla. About the school, some of the politicians talked ambitiously about a big school that encourages students and their families from other cities to move to Tomelilla. Hence, some aspects of the Doughnut Economics model conflicted with their idea. Another mentionable point is the participation of the civil servants (Tjänstemannen) with politicians in the meetings, their relations seemed very close which I count as a positive point for Tomelilla. Since the municipality decided to utilize the idea of the Doughnut in their development process, numerous workshops, meetings, and lectures were held in Tomelilla. These initiatives significantly influenced the mindset and awareness of both politicians and civil servants. As a result, various departments within the municipality are now actively organizing workshops and lectures throughout the city to further implement the concept.

#### 4.2.3. Tomelilla's View on Sustainability

To achieve sustainable development, Tomelilla municipality works daily in large and small ways. The municipality works in collaboration, not only within the administration but also with businesses, associations, and other public actors both locally and nationally. Their efforts are to follow the key figures linked to the global sustainability goals for Agenda 2030 as well as the follow-up of key figures for Sweden's environmental goals.

One of the most important programs that the municipality published is "Livskvalitetsprogrammet" which means "The quality-of-life program"(2023). The quality-of-life program for Tomelilla 2030 is the municipality's governing document for the environment and public health. The report (2023) asserted their main aim in the work is, to include, engage and inspire residents, associations, businesses, and other municipalities. In addition, being brave, open, active, and curious in the work with quality of life and sustainable development are other goals they are going to follow in their sustainable development.

In sum, the municipality desires to become a creative and sustainable part of the Skåne region by following and implementing the international trends and the results presented in reports. Implementing the Doughnut economics model is a major step for the municipality to reach sustainability goals (Tomelilla Municipality, 2024).

#### 4.2.4. Implementation of the Doughnut in Tomelilla

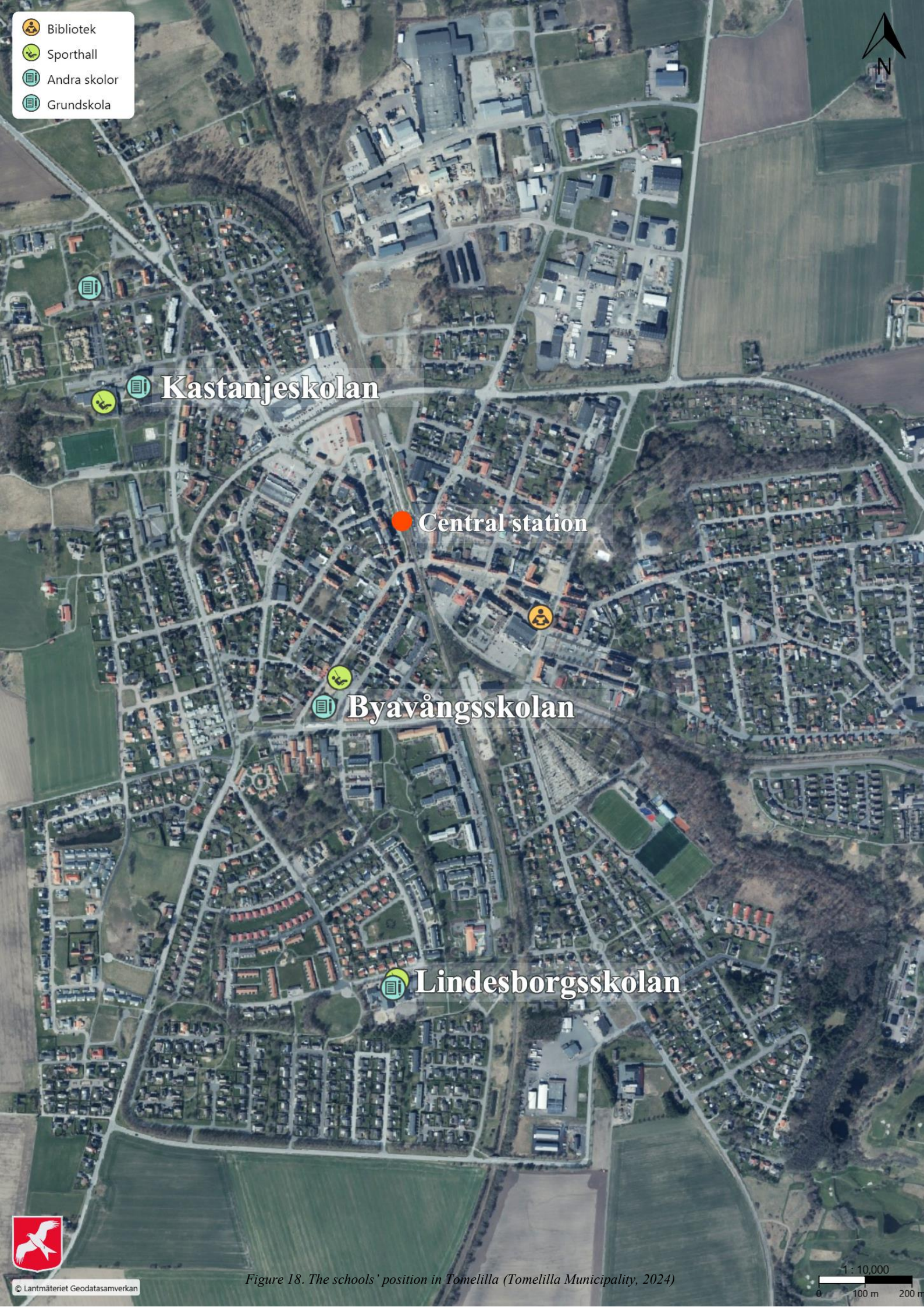
The holistic definition of sustainability, including the social dimension, motivated Tomelilla to work with the Doughnut model (Dijkstra, 2023). The quality-of-life program also utilized the idea of Doughnut, which governs how the municipality deals with the goals of Agenda 2030. Through a so-called city portrait, Tomelilla aims to break out parts of the Doughnut and look at the city through four different lenses: local and global social sustainability, and local and global ecological sustainability. It can be done based on themes such as children's rights or food security. Tomelilla hopes That utilizing the Doughnut model can contribute to creating a clear picture of social, ecological, and economic sustainability aspects throughout the municipality, which can facilitate their joint work to promote a high quality of life in the short and long term (Municipality of Tomelilla 2024). In this way, it seems Tomelilla follows the same approach as Amsterdam. Tomelilla plans to utilize the doughnut framework to offer a comprehensive overview of the various sustainability initiatives they are engaged in. This approach serves as a communication tool with citizens, illustrating opportunities for their involvement in these initiatives. Additionally, Tomelilla seeks to employ the concept of the Doughnut in reimagining the future of urban development and as a guiding principle in their comprehensive planning. The process of developing a city portrait has commenced, but it is still ongoing (Dijkstra, 2023).

#### 4.2.5. Future School in Tomelilla

In Tomelilla municipality there are six municipal primary schools. Together they create an inclusive and equal school for children between 6 and 16 years of age.

- \*\* Brösarps skola.
- \*\* Byavångsskolan.
- \*\* Kastanjeskolan.
- \*\* Odenslundsskolan.
- \*\* Smedstorps skola.
- \*\* Lindesborgsskolan.

Lindesborgsskolan is the municipality's largest school with approximately 450 students, from pre-school to year 6. The new school will replace Lindesborgsskola. The conditions of structure and facilities engaged the municipality to build a new school.



- Bibliotek
- Sporthall
- Andra skolor
- Grundskola



**Kastanjeskolan**

**Central station**

**Byavångsskolan**

**Lindesborgsskolan**



Figure 18. The schools' position in Tomelilla (Tomelilla Municipality, 2024)

The site for a new school has been chosen, as shown in Figure 17 the site includes several existing facilities which should be considered in the development design process.

The project's initial focus is a master plan for the new F-6 school and the surrounding area. The assignment also includes investigating and analysing how the entire area around the new school can be developed from a holistic sustainability perspective, including conversion and extension of the existing junior high school (Kastanjeskolan), as well as the adaptation of the swimming pool (Österlenbadet), sports hall (Österlenhallen), soccer field, green areas, and other parts of the site. The assignment includes identifying important qualities to be taken care of and investigations to be carried out, facilitating dialogue with pupils, citizens, and other stakeholders, and assessing municipal needs for services of various kinds.



*Figure 19. The Future School site plan.*

As the report (2023) asserted the municipality aims to engage and inspire residents and, in this case, the students, teachers and school staff as users and parents who related indirectly to school are the target of the study. To better understand the needs and demands of the students and their complaints to the decision-makers, I tried to conduct several methods such as asking questions through surveys and implementing workshops both for parents and students. Moreover, by visiting several schools and talking with teachers and staff directly, I tried to capture their ideas about the ideal future school.

### 4.3. Analysis

#### 4.3.1. Survey

Education stands as a pivotal element within Doughnut economics, embodying significant social dimensions. Within this framework, Embedded Sustainability and an educated Workforce are regarded as the cornerstones at the local foundations, while education Respect and Rights and Safety extend as global pillars of the social foundation. Moreover, various other societal aspects warrant consideration throughout the development journey. It is crucial to prioritize the perspectives and aspirations of the community being served.

In light of these considerations, while working on the Future School project at WHEN!WHEN! I tried to explore the needs and demands of the future school and the challenges and weaknesses of existing school from students' point of view. Consequently, to fulfil several indicators in Doughnut's social foundation, a survey was designed and asked the students in Tomelilla municipality to answer several questions. Education, health, communities, food, water, gender demands, peace and justice are several of the dimensions that we considered in the survey where we hope to find new solutions from the students. Moreover, by analysing the answers we hoped to find students' demands and desires about the future school.

Surveys may seem straightforward at first glance; However, valid results depend on the researcher having a clear understanding of the circumstances where surveys are suitable and the constraints on inference in interpreting and generalising from survey findings. Questionnaires and interviews are very widely used social research methods for collecting data from and about people. Competence in their design and implementation can reasonably be expected from a real-world researcher. The primary means of gathering information is using questionnaires, and it is crucial to craft them thoughtfully to ensure the acquisition of top-notch data. Constructing questionnaires involves considering various aspects such as social, cognitive, and linguistic nuances. It was structured to include quantitative and qualitative inquiries, aiming to delve into students' perspectives on the future of schooling. The primary objective was to ascertain the demands and ideas of students in Tomelilla, where the project intends to be implemented.

The survey comprises 8 questions encompassing both qualitative and quantitative aspects. The last question was designed in such a way that students could articulate their desires visually. This approach offers a valuable avenue for expressing wishes that may be challenging to convey through words alone. Every society has its characters, slang or even words which are difficult to explain in one word, therefore, we tried to explain some unclear aspects or words at the end of each analysis. We faced amazing, unexpected answers to some questions, so we tried to explain some of them in the footer of each page.

