CHALMERS
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Frameworks for sustainable development in the city of Gothenburg

A case study of sustainability frameworks and indicators within the area of the built environment

Master's thesis in Industrial Ecology Masters Programme

CAROLINA DAHLGREN CAMACHO
FRIDA SIMONSEN

Department of Architecture and Civil Engineering
CHALMERS UNIVERSITY OF TECHNOLOGY
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CAROLINA DAHLGREN CAMACHO

FRIDA SIMONSEN

Supervisor: Researcher Ulrika Palme, Department of Environmental Systems Analysis
Examiner: Professor Holger Wallbaum, Department of Architecture and Civil Engineering

Department of Architecture and Civil Engineering
Division of Building Technology
Building Physics Group
Chalmers University of Technology
SE-412 96 Gothenburg
Telephone +46 31 772 1000

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Abstract

The aim of this thesis was to examine the perceptions of using frameworks and indicators, such as Agenda 2030, for sustainable development within the area of the built environment, in the City of Gothenburg. The opinions of the interviewed stakeholders varied with regards to the need of using Agenda 2030 and the Sustainable Development Goals (SDGs) locally. Several interviewees meant that the municipality has an extensive amount of programs, and that Agenda 2030 should not be handled in a separate program. Therefore, it seemed to be preferred that the SDGs should be integrated in existing programs, or in financial control documents. Further, findings from literature showed that there is a lack of knowledge regarding sustainable development indicators (SDIs), and their impact on policy-making and to have better outcomes. However, a local adoption of Agenda 2030 requires adaptation of the global targets and indicators, to increase the relevance of the targets in local sustainability reporting and policy-making. All private companies included in this study were seen to have adopted Agenda 2030 for their operations. One of the reasons was by the authors suggested to depend on that organizations less complex than the municipal organization, face minor difficulties in the implementation, since they in comparison are less obliged to adopt the whole set of goals. Considering that studies have shown that the municipality already has strong steering towards sustainability, another implemented sustainability framework may be perceived as needless by politicians in the City Council and Committees. Conclusion regarding the research question, about defining the sustainable city, was that especially concrete targets and indicators are needed, else various actors involved with the built environment, will not follow the same desired path towards the sustainably built city. Furthermore, we the authors argue that SDG 11, in comparison to the national environmental quality goal 15 - god bebyggd miljö (a good built environment), better answer the question regarding the 'sustainably built city'. Furthermore, SDIs are needed as they provide guidance. There are some important things to consider when using indicators, such as that they are reflections of human values and never purely objective, that not everything is meaningful to measure, and that indicators purposed to assess sustainable development must be followed for a long time.

Keywords: Agenda 2030, SDG 11, mål 15 - god bebyggd miljö, sustainable cities, sustainable development indicators, indicators, Gothenburg, building sector, built environment

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CAROLINA CAMACHO & FRIDA SIMONSEN, Gothenburg, May, 2020

Contents

Acronyms

LCA - Life Cycle Assessment

MDGs - Millennium Development Goals

NUA - New Urban Agenda

PM - Particulate Matters

UN - United Nations

UNCED - United Nations Conference on Environment and Development

UNCHE - United Nations Conference on the Human Environment

UNCHS - United Nation centre for Human Settlements

SCB - Statistics Sweden

SDI - Sustainable Development Indicator

SDGs - Sustainable Development Goals

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Foreword

Considering the increased adoption of sustainability frameworks nationally, we wanted to assess the current situation in the City of Gothenburg. Further, we wanted to look into what potential these frameworks have to contribute to sustainable development, where indicators play an important role. Also, the built environment constitutes so much of human lives, places to live, work and thrive. On the other hand cities are facing a lot of challenges related to climate impact, resource efficiency and segregation. This makes it an important area in every aspect of sustainability. In conclusion, this resulted in a Master Thesis that combined our interests in sustainability with the building sector.

1

Introduction

The Brundtland report published in 1987, introduced the concept of sustainable development defined as - *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (WCED, 1987). Sustainable development was however a topic of global discussion before 1987. In 1972 the first global environmental conference, The United Nations Conference on the Human Environment (UNCHE) was held in Stockholm, it's main outcome was the Human Environment program; this is known to be the starting point of Sustainable Development (United Nations, 1972) (Handl, 2012). The perspectives on development have changed throughout the history, and the past years nations have reached consensus that the world's development should be sustainable (United Nations, 2020a).