We asked two schools to fill out the survey. the first one is Lindesborgsskolan which will be demolished and replaced with a new one. Lindesborgsskolan is the municipality's largest school with approximately 320 students, from pre-school to year 6. The second one is Byavångsskolan, the municipality's largest school with approximately 320 students, from pre-school to year 6. Three classes took part in Lindesborgsskolan, while Byavångsskolan had five classes involved.

The first analysis is the result of 38 participants in grade 4 at Lindeborgsskolan. 24-01-2024

The second analysis is the result of 21 participants in grade 5 at Lindeborgsskolan. 25-01-2024

The third analysis is the result of 17 participants in grade 6 at Lindeborgsskolan. 24-01-2024

The fourth analysis is the result of 14 participants in grade 6.a at Byavångsskolan. 24-01-2024

The fifth analysis is the result of 12 participants in grade 4.A at Byavångsskolan. 24-02-2024

The sixth analysis is the result of 17 participants in grade 5.A at Byavångsskolan. 24-01-2024

The eighth analysis is the result of 12 participants in grade 5. B at Byavångsskolan. 26-01-2024

The ninth analysis is the result of 12 participants in grade 6.A at Byavångsskolan. 26-01-2024

In total 143 students participated in both schools, 76 students in Lindeborgsskolan while 67 students filled out the survey in Byavångsskolan. Furthermore, to comprehend the viewpoints of students from other regions regarding the future of education, we extended the survey to schools in Iran However, due to time constraints, I won't be delving into this aspect, nor will I analyse all eight questions here. As we mentioned before the main report and whole the analysis are open-source documents which we hope will be investigated by other researchers and scholars in the future. (Through the link in Appendix B you can find more details about the survey analysis)

The questions were conducted in Swedish, but I translated them into English however I didn't translate some of them because they would miss their meaning.

The questions are:

- 1- what do you like best about your school?
- 2- Do you visit your school during the summer, vacations, or holidays?
- 3- How might the municipality utilise school spaces when the school is closed? What specific functions or possibilities would you prefer to see?
- 4- Do you think your city needs an entirely new school building instead of renovating the current school?
- 5- What methods can be employed to support children without access to schooling in impoverished nations?
- 6- If given a budget to construct a new school, what percentage would you allocate to aid students worldwide or to build another school in underprivileged countries?
- 7- If the municipality decides on renovation or new construction, how might you or your family participate in this process?
- 8- Could you describe or illustrate your vision of a dream school?

As I mentioned before every classroom has its analyst which is available through the link however, I tried to summarize the answer by making one diagram for the questions or explaining the important outputs that are more related to this research.

The first question is more about the students' feelings about their school. I tried to understand the importance of place, people and communication between them and their school.

Arvidsbacken in Lindersborgsskolan seemed very popular as most of the students mentioned in their answer to question one. It is a small hill at the school where students like to spend their time. Among other answers, the football field, friends, teachers, and the school environment such as the schoolyard are in the next ranks. Even though they mentioned different places and spaces simultaneously, their answer shows the importance of people and the school community like teachers and friends. In addition, the student's responses to the second question highlighted Arvidsbaken as a preferred natural location for visiting and enjoying activities at the school, particularly during winter for playing. This underscores the significance of the natural environment and the potential it offers, suggesting that designers should pay greater attention to such aspects during the design phase. Furthermore, the issue of restricted access to school facilities, buildings, and yards is a shared concern among students in Tomelilla. To reach a more sustainable future we need maximum use of the existing facilities which are now limited by law or organisation.

Questions two and three are related to this issue that future school projects need to maximise the use of school spaces by the municipality during afternoons or holidays, which can contribute to either reducing or enhancing the sense of community belonging. Only 12 per cent of students answered yes to the second question, indicating a notable

underutilization of this location during summer, vacations, or holidays. Hence, identifying the preferred activities, particularly among students, is paramount. Access to stimulating facilities plays a significant role in the responses, with priority given to playgrounds and sports facilities. Additionally, various types of stores and restaurants rank high among the students' preferences. Sweden appears to exceed the ecological limits so the necessity of moving within the Doughnut's boundaries from both sides is crucial. Needs to build a new building here is the main question which can affect directly planetary boundaries. This is one of the most important tensions between the SDGs. 59% of students express the need for a new school, while the remaining students either lack a clear opinion or advocate for renovating their current school or suggest that neither a new school nor renovations are necessary. A challenge between social aspects and ecological ceiling while they demand to build a new building according to the ecological aspects we can build more. Social indicators are very important in urban development regarding Doughnut economics. Thinking globally and considering the global aspect of each indicator is essential to reach sustainable development through the lens of Doughnut in urban development projects. Question 5 was conducted to explore the student's vision about the condition of other students around the globe and their historical responsibility as someone who lives in the global north. Question 5 posed a challenge for many students, with a significant number either unsure or providing unclear answers. However, among those who did respond, donating money and various items such as books, pens, or used furniture like tables and chairs emerged as the most common answers in Tomelilla schools. The role of schools and teachers to guide and teach the students to take responsibility to reach a sustainable future seems vital.

We can influence every phenomenon, whether through direct or indirect means. Furthermore, to achieve sustainable goals, it's urgent to consider both local and global impacts on the planet. To understand students' perceptions of their direct impact on other schools or students in different parts of the world, as well as their attitudes towards sharing their resources, we asked the sixth question. The sixth question warrants further investigation, as a significant portion of students either have no idea or are allocated zero. However, in contrast, several classes displayed generosity by allocating funds to assist other students or schools in underprivileged countries. Providing education and explanations about the circumstances of students worldwide could enhance students' global awareness and foster a sense of responsibility towards the broader world.

Some students opted to articulate their needs and desires, while others chose to illustrate their vision for the future school. Their responses included requests for playgrounds, stores, cafes, swings, improved air conditioning, green spaces, and new regulations such as allowing the

use of mobile devices. The illustrations varied in their complexity, and they needed more investigations by various visions and experiences. Simple forms predominated, with drawings often depicting schools resembling houses with expansive playgrounds and abundant trees. Scale and simple form play crucial for the students which should be considered by the designers. Their expression becomes more important when they are in contrast with the demands and desires of adults like parents, politicians, or other decision-makers. While some of the decision-makers expressed the need to build a big school, the students expressed their desire by writing or drawing a small school. Among the quantitative answers, several students explained their ideas about the problems that prompted them to decide to build a new school. Condition of toilets, equipment and insects in some places are some of their reasons however there is no official report about the problems at Lindesborgsskolan.

**"The journey for any city or region aiming to live within the Doughnut starts with the ambition of this question: How can our place be home to thriving people, in a thriving place while respecting the well-being of all people and the health of the whole planet?" DEAL**

### 4.3.2. Workshop

According to Doughnut Economics, access to school as social infrastructure has a key role in creating social cohesion. For this reason, understanding residents' opinions, demands and thoughts about the future school has a pivotal role in implementing the idea of Doughnut to build a new school. Kids, adults, the elderly and all the residents were invited to the workshop on 17 January at Kulturhuset in Tomelilla to help us figure out what the future school needs in Tomelilla. The workshop was organised with the help and cooperation of Cilluf Inc., WeAreNotRobots, and When!When!, Wingårdhs and Tomelilla municipality.

Community and network are a major element of the social foundation and have been tested locally in this workshop. Trying to make a healthy and inclusive community by considering communal services and opportunities to participate and integrate socially for all the residents is one of the main indicators in Doughnut Economics, through the workshop we tried to consider this idea in the design process. Participants showed their ideas, thoughts, and dreams by drawing, writing, and animating the pictures. By using a green screen and AI, WeAreNotRobots combined drawings with actions and took a new picture or film with stop motion. Through their creativity and actions, participants could make a new output which shows the importance of coworking during the process from the basic idea and drawing to the last product. Analysing these works and using them in the study process is a crucial step to achieving democratic design. To reach these aims we asked participants to imagine the future school in Tomelilla and tell us about their dreams and needs by writing or drawing. They drew and wrote beautiful, cheerful paintings and wonderful writing about their dreams and needs. Mentioning more green space is the first significant issue seen in all the writings and paintings. More greenery and dedicating more green space to the school seem to be a communal demand among the participants. Among these demands, we can mention forest gardens, flowers, fruit trees and a place where students can grow berries.

The second notable aspect is the vibrant use of colour, kids used boldly happy colours which shows the importance of using colour for the spaces where they will spend considerable time. In addition, belongingness seems to have a crucial role in their drawings, while they use their name and their friend's name on the school facade. Interestingly, they often conceptualise the school as a cosy home that does not have a complicated form but is very familiar to them. The scale they usually use for the building is not very big, so it is very important to pay attention to the scale of the school. Conversely, there exists a pronounced desire among participants for expansive outdoor areas conducive to play, exploration, and interaction with nature, even in inclement weather. Their preference for outdoor spaces equipped

with roofing highlights the need for protective measures, particularly during seasons like winter and autumn.

During my participation in the meeting with politicians and decision-makers I realized that there is an idea that some of them thinking about the connectivity between the already existing Kastanjeskolan building and the new school building, it is notable that the Kastanjeskolan is a high school while the new school is F6 therefor some participants insist on the separation between them because of protecting small kids against older students. This underscores the complexity inherent in decision-making processes when designing educational spaces.

In sum, through a comprehensive analysis of both the drawings and accompanying texts provided by the participants, their aspirations and desires can be effectively visualised and interpreted. These insights can be succinctly presented in the form of a chart, offering a clear and organised depiction of the participants' wishes. Such visualisation enhances understanding and facilitates communication and decision-making processes, providing valuable guidance for future actions and initiatives (Figure 19).

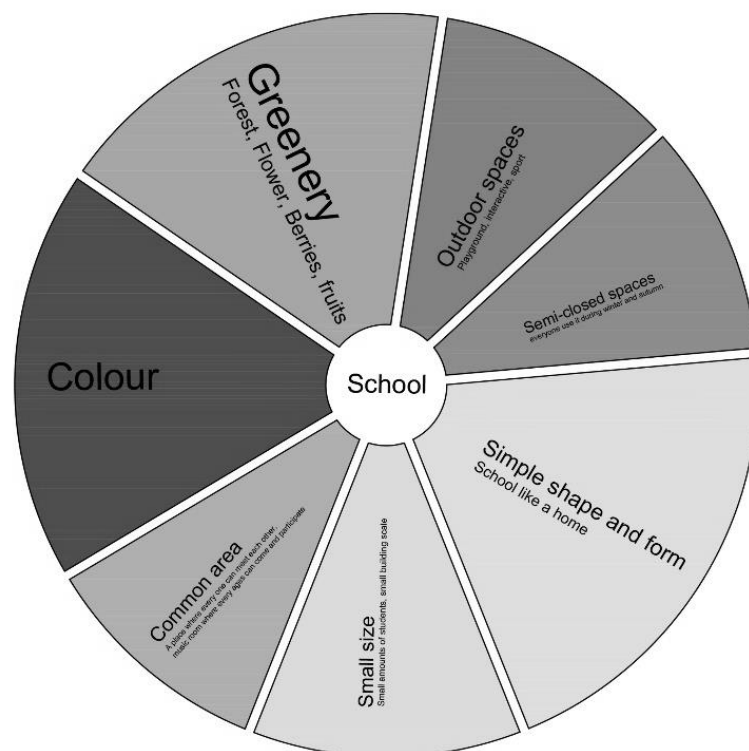


Figure 19. Depiction of the participants' wishes.