To attain sustainable development governments of the world have continuously held summits to develop agendas and goals. During the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro 1992 the agreements of Agenda 21 were reached proposing action globally, nationally and locally to manage human impact on the environment (United Nations, 1992). Eight years later in 2000 the United Nations Millennium Summit agreements were made on measurable and time-bound goals, the Millennium Development Goals (MDGs) (WHO, 2015). Comprising of eight goals handling issues regarding environmental degradation, disease, hunger, illiteracy, poverty, and discrimination against women aimed to be achieved by 2015 (WHO, 2015). The MDGs did however, receive criticism for being compiled by officials at United Nations (UN) without inputs from actors outside the organization, and for that they focused dominantly on developing countries (FN-förbundet, 2016). Lessons were learned and the development of a new global framework - Agenda 2030, with 17 Sustainable Development Goals (SDGs) addressing social, ecological, and economic aspects of sustainability, was done in collaboration between the UN, national officials, and experts from various sectors and countries (United Nations, 2020b).

One of the goals, SDG 11 - sustainable cites and communities, capture that nations shall manage their cities sustainably, seeking to make the urban environment inclusive, safe and resilient (United Nations, 2015). In addition to SDG 11, the *New Urban Agenda* (NUA) framework for sustainably developing cities, was accepted at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) accentuates good urbanization, development, sustenance opportunity, job creation and the improved quality of life. According to United Nations (2017)

the NUA has clear connection to Agenda 2030 and SDG11, and intends to enhance the work towards a sustainable future. According to United Nations (2015) cities play an important role when it comes to making progress on the SGDs. Today approximately half the global population lives in cities and which by 2050 is projected to increase to 70 % (United Nations, 2020c).

Cities have throughout history been the centre of communication, culture and commerce. Presumably cities will continue to be the center of these activities in the future (C40, 2019). Cities and urban settlements serve several other functions as well, as they *a)* are intermediates between national governments and citizens and *b)* are where national and EU legislation and international commitments is translated into concrete action (Global Taskforce of Local and Regional Governments, 2016); *c)* have the insight of local problems and potential capability to address them. The benefits from urbanization, people moving to cities, are more opportunities for jobs and better utilization of infrastructure. The problems with expanding cities comprise of socioeconomic inequalities, inadequate housing and the emergence of slum areas due to rapid urbanization (Geng, Fujita, Bleischwitz, Chiu, & Sarkis, 2019). As cities emerge negative environmental impacts such as increased noise and air pollution follow (Naturvårdsverket, 2020). According to C40 (2019), cities in developed countries have roughly said similar challenges which are, greenhouse gas emissions within transport, public lighting, waste management, and energy. Since cities are distinguished in terms of size, geographical location, structure, wealth, economy, availability of resources, and ecological impact, their challenges and potential management of unsustainable practices will be different.

The goal to have sustainable development in cities is emphasized by the national government through agreements of Agenda 2030 and the SDGs (Regeringskansliet, 2018). Though the actual implementation of the framework varies among national municipalities and regions. Gothenburg has for instance been said to have a less coordinated strategy for the implementation of Agenda 2030 compared to Malmö and Stockholm (Valencia, 2019). The city of Malmö has further proposed their *"Declaration of Cities Commitment to the 2030 Sustainable Development Agenda"* comprising of a strategy to accelerate the implementation of Agenda 2030 to the building sector (LFM30, 2020). The region of Västra Götaland follows the global pattern of increased urbanization, where Gothenburg with above half a million inhabitants is expected to have a population increase of 22 % by the year 2040 (Västra Götalandsregionen, 2019). Considering that Gothenburg is the second largest city in Sweden, and is expected to grow notably the decades to come, the building sector needs to take social, economic and environmental aspects of development into consideration. Since the building sector contributes to approximately 19 % of the total greenhouse gas emissions, and 37 % of the total energy consumption in Sweden, challenges are certainly present in the expansion of Swedish cities (Boverket, 2020e) (Boverket, 2020a). Issues from city planning and development of the built environment arise as land is being transformed. Buildings and infrastructure consumes energy, raw materials and have implications on human well-being throughout their life cycles. Thus impact on the SDGs can be found through all phases, city

planning, urban construction, the use of buildings and infrastructure and their end of life. Stakeholders involved in the building sector need to put effort in decreasing the environmental footprint from construction, and at the same time enable thriving urban environments to meet the goal of human well-being. Since the building sector also has impacts on society through job creation, affordable housing, waste management, biodiversity, economic development, climate impacts and energy use, it plays a major role in the context of sustainable development. There are two frameworks that addresses the goal of sustainably built environment nationally, one being the fifteenth national environmental quality goals - god bebyggd miljö (a good built environment) and the other being the global Agenda 2030 and SDG 11 - sustainable cities and communities (Sveriges miljömål, 2020) (United Nations, 2015). Because of the recent national agreements on the SDGs and relatively short time for when the they are to be achieved, development of an ambitious, strategic, and feasible plan must be put in place as soon as possible.

1.1 Aim

Goals and targets related to sustainable development in cities, and specifically sustainably built environment, are increasingly stressed on various levels of government. Agenda 2030 and SDG 11, as well as the national environmental quality goal 15 - god bebyggd miljö (a good built environment) are both trying to address this issue. The aim of this thesis is thus to examine the perceptions of using sustainability frameworks such as Agenda 2030, among stakeholders in the City of Gothenburg, that play a role in the progress of national, regional and local sustainability goals. Further, the study aims to surface the different perspectives of the *sustainable city* and the use of indicators purposed to enhance sustainable development within the area of the built environment.

1.2 Specification of the issue under investigation

As a part of the overall aim the following questions are to be answered,

- What are the local preconditions and challenges as well as the prioritized measures, such as political, financial or procedural according to local stakeholders, to support the work on sustainable development within the area of the built environment?
- Is there a need for a framework such as Agenda 2030 in the municipality? If so, how could the municipal organization be supported in the implementation of it?
- Could an organization such as a *sustainability council* support the municipal work with sustainable development?
- How do political mandate periods and short term goals work with long-term visions and goals as in Agenda 2030?
- What stakeholders, be individuals, companies or municipal organizations or others, play a major role when it comes to reaching the city's sustainability

goals?

1.3 Delimitations

The following section presents the limitations that has been made for the thesis,

- The study will focus on the city of Gothenburg and its built environment referring to public spaces such as parks and green areas, the existing building stock, planned buildings, and transportation infrastructure.
- In this study, 'building sector' refers to the construction and building companies. The terms 'area of the built environment' and 'stakeholders involved with the built environment' refers to all actors that could influence or are influenced by activities in the building sector, i.e private and public companies, politicians and municipal administrations as well as the academia.
- Besides authorities such as those responsible for city planning and urban development, other actors that appeared to be relevant are included in the study. Relevant stakeholders will be identified through snowball sampling.
- The study will touch upon social, economic and environmental dimensions of sustainability since all are crucial for sustainable development.
- The relatively short time frame for when this study was to be conducted, limited the amount of interviews. In total 16 interviews were held.

2

Theoretical Background

This chapter aims to provide the reader with knowledge about the past and present frameworks purposed for enhancing and assessing sustainable development in cities. The chapter is structured in a way that international sustainability frameworks and the historical background are briefly covered, followed by the national applied frameworks. Furthermore, this chapter provides the basis for where the case study, with particular focus on the City of Gothenburg, will supersede.

2.1 International sustainability frameworks on the level of cities

Sustainable development is not a static condition but rather a continuous work on how to manage our societies. According to United Nations (2013) sustainable cities is a broad concept that combines environmental management, economic development, social development and urban governance. Additionally, the combined areas refers to decisions of investments and management of cities by the municipality together with national authorities and institutions (United Nations, 2013). In the sustainable cities program established by United Nation Centre for Human Settlements (UNCHS) in 1991, the definition of a sustainable city was formulated as - *"where achievements in social, economic and physical development are made to last"* (United Nations, 2013). According to Rees (1992) this general definition was too vague, adding that a sustainable city needs to have a low ecological footprint while reducing the risk for displacement of this to other locations. Additionally, Satterthwaite (1992) meant that *"sustainable cities should meet their inhabitants' development needs without imposing unsustainable demands on local or global natural resources and systems"*.