Highlighting this issue is significant, as it underscores the potential conflict between politicians' ambitions and the demands of citizens, revealing the challenges in implementing Political Voice as one of the social foundations of Doughnut Economics.

Our Community Helpers  
People Who Protect Us  
Fireman  
Policeman  
Health Officials  
School Nurse

How Firemen Help Us  
What we want to find out  
at the Fire Station.  
1. How the fire station  
works.  
2. How does the fire station  
get a call?  
alarm box  
Do fire trucks go to  
the country?

After Our Trip  
Some things we want  
to know more about.  
1. What makes water spurt  
from the hose?  
2. What makes a fire  
extinguisher work?



### 4.3.3. Challenges in Implementing Circular Development

Implementing a circular economy in developing nations presents its own set of obstacles. Among these obstacles are Limited infrastructure, lack of technological capabilities, and financial constraints that hinder the embrace of circular economy practices (Jenks, 2024). Figure 20 shows several challenges to the implementation of circular development.

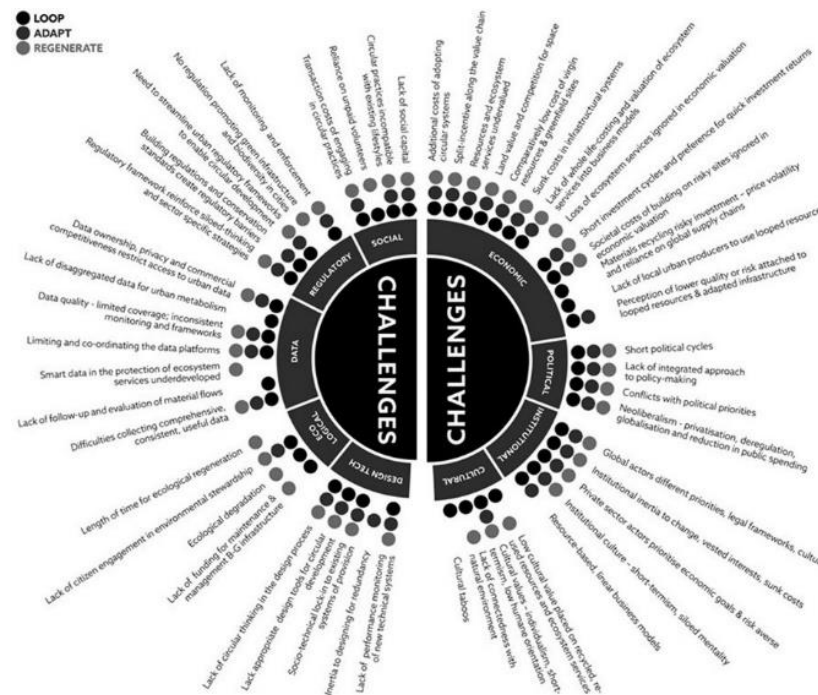


Figure 20. The challenges to the implementation framework identified by the literature.

Hence, Doughnut Economics as a circular economy also faces various obstacles in its implementation. Doughnut Economics is seen as advantageous for promoting comprehensive understanding and dialogue regarding sustainability (Eriksson, 2022) although the ability of the Doughnut to challenge prevailing beliefs about growth and development could be limited (Eriksson 2022; Olsson 2020; Pasgaard & Dawson, 2019). moreover, there is a challenge to applying the doughnut in local governance because this is working with complex systems, objective coherence across scales, and handling trade-offs, inequalities, and power dynamics (Turner & Wills, 2022). Successful implementation of the doughnut model necessitates the utilization of adaptive management methods, involving various stakeholders, and interdisciplinary cooperation to facilitate the local implementation of complex, cross-scale systems science (Turner & Wills, 2022). These complexities make it difficult to implement the idea of the Doughnut in small-scale urban development projects.

The other most notable challenge is the lack of empirical examples for utilising the idea of the Doughnut in urban development projects. Even, I faced these challenges in finding a critical approach to

Doughnut economics. Considering these issues makes Doughnut weak in defining a transparent pathway for developers, designers, planners, or decision-makers which I faced while I was working on the project in Tomelilla. Transparency is an important aspect of Doughnut thinking which seems difficult to implement in small-scale projects. Moreover, assessing all the pathways as mentioned in LCA seems very difficult when the process is not clear and assessable. It is the same in the political aspect and the lack of data monitoring can also damage political support. As Quast (2023) quotes from a resident in Tomelilla “It has always been a question for those in the small villages outside that ‘the politicians don't care about us’ and ‘all money is going into Tomelilla [city]’ and so on “. This example shows the importance of transparency at all levels of development. Among the other challenges I faced during the project were very large amounts of data and software or disciplines that needed many experts and scholars. It could be difficult for small governments, cities or projects to employ all of them. As Wies (2023) mentions evaluating the Doughnut model at the local level is regarded as challenging and proximate.

In sum, even though the methods for evaluating the sustainability of urban systems are developing It's important to approach this assessment with caution because the normative decisions made during the process can significantly influence the results, particularly when determining a sharing approach for the urban safe and just operating space (Dillman et al. 2021).

#### 4.3.3.1. Conflict

The foundational principle of Doughnut Economics is to shift the objective from endless GDP growth to thriving within the Doughnut framework (Raworth, 2018). In the case of Tomelilla Eriksson (2022) believes that even though city officials agree with Raworth idea about growth they argue that economic growth still has a part to play in Tomelilla's development. Furthermore, they view economic growth as feasible even within a future economy that adopts Raworth's principles. During the meetings, I realized this issue that the decision-makers consider the idea of the Doughnut as a pathway to city development even though their comprehension of the whole idea of the Doughnut is not clear. The idea of building a new school seems to follow this idea that they hope to encourage families and students to stay in Tomelilla or move from other cities to the cities which can change the image of the city. In addition, most of their focus was on ecological aspects of the Doughnut, like producing clean energy or more green areas and local food production but in terms of globally, there is still a lack of clear ways or actions. In urban development projects, there may be instances where sacrificing one aspect of the goal is necessary to achieve another, particularly when striving to address both ecological and social concerns simultaneously. Decision makers

took the first non-transparent step when they decided to build the new school. However, they mentioned the bad conditions of the existing building but there were no professional reports about the problems. Also, their decision about the site of the new school is unclear as to how they chose and decided about the new place and position of the new school. Another notable issue that I faced was the number of students and the scale of the school. I had several unofficial conversations with the teachers and rectors, and I asked them about their ambitions about the size of the new school. While they supported the small number of students in the small school, the politicians discussed the big school with 800 students.

Regarding these issues, Eriksson (2022) still believes that the municipality's policy does not stand in contrast with the whole concept of the Doughnut.

#### 4.3.3.2. Behavioural change

As I mentioned before except for the codes and roles, the residents need to change their behaviour in the city. Without residents' support achieving net zero emissions by 2050 is unattainable. Thriving has a key role in the idea of Doughnut and breaking planetary boundaries has a direct effect on social well-being and the ability to thrive. Understanding the meaning of the Thrive could be a challenge for implementing the idea of Doughnut in urban development. As Kate Raworth (2018) mentions how lacking the necessities of life or overshooting planetary boundaries prevents people from thriving. The residents' descriptions of current positive developments, along with their aspirations and visions for the future, reveal their interpretation of thriving. Similarly, the challenges they identify offer insights into the necessary changes for citizens to achieve thriving (Quast, 2023). However, Quast (2023) argues in her assertion that citizens in Tomelilla have touched on the issues of food, health, education, income and work, political voice, and networks as areas where they perceive shortcomings in the community but it is unclear how they assess these shortcomings especially related to the global dimensions while the indicators show the social foundation have an almost good situation in the Doughnut for Sweden. In sum, transparency and awareness could have a crucial role in giving the residents clear and real insights about the ecological and social condition of the city related to the Doughnut.

#### 4.3.3.3. Policy and Law

Tomelilla like many regions, cities and countries is at the beginning of shifting to a circular economy. In this way, the value of products, materials, and resources should be preserved moreover they can be used as long as possible, and the generation of waste is minimized. To achieve these goals the role of LCA and implementing the principles of Cradle to Cradle is crucial. Approximately 65 billion tons of raw materials were incorporated into the economic system in 2010, with expectations of this figure rising to 82 billion tons by 2020. The global scenario is poised to decline significantly, as the middle class is projected to more than double globally by 2030, reaching nearly 5 billion people, thereby amplifying consumption patterns (Kirchherr et al. 2017). Despite the European Commission (EC) adopting an ambitious package of proposals aimed at transitioning the European economy towards a more circular model in Brussels on 2 December 2015, (Kirchherr et al., 2017) there are still numerous challenges, particularly concerning the reuse of materials. The market for reused building materials in Sweden is now dysfunctional, mostly due to a lack of organization, logistical infrastructure, and regulatory frameworks. Within the construction sector, strict regulations govern the performance standards of products and materials.

To delve deeper into the problem I sent an email to Patrik Karlsson Ryberg (RISE Research Institutes of Sweden) and asked him about reusing building materials) and he answered me: " The market for reused building material market is currently dysfunctional, there are so many product groups where quality specifications need to be verified for the material to be sold at an open market. Most reuses of building material occur within the same organization, taking from one building to another with the same owner, for these product groups with regulations regarding performance in the building or planning codes. There is the option of testing the performance of material case by case however that is most likely not economically feasible. For material not regulated by code there is a limited market, Malmö there is the 'Återbyggsdepå'. There is also the marketplace hosted by CCBUILD. If the developer is willing, they can take the risk of disregarding the warranty of purchased reused material. This will make the process easier, but it is a risk." As he stressed, disregarding the warranty if developers use recycled materials in their projects and maybe the materials couldn't pass the codes. So, in the case of the Future school in Tomelilla, I visualized the existing problems and how the municipality can deal with the problem by taking responsibility in different sectors (Figure 21).



Figure 21. By taking responsibility in different sectors using recycled building materials becomes possible.

#### 4.3.3.4. Navigating the Global Limitations, Political Voice, Justice by Democracy

In 2023, Tomelilla municipality will build a new school fit for the 21st century based on holistic views of learning environments and the principles of the Doughnut Economy. The Doughnut consists of two concentric rings: a social foundation to ensure that no one falls short on life's essentials (from food and housing to healthcare and political voice), and an ecological ceiling ensuring that collectively we do not overshoot our pressure on Earth's life-supporting systems, on which we fundamentally depend such as a stable climate, fertile soils, healthy ecosystems, and a protective ozone layer (Raworth, 2018).

Although the new school intends to deal with all the foundations, in this part the most important factors in the social foundation ring are Literacy, School equity, peace and justice. The main question is how Democracy which implies creation freedom and equality between people is going to work with those factors and in this case, how democracy is going to achieve a democratic school in local and global aspects. Cambridge Dictionary defines democracy as "the belief in freedom and equality between people, or a system of government based on this belief, in which power is either held by elected representatives or directly by the people themselves" In politics democracy is a country in which elected representatives hold power.

As shown in Figure 22 democracy's main approaches are freedom and equality. Figure 23 shows the approaching ways of democracy in global and local. In this case, Sweden as a democratic country in

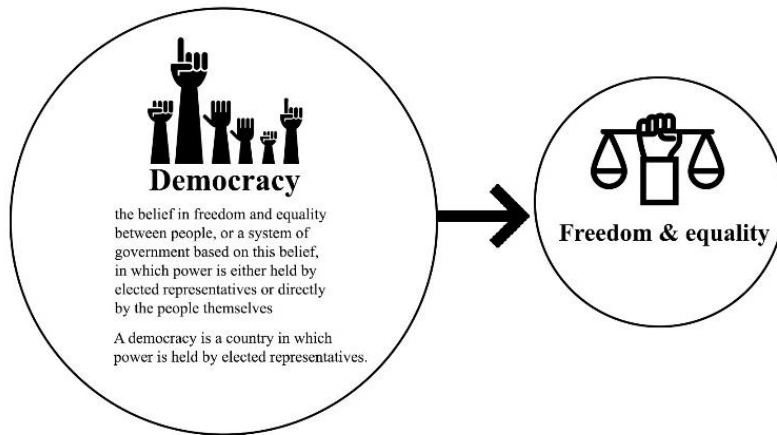


Figure 22. Definition of democracy and its main approaches.

northern Europe has a clear way to reach democracy. Various types of elections make Sweden one of the most democratic countries in the world while as of the end of 2017, only 96 out of 167 countries with populations of at least 500,000 (57%) were democracies of some kind in the world (www.pewresearch.org). kommunfullmäktige, regionfullmäktige, Riksdagen and Europaparlamentet are the main elections in Sweden but in our case, we have another election related to schools where the students elect them to choose their representatives. To understand the representative's student's opinion, in this case, building a new school we can ask their opinion about it. Simultaneously in the local way of democratic decision, there is another way, ask every single student about a specific issue or

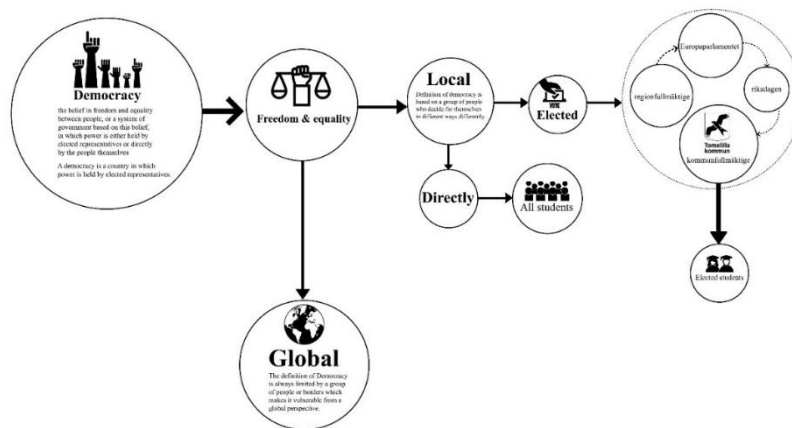


Figure 23. approaching ways of democracy in global and local.

question. To test this strategy, we prepared a survey which included several questions about the new school and process. Contrary to the local path, there are some limitations in the global path. In most definitions, democracy is limited to a border, land, state, or group of people. In global we don't have any organisations or states that are chosen by people from all over the world. This is a big concern in

reaching freedom and equality globally. The question here is how we can reach Doughnut's goals democratically and build a democratic school with a global vision. What is the role of a democratic country here in solving the problem from a global perspective? Throughout the survey, we tried to know students' opinions about these questions. Even though as I mentioned before there were several conflicts between the social and ecological aspects of the Doughnut. Building a new school requires converting land which conflicts with Land conversion in the Doughnut Foundations, simultaneously students thought they needed a new school. Furthermore, there is still a lack of information that how a school can deal with global aspects of political voice or justice. The biggest example of democracy which is implemented in the world is the European parliament. In the era where we usually talk about globalization, it seems there is a lack of definition of democracy from the global perspective. To reach equality and freedom as a main purpose of democracy first and foremost we need to find a way to define how democracy should work globally and as a person how we can participate in it or how we can affect it. The last picture shows the process by which tries to demonstrate a way to find a connection between a local school and a global school (Figure 24).

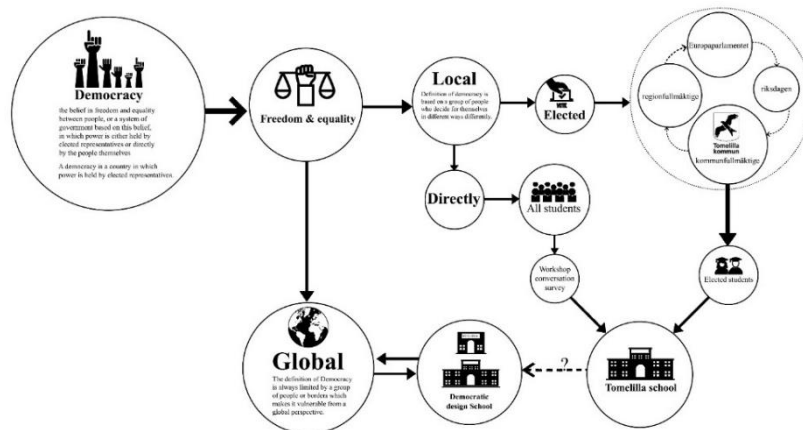


Figure 24. demonstrates a way to find a connection between a local school and a global school.

#### 4.3.4. Downscaling the Doughnut in Local Governance

The possibilities and opportunities which may emerge for the city as they implement the Doughnut Economics model are overflowing. Downscaling the size of the doughnut might necessitate a closer focus on connectivity across various scales, a demand not previously emphasized in traditional approaches to local governance for sustainable development (Turner and Wills, 2022). Moreover, local institutions might possess a greater capacity to generate comprehensive, location-specific policies and initiatives compared to national processes, where separate government departments with isolated policy agendas typically tackle issues (Turner and Wills, 2022). Communication between different parts and sectors of

municipalities is a confirmation for this reason while this closeness helps them easily share their thoughts and ideas. During my participation in the meetings in Tomelilla municipalities, this connectivity was obvious between various sectors even between them and politicians where they shared and discussed the problems. This can streamline decision-making processes, leading to quicker and more efficient outcomes for the city. However, there are several substantial challenges to downscaling the doughnut. Among these challenges, Turner, and Wills (2022) identified three important ones: representing, understanding, and responding to complex systems; goal coherence across scales; and difficult decisions and trade-offs. Tackling these challenges is crucial for achieving progress towards sustainable development, and the doughnut framework could serve as a clear vision to inspire and drive local initiatives in this direction.

In summary, downscaling the Doughnut offers the municipality a chance to identify the planetary boundaries most impacted by the city's functions and processes, both directly and indirectly. The Doughnut Economics model holds significant potential in tracing sustainable development and planetary boundaries in a clear and accessible way, facilitating the identification of areas for improvement. This can help in promoting awareness of sustainability and integrating it into the city culture, thereby reducing resistance to change.

#### 4.3.5. Gaps in Tomelilla Doughnut Economics Strategy

Since the birth of the idea of Doughnut Economics has been gaining increasing recognition and interest, among countries, regions and cities, however, the idea is still young, particularly in practical approach consequently, the idea needs more investigations and research. Additionally, the existing data shows unequal attention and investigation between the Global South and the Global North (Quast 2023). Turner & Wills (2022) have also pointed out that the Doughnut framework lacks practical advice on its application across various local contexts. However, the lack of empirical examples particularly concerning the small-scale project makes the case of Tomelilla both difficult and attractive. The lack of empirical case studies raises the potential for misunderstanding the Doughnut concept and may inadvertently steer the project towards greenwashing. In addition, among the other gaps I can mention the comprehension of historical responsibility. One of the major debates at the United Nations climate summit in Glasgow revolves around the question of whether, and in what manner, the world's wealthiest nations, which bear a disproportionate responsibility for historical global warming, should provide compensation to poorer nations for the damages incurred due to rising temperatures. Wealthy countries, comprising only 12 per cent of the global population are responsible for 50 per cent of all the planet-warming greenhouse gases emitted from fossil fuels and

industry over the past 170 years (Figure 25). I tried to understand the level of responsibility among the students through the survey.

Addressing such issues requires a greater emphasis on generosity rather than solely focusing on quantifying effects, which can be particularly challenging in small-scale projects. ( Who Has The Most Historical Responsibility for Climate Change? - The New York Times (2021). Counting and measuring all the effects and processes is one of the most important challenges in small-scale projects while LCA requires recording all processes occurring throughout the life cycle. This gap becomes more obvious when we can't monitor every single action for example, we as a designer used office spaces, light and electricity moreover we travelled several times to the Tomelilla which can be ignored by software while it will count the CO2 emission for the project. Filling the gap between actions and measuring the data in small-scale projects could be difficult and cost too much for developers.

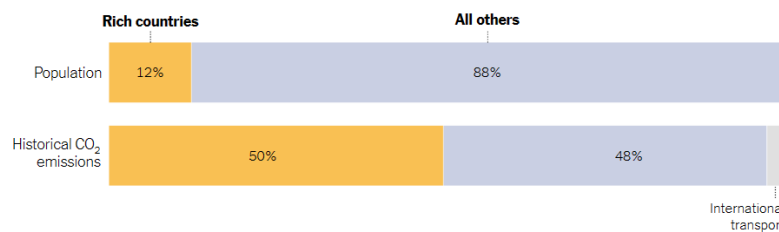


Figure 25. Population data from 2020. Source: World Bank, Global Carbon Project

#### 4.4. discussion

As I mentioned, there are many unanswered questions about implementing the idea of Doughnuts in urban development projects that need more investigation and research. However, several cities like Amsterdam and Copenhagen implemented the idea of Doughnut Economics in their urban developments but as I mentioned in section 3.8, they have still a holistic vision without any special details. Their focus is on short food chains and using more sparingly, although the global aspects of their strategy are not still clear.