In 1992, the United Nations (UN) held the Rio de Janiero Conference on Environment and Development (UNCED) resulting in the *The 1992 Rio Declaration*. During the conference the governments tried to address the concept of city sustainability by integrating environmental, social, economic and governance dimensions of sustainability. The declaration brought up that unsustainable production and consumption alongside poverty need to be eliminated (United Nations, 2013). The declaration stated that the civil society, the government and international communities have a role in the protection of the environment according to the declaration. The Agenda 21 framework was also established during the UNCED, where the aim was to strengthen the work for sustainable development by integrating environmen-

tal, social, economic and governance aspects due to challenges in the 21^{th} century (UNSD, 1992). Agenda 21 did however not contain any formulation about sustainable cities *per se*, though brought up the importance of authorities and the civil society on the local, national and international level in terms of political implementation for sustainable development (United Nations, 2013).

The second UNCHS was held in Istanbul (1996) resulting in the Habitat Agenda framework that discussed urban sustainability as a conjoined integration between the environmental, social and economic issues (United Nations, 2003). During the conference, nations shared and discussed their progress on sustainable cities and further concluded that climate change is an important area of societal development and building sustainable cities (United Nations, 2013). In the World Economic and Social Survey United Nations (2013) providing analysis of the outcome of the United Nations Conference on Sustainable Development (Rio+20), following formulation about sustainable cities were made:

> *"In an increasingly urbanized world which demands more sustainable ways of living, urban governance entails the fostering of urban planning and environmental management, which includes the reduction of ecological footprints, and the decentralization of decision-making, and resource allocation, as well as enhanced policy coordination between local and national authorities"*

This framework presented four pillars that would contribute towards achieving sustainable cities such as, urban governance, social development, environmental management and economic development (United Nations, 2003).

By 2016, Agenda 2030 and the SDGs had been developed to supersede the MDGs and provided a more comprehensive set of goals and targets with corresponding indicators. The goals and targets in this framework were developed in consultation with experts from various sectors, and agreed upon among national governments. The 17 goals and 169 targets have been said to be interrelated, indivisible, and seeks to balance all dimensions of sustainability - social, economic and ecological (United Nations, 2015). Further, the SDGs have been structured in a way that implies that no goal is more important than another to reach sustainability. In contrast to the MDGs, Agenda 2030 and more specifically SDG 11, constitutes the subject of *sustainable cities* (United Nations, 2015). This goal, being the only SDG with a territorial dimension, is stated as - *"to make cities and human settlements inclusive, safe, resilient and sustainable"*, and has been assigned following targets,

- 11.1 Safe and affordable housing
- 11.2 Affordable and sustainable transport systems
- 11.3 Inclusive and sustainable urbanization
- 11.4 Protect the world's cultural and natural heritage
- 11.5 Reduce the adverse effects of natural disasters
- 11.6 Reduce the environmental impact of cities
- 11.7 Provide access to safe and inclusive green and public spaces

One of the indicators coupled to target 11.1 - By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums is formulated as, *"11.1.1 - Proportion of urban population living in slums, informal settlements or inadequate housing"*. Some of the indicators assigned target 11.3 - Inclusive and sustainable urbanization is formulated as *11.3.1 Ratio of land consumption rate to population growth rate* and *11.3.2 - Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically*. On the contrary, SDG 11 may be seen as an overarching goal where a number of other goals need to be fulfilled to have sustainably developing cities. Cities may for instance also have an impact on,

- SDG 3 - Ensure healthy lives and promote well-being for all at all ages with target
  - 3.9 - By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

- SDG 6 - Ensure availability and sustainable management of water and sanitation for all
  - 6.4 - By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

- SDG 7 - Ensure access to affordable, reliable, sustainable and modern energy for all and target
  - 7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix (United Nations, 2015).

The goals, their targets and indicators was developed to be universally applicable to enable cross-country comparisons (United Nations, 2015). The differing physical preconditions and level of social and economic development among nations, impose that localization and adjustment of the SDGs and indicators to be nationally relevant are needed.

2.2 National sustainability frameworks on the level of cities

The former national goal addressing sustainably developing cities is one of the national environmental quality goals, goal 15 - god bebyggd miljö (a good built environment). As earlier mentioned, the national agreement has agreed upon Agenda 2030 where the subject of sustainably built cities is also covered. These two frameworks, their goals, targets or milestones, and indicators are to be presented in the section below.

Goal 15 - God bebyggd miljö (A good built environment)

In 1999 the Swedish Parliament agreed on 15 national environmental quality goals (Rangstedt, 2019). Later in 2005, a sixteenth goal were added (Naturvårdsverket, 2019b). The goals form the basis for the national environmental policy and aims to provide long-term targets for the environmental work. They intend to guide authorities, county administrative boards, municipalities, business and other relevant stakeholders (Naturvårdsverket, 2019b). The fifteenth goal addresses the subject of a sustainably built city that is:

> *"Cities, agglomerations and other built environment shall constitute a good and healthy living environment and contribute to a good regional and global environment. Nature and cultural values must be utilized and developed. Buildings and facilities must be located and designed in an environmentally sound manner so that a long-term good management of land, water and other resources is promoted"* - (Naturvårdsverket, 2019b).

For measuring the progress on the goal Sveriges miljömål (2020) has developed four indicators which are,

1. Bostäder i kollektivtrafiknära lägen (Housing close by public transport)
2. Bygg- och fastighetssektorns miljöpåverkan (The environmental impact of the construction and real estate sector)
3. Skyddad bebyggelse (Protected buildings)
4. Tillgång till service och grönska (Access to service and greenery)

The national government has further decided on ten clarifications that are used in the continuous work on follow-up - *"sustainable settlement structure, sustainable city planning, infrastructure, public transport, walking and cycling, nature and green areas, cultural values in built environment, good everyday environment, health and safety, sustainable energy and natural resources and sustainable waste management"* (Boverket, 2019d). In the goal description it is stated that national challenges are increased population and need of housing. According to Naturvårdsverket (2019b), the solution to meet the social and environmental challenges of urbanization is to construct a denser city. By constructing a more dense city one could (theoret-

ically) decrease energy consumption, better utilize existing transportation infrastructure and lessen exploitation of land purposed for agricultural production. On the other hand, a city with a high degree of exploitation causes problems such as noise, limited access to daylight and worsened air quality (Naturvårdsverket, 2019b). Naturvårdsverket (2019b) argue that for minimizing the conflicts coupled to a more dense constructed city, politicians need to make clear political considerations and position themselves for these matters. Boverket is the responsible authority for follow-ups on this goal and as for current situation the goal is not reached by 2020 (Naturvårdsverket, 2019b).

Sustainable Development Goal 11

The national government has agreed upon adopting Agenda 2030 and the SDGs. Sweden may have reached a relatively high level of wealth and human well-being, the national (and international) challenges are though related to global climate and environmental problems, equal level of health and possibilities for life long learning (Regeringskansliet, 2018). The purpose with the adoption of Agenda 2030 is to facilitate various actors and their contribution to the transition, and to empower the politics that the government is pursuing for sustainable development. The justification for adopting the new framework is that it could:

> *"provide the power to change, engage younger generations and stimulate for new collaboration and initiatives; enable comparability between international countries; the common ground of language; and points of reference for individuals, small and large companies, national departments and academia, are highlighted as added benefits"* - (Regeringskansliet, 2018).

The framework is further legitimized through the establishment of an Agenda 2030-delegation, intended to support the implementation and coordinate the work on sustainable development. The main task for the delegation will be to anchor the framework nationally, and hold broad participating dialogues about sustainable development together with municipalities, counties and regions (Regeringskansliet, 2018). The national government further recognizes regions, cities, in business and other stakeholders and their contribution as important (Regeringskansliet, 2018). Since Agenda 2030 is not mandatory to use as a basis for governance or as a tool for sustainability reporting, municipalities and regions individually determine how to approach sustainable development. In 2017, the amount of municipalities and regions that had integrated the SDGs in programs, plans or other policy tools were 103 (out of 290) and 9 (out of 20) respectively (Statskontoret, 2019). To support and ease a stronger engagement on regional and local level the national government published the *Agenda 2030 Action-plan for 2018-2020* presenting six thematic areas in particular focus together with four key factors for the implementation. The aim with the action plan is further to get Agenda 2030 to acquire a stronger anchoring in the parliament by establishing a system for continuous follow-up of the implementation.