Regarding time limitations I tried to figure out several questions. To understand the unknown aspect of implementing the idea of Doughnut I focused on a small-scale project. Even though there is a lack of empirical and theoretical examples and research I tried to clarify some aspects of the doughnut regarding small-scale urban development projects. To find them I focused on the future school of Tomelilla as a case study. It enabled me to delve deeper into empirical examples however the school project was ongoing and simultaneously I was working on the project. This simultaneously had a positive and negative side. On one hand, I had to find a practical way to implement the idea of the Doughnut in the project while there were several conflicts between the indicators. On the other hand, I had to look at the project with a critical view which meant I had to criticise my work.

To delve deeper into the topic, I conducted four questions which are intertwined together. The questions are:

RQ1: How can doughnut thinking be operationalised in small-scale urban development projects, what challenges and opportunities their face?

RQ2: How can cities use the doughnut core concepts and tools in urban development?

RQ3: How do the local governments - from villages to megacities - adopt the tools and concepts of Doughnut Economics to help bring these items to the globe?

RQ4: What kinds of aspects should be considered in a small-scale doughnut urban development project?

Various approaches have been employed to address these questions, including qualitative findings, literature reviews, case studies, surveys, active participation in meetings and workshops, as well as conducting interviews. Moreover, I tried to incorporate my observations and insights from interactions with politicians and city officials into a narrative framework across multiple sections of this research. Doughnut Economics (Raworth, 2018) is a main book exploring Doughnut thinking which most scholars refer to in their research. The considerable and newest existing literature regarding the field of Doughnut in urban development is Doughnut for Urban Development (Bjørn et al., 2023). Moreover, through Doughnut Economics Action Lab (DEAL) I fund other articles, research, theses, and workshops related to the topic. The primary objective was to thoroughly examine all aspects of the Doughnut concept, aiming to capture its overarching idea. Subsequently, the focus shifted to exploring its relevance to urban development. In the research, I approached the topic critically in tracking of answers to my questions. To operationalise the idea of the Doughnut in urban development projects Doughnut for Urban Development (Bjørn et al., 2023) is considered as a compass for developers and planners. Following the Social and Ecological instructions in the book as a guideline can help developers reach more sustainable projects. In addition, DEAL published several tools and guidelines to help cities move toward Thrive such as Creating City Portrait and City WORKS. Several cities like Amsterdam published their work to share their experiences with others. But still, Doughnut for Urban Development (Bjørn et al., 2023) seems more practical than others while the other experiences talk about holistic goals and visions. The inner ring and outer ring of the Doughnut for Urban Development are more focused on the details that developers should consider in their work. 48 social impact areas including 24 local and 24 global impacts and an ecological ceiling by 24 local and 24 global impact areas within the core Earth systems of climate stability and healthy ecosystems steer urban development towards a safe and just space for humanity. As shown in Figure 26 by passing every single project through the Doughnut hole we should have a Doughnut project. In the case of the Future School, applying this approach will result in a Future School

based on the Doughnut principles. While some claim this might happen, my experience on the project suggests otherwise. The first notable problem is understanding the whole idea of the Doughnut Both local and global aspects must be considered equal while the first and most important focus of projects is on the local aspects. By solving the

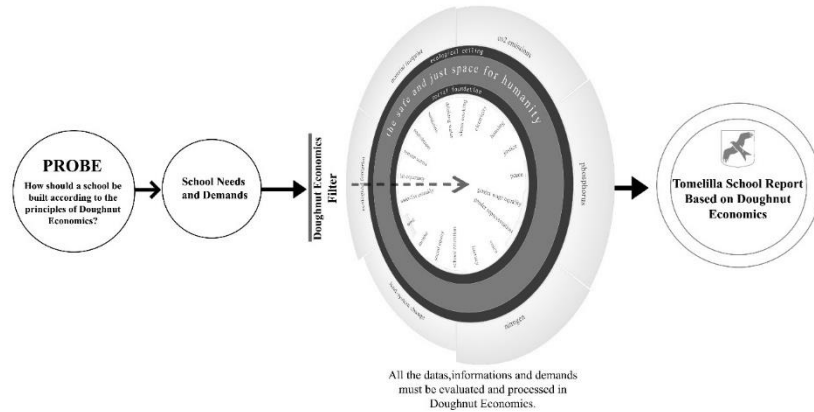


Figure 26. Passing every single project through the Doughnut hole to achieve Doughnut development.

local problem, they aim to solve global aspects while the historical responsibility needs more radical and clear actions that people especially in the global south could feel directly. Even though the indirect impact is so important most arguments I encountered emphasized the indirect aspects of their efforts and actions.

Furthermore, the role of the community and their awareness about their responsibility in the world seems crucial. As survey analysis has shown to achieve the student's demands we should sacrifice several principles of the doughnut. The concept is not so straightforward, and the complexity of the Doughnut and its Principles makes the idea difficult to implement. Furthermore, the designers who participated in the project expected more clear and straightforward principles that they could follow. Even though I consider this matter both positive and negative. On the other hand, this unclarity makes it difficult to utilise the idea on the small-scale project but on the other hand, it shows the various dimensions of a project that are usually overlooked. Considering the social and ecological aspects of a project and looking at the local context of every single project makes every project unique which means every project needs a large amount of data and research. The workshop results exemplify this issue. Some participants expressed desires that differed significantly from the decision-makers' plans for the school. Another notable matter to find answers to the questions, especially the aspects that should be considered in a small-scale doughnut urban development project is that most of the data and research focused on CO2 emission while the other aspects like phosphorous or land use were almost neglected. Building on already converted land is one of the most important planetary boundary foundations that should be considered in the design process.

During the observation and site visit in Tomelilla, I realized that some of the existing buildings like Slöjdsal (Crafts room) which is located on the south-west of the site could be renovated instead of demolished but as I understood during the meeting by the politicians, the aim to demolish the building, at least on part of the building. In addition, there is no official report or evaluation of the conditions of the building. Using and renovating existing infrastructures, buildings and materials have a crucial role in mitigating environmental effects on the planet which is one of the main goals of Doughnut Economics. By preserving existing buildings and renovating them the municipalities can take an effective step towards sustainable development. Transparency as an important principle should be considered in every single project from the beginning while the decision makers and stakeholders make the decision every step should be clear for the residents. With clear reports and statistics, their decisions can be more reliable for the users. The first question I countered during the project was why the municipality decided to build a new school. Even though they usually argued that the bad condition of the existing school was the reason, the lack of reports from the experts made the decision unreliable. Moreover, the decision about the location of the school is considered an important issue in urban planning and which area needs what kinds of users. In this case, I couldn't find a map or any other kind of report that shows an investigation to find the right place for the new school according to urban planning and statistics. In the case of Tomelilla school avoiding changing the land use to build the school on the agricultural land or cutting the forest can play an important role in having a sustainable school. According to the Doughnut, in Sweden, the demand to avoid deforestation by cutting the trees is crucial. The aim is to maintain 75% of forested land cover in the planetary boundary of the land system which is threatened by the logging industry and demand for timber. Locally, ecosystems in and around the project area can be restored to improve biodiversity. This can for instance entail planting trees or wildflowers in the project area or providing habitats for local birds and insects. Forestation and extending the existing forest can provide many co-benefits –including for biodiversity if done well. As an example in the case of Tomelilla school, the suggestion is to extend the existing small forest at least as much as we aim to build (number of students X square meter per student = Area required for forest planting). Sustainable projects inherently carry various risks, such as greenwashing, the rebound effect, or the challenge of undertaking the right idea. Nevertheless, the capacity of the Doughnut model to instigate change depends on how it is applied across different levels, as noted by Turner and Wills in 2022. Although the idea of Doughnut is still young it can be considered a useful tool for a sustainable future.

# ”En hållbar utveckling är en utveckling som tillfredsställer dagens behov utan att äventyra kommande generationers möjligheter att tillfredsställa sina behov”

## 5. Conclusion

To wrap up this work, I'd like to offer some closing remarks and comments. Delving into all the foundations and principles of the Doughnut proved challenging due to time constraints. The lack of time not only made it difficult to investigate all the indicators of the Doughnut for Urban Development but also the Future School project was ongoing, and the municipality hasn't published the final work yet. Considering all the challenges and opportunities of the Doughnut thinking and implementing this idea in urban development projects, especially small-scale projects there are several notable issues that I would like to highlight. The most crucial consideration for any development project, regardless of scale, is often the option of not building at all. This might seem counterintuitive, but it emphasizes prioritizing sustainability. Figure 27 illustrates a key strategy for future development: minimize intervention. While numerous strategies, data tools, and complex figures exist, this figure offers a

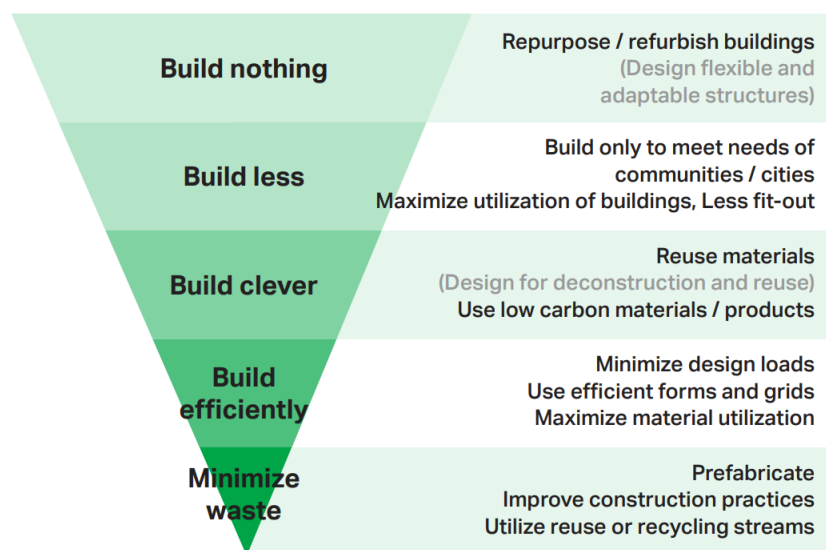


Figure 27. Embodied carbon reduction strategy. (WBCSD, 2021)

simplified approach to achieving a sustainable future. Additionally, considering all the indicators introduced in Doughnut for urban development makes this idea difficult to apply globally, especially in small-scale projects or poor countries where the accessibility for all measurement and assessment tolls would be difficult or impossible otherwise, we must sacrifice one element of a goal for the gaining of another goal. To deal with this complexity of the Doughnut or difficulties in accessing the data in small-scale projects developers and planers should look at their project through the lens of Critical. Lack of report for the existing school problems is one of the examples I can mention regarding the project while everybody talked about the different problems at the Lindesborgsskolan there were no official reports regarding the problems. It can raise doubts about transparency, which is considered one of the key elements in Doughnut Economics. However, trusting each other can solve this kind of problem in small-scale projects. Apart from these, information, data, and documents confuse people, especially non-experts. However, the target is zero-carbon emissions for 2050 which is simple and understandable for everyone (Figure 28).

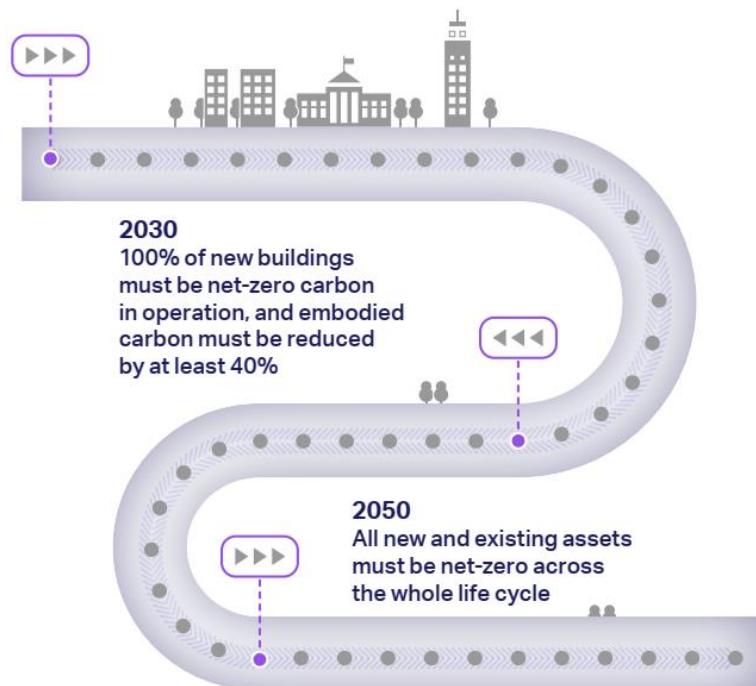


Figure 28. Route to net-zero buildings, UNFCCC (2021)

However, these complexities make implementing the Doughnut in urban development projects difficult by considering the main principles and understanding the whole idea of the Doughnut, it can be a useful method to mitigate both environmental and social impacts. Using existing infrastructures by developing, renovating or revitalising them through finding them by mapping, especially in small cities can be the first step in every development process. Moreover,

using local materials, entrepreneurs' and even residents' participation in a project small or big leads the projects to a sustainable future. Instead of counting every single effect of a development which needs vast numbers of expertise, developers can follow the main idea of Doughnut presented by Kate Raworth and be more generous in sharing their knowledge and property with the rest of the world. Considering the direct and indirect effects on both local and global scales, developers can find simple solutions and act like donating a per cent of their project budget to developing countries or even by transferring knowledge they can have a big effect elsewhere. As an example in this thesis, I suggested if the municipalities aim to consider global aspects of equality, they can donate or build a small school with a small amount of the school budget somewhere in the global south. Moreover, most of the reports talk about Zero Emissions, considering other aspects of the ecological ceiling like biodiversity have a crucial role in every single project regardless of where is located. Following the local and global rules about the workers who work on the projects and attention to their salary and safety is a fundamental right that developers should consider worldwide.

Sometimes producing sustainable energy costs too much and even providing its infrastructure is too difficult for developing countries. Consequently, policymakers and developers should focus on using less energy and building adaptable buildings connected to a local environment. Moreover, attention to not changing land use particularly in developed countries like Sweden even for producing clean energy should be considered by decision-makers.

Ultimately, it's important to highlight that achieving a sustainable transition in any development project, whether it's a big city or small neighbourhood, requires brave leaders. The involvement of politicians who support these new approaches is crucial.

## **6. Limitations and further research**

Doughnut Economics as a Compass for Human Prosperity in the 21st Century (DEAL, 2024) containing both ecological and social aspects, can be a compass for building thriving cities in the 21st century. This approach emphasizes that all urban development projects must consider these environmental and social dimensions. However Doughnut Economics is a recent concept, and there is limited data on its real-world application. Further case studies and successful implementations are needed to solidify its effectiveness. Moreover, according to the Doughnut for Urban Development (Bjørn et al., 2023) in total 96 indicators both locally and globally should be considered in a small or big project while every single one of these indicators needs expertise and knowledge. The sheer number might seem daunting. Even though it can be considered a barrier, this comprehensiveness

reflects the importance of evaluating every project from a multifaceted perspective. The time was limited and investigating all these principles was not possible. Consequently, to delve deeper into more aspects of the Doughnut idea for future research I suggest that a group of researchers or students from diverse fields and expertise work together on this topic. This diversity helps them to explore more unknown aspects of the doughnut and helps them to find clearer ways to implement or criticise the idea in urban development projects.

Although being part of the design team could be seen as a limitation, I attempted to turn the challenges I faced into opportunities throughout the research. Critically examining the ongoing project, which is a result of my work, was difficult, but I approached it with maximum sincerity. Collaborating with colleagues and the municipality, who were committed to implementing Doughnut principles in the projects, helped ensure we were heading in the right direction. The Swedish municipality of Tomelilla is actively integrating Doughnut Economics principles into its development projects. This ongoing effort, coupled with the evolving "Future School" initiative, positions Tomelilla as a valuable case study. By examining Tomelilla's journey, researchers can gain insights into the opportunities and challenges of implementing Doughnut Economics in smaller urban settings.

In addition, having grown up in a global south country and maintaining strong connections with its people, I have always been intrigued by the actions of politicians and residents, as well as how policies in the global north affect the global south. For future research, I suggest delving deeper into how implementing Doughnut Economics principles in urban developments can directly impact countries in other parts of the world.

**"To avert a climate catastrophe, we need bold pledges but matched by concrete, measurable action."**

Catherine Mckenna

## 7. Reference list

- A Good Life for All Within Planetary Boundaries (2021). Good Life, 2024 Source: <https://goodlife.leeds.ac.uk> (Accessed 2024-02-21).
- Alvarez-Risco, A., Muthu, S.S. and Del-Aguila-Arcentales, S. (2022) *Circular Economy: Impact on Carbon and Water Footprint*. 1st ed. Springer Singapore Pte. Limited (Environmental Footprints and Eco-Design of Products and Processes Series). Available at: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib,cookie,url&db=cab05074a&AN=malmob3032970&site=eds-live&scope=site> (Accessed 2024-04-10).
- Architecture 2030. (2023). WHY THE BUILT ENVIRONMENT. <https://www.architecture2030.org/why-the-built-environment/>
- Bocken, N. and Konietzko, J. (2023) 'Experimentation capability for a circular economy: a practical guide', *Journal of Business Strategy*, 44(6), pp. 406–414. doi:10.1108/JBS-02-2022-0039.
- Birgisdóttir, H., Bjørn, A., Branny, A., Clausen, C., Fanning, A., Fetzer, I., Francart, N., Grcheva, L., Heide, M., Lassen, E., Leonardsen, J., Moberg, F., Nørgaard, R., Pham, D., Rasmussen, K.K., Raworth, K., Ryberg, M. and Sahan, E. (2023) *Doughnut for Urban Development: A Manual*. Edited by Dani-Hill-Hansen and Kasper Guldager Jensen. Copenhagen. The Danish Architectural Press.
- Boverket. (2020). Regulation on climate declarations for buildings. <https://www.boverket.se/globalassets/publikationer/dokument/2020/regulation-on-climate-declarations-for-buildings.pdf>
- Boverket. (2023). Regulation on climate declarations for buildings. <https://www.boverket.se/globalassets/publikationer/dokument/2020/regulation-on-climate-declarations-for-buildings.pdf>
- Birgisdóttir, H., Bjørn, A., Branny, A., Clausen, C., Fanning, A., Fetzer, I., Francart, N., Grcheva, L., Heide, M., Lassen, E., Leonardsen, J., Moberg, F., Nørgaard, R., Pham, D., Rasmussen, K.K., Raworth, K., Ryberg, M. and Sahan, E. (2023) *Doughnut for Urban Development: A Manual*. Hill-Hansen, D. and Guldager Jensen, K. (Eds.), Copenhagen, The Danish Architectural Press.
- Brooks, N., Donaghy, K. and Knaap, G. (2012) *The Oxford handbook of urban economics and planning*. [electronic resource]. Oxford University Press. Available at: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib,cookie,url&db=cab05074a&AN=malmob2577736&site=eds-live&scope=site> (Accessed 2024-04-24).

- Baeten, G. (2012) ‘Normalising Neoliberal Planning: The Case of Malmö, Sweden’, *Contradictions of Neoliberal Planning*, pp. 21–42. doi:10.1007/978-90-481-8924-3\_2.
- Baeten, Guy (2017) Neoliberal planning, in M Gunder et al. (eds.), *Routledge Handbook of Planning Theory*, pp. 105-117, Routledge, London
- Birgisdóttir, H., Bjørn, A., Branny, A., Clausen, C., Fanning, A., Fetzer, I., Francart, N., Grcheva, L., Heide, M., Lassen, E., Leonardsen, J., Moberg, F., Nørgaard, R., Pham, D., Rasmussen, K.K., Raworth, K., Ryberg, M. and Sahan, E. (2023) *Doughnut for Urban Development: A Manual*. Edited by Dani-Hill-Hansen and Kasper Guldager Jensen. Copenhagen. The Danish Architectural Press.
- Birgisdóttir, H., Bjørn, A., Branny, A., Clausen, C., Fanning, A., Fetzer, I., Francart, N., Grcheva, L., Heide, M., Lassen, E., Leonardsen, J., Moberg, F., Nørgaard, R., Pham, D., Rasmussen, K.K., Raworth, K., Ryberg, M. and Sahan, E. (2023) *Doughnut for Urban Development: A Manual*. Edited by Dani-Hill-Hansen and Kasper Guldager Jensen. Copenhagen. The Danish Architectural Press.
- Byrne, J. (2021). Observation for Data Collection in Urban Studies and Urban Analysis. In *Methods in Urban Analysis* (pp. 149–127)
- City Of Amsterdam. (2022). Policy: Circular economy. <https://www.amsterdam.nl/en/policy/sustainability/circular-economy/> (Accessed 2024-04-25).
- Castro, C.G., Trevisan, A.H., Pigosso, D.A., Mascarenhas, J., 2022. The rebound effect of circular economy: definitions, mechanisms and a research agenda. *J. Clean. Prod.* 345 (October 2021), 131136  
<https://doi.org/10.1016/j.jclepro.2022.131136>.
- Department of Economic and Social Affairs Sustainable Development (2024). *The Sustainable Development Goals Report. — SDG Indicators*. un.org (Accessed 2024-04-09)
- Dijkstra, W. (2023). *To Do or Doughnut: Defining the Limits of the Urban Safe and Just Operating Space*. Master thesis, Norwegian University of Life Sciences.  
<https://nmbu.brage.unit.no/nmbu-xmlui/handle/11250/3081680>
- D’Alisa, G., Demaria, F., & Kallis, G (eds). (2014). *Degrowth: a vocabulary for a new era*.Routledge.
- Dillman, K. J., Czepkiewicz, M., Heinonen, J., & Davíðsdóttir, B. (2021). A safe and just space for urban mobility: A framework for sector-based sustainable consumption corridor development. *Global Sustainability*, 4.  
<https://doi.org/10.1017/sus.2021.28>.

- Doughnut Economics Action Lab (2024). Cities & Regions. <https://Doughnuteconomics.Org/>. Cities & Regions | DEAL (doughnuteconomics.org) (Accessed:2024-01-28-).
- Dyllick, T., & Muff, K. (2014). Clarifying the Meaning of Sustainable Business: Introducing a Typology from Business-as-Usual to True Business Sustainability. Social Science Research Network. <https://doi.org/10.2139/ssrn.2368735>
- European Commission. (Accessed 2024-01-02). Construction and demolition waste. [https://environment.ec.europa.eu/topics/waste-and-recycling/construction-and-demolition-waste\\_en](https://environment.ec.europa.eu/topics/waste-and-recycling/construction-and-demolition-waste_en)
- European Union. (2020). Amsterdam City's circular economy strategy for 2020-2025 shapes itself on the 'Doughnut' model. <https://circulareconomy.europa.eu/platform/en/news-and-events/all-news/amsterdam-citys-circular-economy-strategy-2020-2025-shapes-itself-doughnut-model> (Accessed 2024-04-25).
- Economy, Circle, 2022. The Circularity Gap Report 2022, vol. 26. <https://www.circularity-gap.world/2022>.
- Energistyrelsen (2022). Global Arapportering 2022. Energistyrelsen. [https://ens.dk/sites/ens.dk/files/Basisfremskrivning/ga22\\_-\\_hovedrapport.pdf](https://ens.dk/sites/ens.dk/files/Basisfremskrivning/ga22_-_hovedrapport.pdf)
- European Union. (2006). Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/ EC (Text with EEA relevance). <https://eur-lex.europa>. EU/EN/legal-content/summary/European-pollutant-release-and-transfer-register-e-prtr.html
- Espey, J., Parnell, S. and Revi, A. (2023) 'The transformative potential of a Global Urban Agenda and its lessons in a time of crisis', npj Urban Sustainability, 3(1). doi:10.1038/s42949-023-00087-z.
- Economy, Circle, 2022. The Circularity Gap Report 2022, vol. 26. <https://www.circularity-gap.world/2022>.
- Eriksson, F. (2022). Towards a critical understanding of Doughnut Economics- The case of Tomelilla, Sweden. Lunds Universitet.
- Ecochain. (2024). Life Cycle Assessment (LCA). <https://ecochain.com/solutions-by-use-case/life-cycle-assessment-lca/> (Accessed 2024-01-18).
- Everett, Eller. (2022). Combining the Circular Economy, Doughnut Economy, and Permaculture to Create a Holistic

- Economic Model for Future Generations. 19.  
10.3390/environsciproc2022015019.
- Fanning, Andrew L., Daniel W. O'Neill, Jason Hickel, and Nicolas Roux. "The social shortfall and ecological overshoot of nations." *Nature Sustainability* 5, no. 1 (2022): 26-36.
  - Flick, U., 2007. *Designing Qualitative Research*. Qualitative Research Kit. London: SAGE Publications, Ltd. Available at: <<https://doi.org/10.4135/9781849208826>> [Accessed 11 Jan 2024].
  - Feola, G. (2015). Societal transformation in response to global environmental change: A review of emerging concepts. *Ambio* 44(5): pp. 376–390.  
<https://doi.org/10.1007/s13280-014-0582-z>
  - Fanning, Andrew L., Daniel W. O'Neill, Jason Hickel, and Nicolas Roux. "The social shortfall and ecological overshoot of nations." *Nature Sustainability* 5, no. 1 (2022): 26-36.
  - Flyvbjerg, B. (2013) 'Five Misunderstandings About Case-Study Research'. doi:10.1177/1077800405284363.
  - Fields, D. (2017) 'Urban struggles with financialization', *GEOGRAPHY COMPASS*, 11(11).  
doi:10.1111/gec3.12334.
  - Gürbüz, Salih. (2017). Survey as a Quantitative Research Method.  
[https://www.researchgate.net/publication/321874371\\_Survey\\_as\\_a\\_Quantitative\\_Research\\_Method](https://www.researchgate.net/publication/321874371_Survey_as_a_Quantitative_Research_Method)
  - Goodall, B. (1972) *The economics of urban areas*. Pergamon Press.  
*Green European Journal* (2020) *The Doughnut Model for a Fairer, Greener Amsterdam*. Available at:  
<https://www.greeneuropeanjournal.eu/the-doughnut-model-for-a-fairer-greener-Amsterdam/> (Accessed 2022-02-24).
  - García-Lamarca, M. et al. (2022) 'Urban green grabbing: Residential real estate developers discourse and practice in gentrifying Global North neighborhoods', *Geoforum*, 128, pp. 1–10. doi:10.1016/j.geoforum.2021.11.016.
  - Golubchikov, Oleg. (2017). The post-socialist city: insights from the spaces of radical societal change.  
10.4337/9781785363429.00030.
  - Goonewardena, K., 2002. Planning and neoliberalism: The challenge for radical planners. *Progressive Planning*, (153).
  - Guzzo, D, Pigosso, DCA & Walrave, B 2023, 'Unveiling the dynamic complexity of rebound effects in sustainability transitions: Towards a system's perspective', *Journal of Cleaner Production*, vol. 405, viewed 28 March 2024, <<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib,cookie,url&db=edselc&AN=edselc.2-52.085151255821&site=eds-live&scope=site>>.

- Goodall, B. (1972) *The economics of urban areas*. Pergamon Press.  
Green European Journal (2020) *The Doughnut Model for a Fairer, Greener Amsterdam*. Available at:  
<https://www.greeneuropeanjournal.eu/the-doughnut-model-for-a-fairer-greeneramsterdam/> (Accessed 2022-02-24).
- Hassan, Tarnim, T. (2022) *Doughnut Urbanism: An assessment framework for urban development through a Doughnut Economy perspective*. Master thesis.
- Hmeidi, J. (2023). *Downscaling the Doughnut Economics Model - Employing a Global Model at the Enterprise Level: A Case Study of Proton Group and Apotea AB*. [pdf]  
Available at: <https://hj.diva-portal.org/smash/record.jsf?pid=diva2%3A1823235&dswid=-9359>.
- Hmeidi, J., & Ryberg, A. (2023). *Downscaling the Doughnut Economics Model - Employing a Global Model at the Enterprise Level: A case study of Proton Group and Apotea AB*. Jönköping University.  
<https://urn.kb.se/resolve?urn=urn:nbn:se:hj:diva-63126>
- Horwitz, S. 2017. *There's a Hole in the Middle of Doughnut Economics*. Fee. 26 July. <https://fee.org/articles/theres-a-hole-in-the-middle-of-doughnut-economics/> (Accessed 2024-03-27).
- IPCC, 2022: *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lössche, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp., doi:10.1017/9781009325844.
- Iyyanki, V. M., & Manickam, V. (2017). *Life Cycle Assessment*. Environmental Management (pp. 57-75). Butterworth-Heinemann. Available from:  
<https://www.sciencedirect.com/science/article/pii/B9780128119891000051>
- International Energy Agency (IEA). (2021). *Yearbook of international organizations online*. Available at:  
<https://www.iea.org/countries/sweden>
- Information. (2022). *Can become a model for green transition of the entire country: Copenhagen must be a doughnut city*.  
<https://www.information.dk/indland/leder/2020/06/kan-model-groen-omstilling-hele-landet-koebenhavn-vaere-doughnut-by/> (Accessed 2024-04-25).

- Janusek, W (2023) Invisible energies in city making (Bachelor's Dissertation), University of the Arts London, UK.
- Jenks. (February 22, 2024). The circular economy in developing countries: opportunities and challenges. <https://green.org/2024/01/30/the-circular-economy-in-developing-countries-opportunities-and-challenges/#:~:text=Limited%20infrastructure%2C%20lack%20of%20technological%20capabilities%2C%20and%20financial,or%20skepticism%20from%20traditional%20economic%20models%20and%20industries.> (Accessed 2024-03-21).
- Joss, S (2009), Eco-cities: A Global Survey 2009, in C A Brebbia, S Hernandez, E Tiezzi (eds.), The Sustainable City VI: Urban Regeneration and Sustainability, WITPress, Southampton, pp. 239 250
- Khmara, Y. and Kronenberg, J. (2023) 'On the road to urban degrowth economics? Learning from the experience of C40 cities, doughnut cities, Transition Towns, and shrinking cities', *Cities*, 136. doi:10.1016/j.cities.2023.104259.
- Khmara, Y., & Kronenberg, J. (2023). Urban degrowth economics: Making cities better places for living, working, and playing. *Local Environment*, 28, 304–321. <https://doi.org/10.1080/13549839.2022.2136638>
- Krauss, J. (2018) Review of Doughnut Economics: 7 Ways to Think Like a 21st Century Economist by Kate Raworth. *Journal of world-systems research*, 24 (2), 452–457. <https://doi.org/10.5195/jwsr.2018.854>
- Kirchherr, J., Reike, D. and Hekkert, M. (2017) 'Conceptualizing the circular economy: An analysis of 114 definitions', *Resources, Conservation & Recycling*, 127, pp. 221–232. doi:10.1016/j.resconrec.2017.09.005.
- Kassier, Liesel. (2024). Interconnected or Disconnected? A Review of Sustainability, Resilience, and Sustainable Business Model Constructs in the Academic Business Literature. *Journal of the Knowledge Economy*. 1-28. 10.1007/s13132-023-01712-z.
- Landrum, N. E. (2018). Stages of Corporate Sustainability: Integrating the Strong Sustainability Worldview. *Organization & Environment*, 31(4): pp. 287–313. <https://doi.org/10.1177/1086026617717456>
- Milanovic, B. 2018. Doughnut economics: Seven ways to think like a 21st-century economist. *Brave New Europe*. June 25. Available at: <https://braveneweuropa.com/doughnut-economics-seven-ways-to-think-like-a-21st-century-economist-by-kate-raworth> (Accessed 2024-03-23).
- Olsson, D. (2020). The Transformative Potential of Resilience Thinking: How It Could Transform Unsustainable

- Economic Rationalities. *Alternatives*, 45(2), 102–120.  
<https://doi.org/10.1177/0304375420938284>
- OECD (2013), *Green Growth in Cities*, OECD Green Growth Studies, OECD Publishing, Paris Paddison R. (1993) *City marketing, image reconstruction and urban regeneration. Urban Studies* Vol. 30, no. 2, pp. 339-349
  - O'Brien, K. and Sygna, L. (2013). Responding to Climate Change: The Three Spheres of Transformation. *Proceedings of Transformation in Changing Climate International Conference*, Oslo, 19-21 June 2013, 16-23. (PDF) Responding to climate change: The three spheres of transformation (researchgate.net)
  - Österlen.(2022).Tomelilla. <https://www.xn--sterlen-80a.se/byarna/tomelilla/>.(Accessed 2024-04-11).
  - Pasgaard, M., & Dawson, N. (2019). Looking beyond justice as universal basic needs is essential to progress towards 'safe and just operating spaces'. *Earth System Governance*, 2. <https://doi.org/10.1016/j.esg.2019.100030>
  - Quast, LM (2023) *Doughnut Economics in practice: Unrolling the Doughnut with citizens of Tomelilla, Sweden* (Master's Dissertation), University of Freiburg, Germany.
  - Raworth, K. (2018) *Doughnut Economics: seven ways to think like a 21st-century economist*. Paperback edition. Random House UK. Available at: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,url,shib&db=cat05074a&AN=malmö.b2818832&site=eds-live&scope=site> (Accessed: 11 January 2024).
  - Raworth, K. (2020) *Doughnut Economics: seven ways to think like a 21st-century economist*. Paperback edition. Random House UK. Available at: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,url,shib&db=cat05074a&AN=malmö.b2818832&site=eds-live&scope=site> (Accessed: 21 February 2024).
  - Rockström, J., Steffen, W., Noone, K. et al. A safe operating space for humanity. *Nature* 461, 472–475 (2009). <https://doi.org/10.1038/461472a>
  - Reduction Roadmap (2022) *Reduction Roadmap: Preconditions and Methodologies*. Version 2 - 27 September 2022. [www.reductionroadmap.dk](http://www.reductionroadmap.dk)
  - Research &, Degrowth. (2010). Degrowth declaration of the Paris 2008 conference. *Journal of Cleaner Production*, 18(6), 523–524. <https://doi.org/10.1016/j.jclepro.2010.01.012>
  - Robson, C., & McCartan, K. (2016). *Real-world research: a resource for users of social research methods in applied settings* (Fourth Edition). Wiley.

- Reduction Roadmap (2022) Reduction Roadmap: Preconditions and Methodologies. Version 2 -27 September 2022. [www.reductionroadmap.dk](http://www.reductionroadmap.dk).
- Sizirici, B., Fseha, Y., Cho, C.-S., Yildiz, I., & Byon, Y.-J. (2021). A review of carbon footprint reduction in the construction industry, from design to operation. <https://www.ncbi.nlm.nih.gov/pmc/articles/>
- Rosenzweig, W. (2004). Double Bottom Line Project Report: Assessing Social Impact In Double Bottom Line Ventures: Methods catalogue. (peer-reviewed). UC Berkeley with support from support from The Rockefeller Foundation. <https://escholarship.org/uc/item/80n4f1mf>
- 
- Stein, T. (2022). Carbon dioxide now more than 50% higher than pre-industrial levels | National Oceanic and Atmospheric Administration. <https://www.noaa.gov/news-release/carbon-dioxidenow-more-than-50-higher-than-pre-industrial-levels>
- Sweden Statistics. (2022). Tomelilla kommun - folkmängd, invandrare, skatt och valresultat. <https://www.swedenstatistics.se/befolkning/tomelilla-kommun>. (Accessed 2024-03-11).
- Stockholm Resilience Centre. (2023). Planetary boundaries. <https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>
- Saiu, V., Blečić, I. and Meloni, I. (2022) ‘Making sustainability development goals (SDGs) operational at the suburban level: Potentials and limitations of neighbourhood sustainability assessment tools’, *Environmental Impact Assessment Review*, 96. doi:10.1016/j.eiar.2022.106845.
- Stoddard, I., Anderson, K., Capstick, S., Carton, W., Depledge, J., Facer, K., Gough, C., Hache, F., Hoolohan, C., Hultman, M., Hällström, N., Kartha, S., Klinsky, S., Kuchler, M., Lövbrand, E., Nasiritousi, N., Newell, P., Peters, G. P., Sokona, Y., Stirling, A., Stilwell, M., Spash, C. L. & Williams, M. (2021). Three Decades of Climate Mitigation: Why Haven’t We Bent the Global Emissions Curve? *Annual Review of Environment and Resources*, 46(1): pp. 653–689. <https://doi.org/10.1146/annurev-environ-012220-011104>
- Sager, T. (2011) ‘Neo-liberal urban planning policies: A literature survey 1990–2010’, *Progress in Planning*, 76(4), pp. 147–199. doi:10.1016/j.progress.2011.09.001.
- Sizirici, B., Fseha, Y., Cho, C.-S., Yildiz, I., & Byon, Y.-J. (2021). A review of carbon footprint reduction in the construction industry, from design to operation. <https://www.ncbi.nlm.nih.gov/pmc/articles/>

- Sager, T. (2011) 'Neo-liberal urban planning policies: A literature survey 1990–2010', *Progress in Planning*, 76(4), pp. 147–199. doi:10.1016/j.progress.2011.09.001.
- Saiu, V., Blečić, I. and Meloni, I. (2022) 'Making sustainability development goals (SDGs) operational at the suburban level: Potentials and limitations of neighbourhood sustainability assessment tools', *Environmental Impact Assessment Review*, 96. doi:10.1016/j.eiar.2022.106845.
- Turok, I, Scheba, A & Visagie, J 2023, 'Rethinking urbanization and economic development: a synopsis', *ENVIRONMENT AND URBANIZATION*, vol. 35, no. 2, pp. 297–309, viewed 9 April 2024, <<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib,cookie,url&db=edswss&AN=00109487600001&lang=sv&site=eds-live&scope=site>>.
- Tomelilla Kommun. (2024). Så styrs Tomelilla kommun. Så styrs Tomelilla kommun | Tomelilla kommun.(Accessed: 2024-02-08).
- Tomelilla Kommun. (2024). Livskvalitetsprogrammet. Livskvalitetsprogrammet | Tomelilla kommun.(Accessed: 2024-02-10).
- The New York Times. (2021) Who Has The Most Historical Responsibility for Climate Change?. <https://www.nytimes.com/interactive/2021/11/12/climate/cop26-emissions-compensation.html> (Accessed 2024-04-24).
- Turok, I and G McGranahan (2013), "Urbanisation and economic growth: the arguments and evidence for Africa and Asia", *Environment and Urbanization* Vol 25, No 2, pages 465–482.
- Turner, R. A., & Wills, J. (2022). Downscaling doughnut economics for sustainability governance. *Current Opinion in Environmental Sustainability*, 56. <https://doi.org/10.1016/j.cosust.2022.101180>
- Turner, Rachel & Wills, Jane. (2022). Downscaling doughnut economics for sustainability governance. *Current Opinion in Environmental Sustainability*. 56. 10.1016/j.cosust.2022.101180.
- Tateishi, E. (2015). *Greenwashing and Capitalist Production of Urban Space: A case study in Iskandar Malaysia*, Lund University. <https://lup.lub.lu.se/student-papers/search/publication/5403348>
- Tateishi, E. (2015). *Greenwashing and Capitalist Production of Urban Space: A case study in Iskandar Malaysia*. Master's thesis, Lund University. <https://lup.lub.lu.se/student-papers/search/publication/5403348>
- Turner, R. A. & Wills, J. (2022). Downscaling Doughnut Economics for sustainability governance, *Current Opinion in*

- Environmental Sustainability, 56:101180.  
<https://doi.org/10.1016/j.cosust.2022.101180>
- United Nations, Department of Economic and Social Affairs Sustainable Development (2015).  
<https://sdgs.un.org/2030agenda>. (Accessed 2024-02-10)
  - United Nations, Climate Action. (2022). Greenwashing – the deceptive tactics behind environmental claims.  
<https://www.un.org/en/delegate/%E2%80%98zero-tolerance-greenwashing%E2%80%99-guterres-says-report-launch#:~:text=The%20report%20slams%20greenwashing%20%E2%80%93%20misleading%20and%20weak%20net%2Dzero%20pledges> (Accessed 2024-04-02).
  - Urban Times. (2016). Ten reasons cities need urban planning. <http://urbantimes.co/2013/07/ten-reasons-cities-need-urban-planning/>(Accessed 2024-02-04).
  - World Economic Forum, Climate Action. (2021). How to spot greenwashing – and how to stop it.  
<https://www.weforum.org/agenda/2021/05/how-spot-greenwashing/> (Accessed 2024-04-02).
  - World Bank (2013), Energizing Green Cities in South East Asia. Applying Sustainable Urban Energy and Emissions Planning, The World Bank, Washington
  - Ward, K. (2013) Researching the City: A Guide for Students. 1st ed. SAGE Publications. Available at:  
<https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,cookie,url,shib&db=cab60574a&AN=malmob.2088161&site=eds-live&scope=site> (Accessed: 11 January 2024).
  - WBCSD. (2021). World Business Council for Sustainable Development. <https://www.wbcsd.org/> (Accessed: 15 March 2024).
  - Weinstein, M. P., Turner, R. E., & Ibáñez, C. (2013). The global sustainability transition: it is more than changing light bulbs. Sustainability: Science, Practice, & Policy 9(1): pp. 4–15. <https://doi.org/10.1080/15487733.2013.11908103>
  - Weaver, Liz. (2016). Possible: Transformational change in collective impact. Community Development. 47. 1-10. [10.1080/15575330.2016.1138977](https://doi.org/10.1080/15575330.2016.1138977).
  - Pew Research Center. (2019). Despite global concerns about democracy, more than half of countries are democratic. <https://www.pewresearch.org/short-reads/2019/05/14/more-than-half-of-countries-are-democratic/> (Accessed 2024-01-26).
  - Wies, A. (2023). To Do or Doughnut: Defining the Limits of the Urban Safe and Just Operating Space. Licentiate thesis, Noragric, Faculty of Landscape and Society.  
<https://nmbu.brage.unit.no/nmbu->

[xmlui/bitstream/handle/11250/3081680/no.nmbu%3awiseflow%3a6866410%3a55030809.pdf?sequence=1](https://hdl.handle.net/11250/3081680/no.nmbu%3awiseflow%3a6866410%3a55030809.pdf?sequence=1)

## 8. Appendices

Through the two appendices below you can find the whole documents and data about the survey analysis and workshop implemented in Tomelilla. As DEAL mentions all the data are open access that anyone can use to turn Doughnut Economics from a radical idea into a transformative action.

**Appendix A:** Learning from the workshop, Tomelilla new school strategy and report,2024. Link:

[https://drive.google.com/file/d/1oByvNK\\_W-DI9KEFHRXyPOhkO2\\_IFMEZi/view?usp=sharing](https://drive.google.com/file/d/1oByvNK_W-DI9KEFHRXyPOhkO2_IFMEZi/view?usp=sharing)

**Appendix B:** Survey Analysis, Tomelilla new school strategy and report,2024. Link: [https://drive.google.com/file/d/16772-OrqURoUSOJPxGMaY6mm3l2\\_K9b8/view?usp=sharing](https://drive.google.com/file/d/16772-OrqURoUSOJPxGMaY6mm3l2_K9b8/view?usp=sharing)