Statistics Sweden (SCB) is deputised the task to analyse the current situation in Sweden, and contribute with proposals on how to statistically measure the progress on the SDGs. They are responsible to coordinate the development and production of indicators and to make them available to organizations, governments and other concerned stakeholders (Regeringskansliet, 2018). The purpose with the indicator follow-up is to provide transparency and that decisions and policy-making can be done based on evidence and profound analysis. As stated by SCB (2020), many of the indicators related to SDG 11 are already in place for statistical follow-up on both global and national level. Some indicators have though been further developed, as for instance target 11.1 - *11.1.1 - Proportion of urban population living in slums, informal settlements or inadequate housing*. This is thus complemented with an indicator on proportion of households living in overcrowded housing (SCB, 2020). SCB (2020) further states that there are no current national indicator taking homelessness into account, since no such official statistics are available. However, the National Board of Health and Welfare (Socialstyrelsen) has done a mapping each sixth year of the amount of homeless people. The definition of homelessness as used by the authority, is stated as people in urgent homelessness, people that lack housing after institutional residence, short-term residence in family, relative or other private peoples housings and private people on the secondary housing market (SCB, 2020). This accentuates that collaboration between SCB and other organizations responsible for collection of national data, is important in the national system of indicator development and production. Next chapter will shed light on the current situation of the City of Gothenburg and its governance for sustainable development.

3

Case study

In this chapter, Gothenburg with it's site-specific environment and preconditions is handled. Firstly, the governance system is described in order to understand the municipal organization - the *City of Gothenburg*. Additionally, an organizational scheme is showing how the municipal organization and sub-organizations are organised. Secondly, the chapter will present the current state of how the city is working with the SDGs 11 and the national environmental goal 15 - god bebyggd miljö (a good built environment). Thirdly, all the interviewed stakeholders will be introduced in a table together with their professional background.

3.1 City of Gothenburg

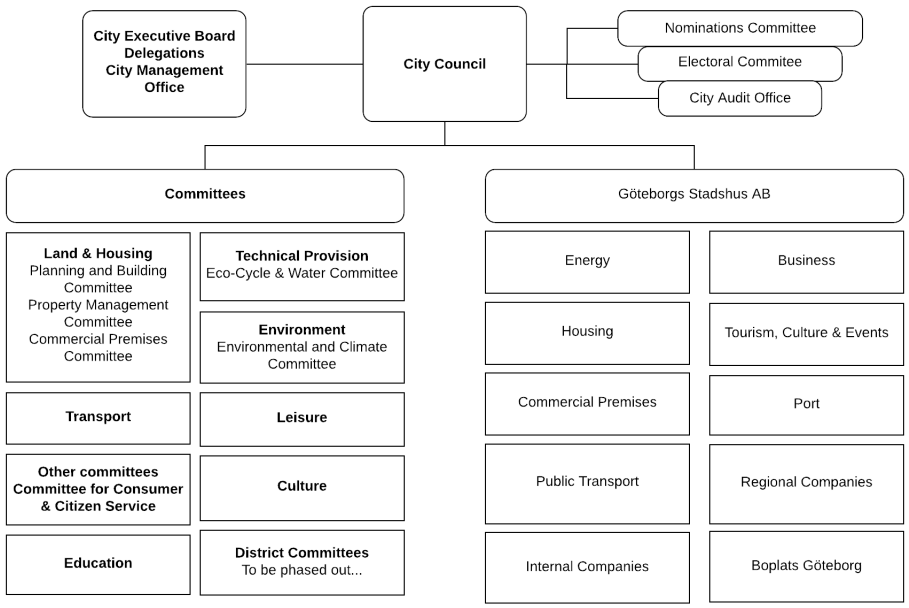
3.1.1 The governance system

The primary decision-making body of the *City of Gothenburg* is the City Council consisting of politicians elected every forth year. The City Council elects the City Executive Board with the responsibility to lead and coordinate the work in the City Committees (nämnder) and Administrations (förvaltningar), and answers for the municipal economy. The City Executive is an organizational branch that supports the City Executive Board, and carries out assessments of what has been determined upstream in the municipal organization. The City Administrations are divided thematically and are comprised of the City Planning Authority, the Traffic & Public Transport Authority, City Premises Administration, the Real Estate Administration, the Environmental Administration among others, as shown in figure 3.1. Göteborgs Stadshus AB is the owner of all public companies and consists of a CEO, approximately ten coworkers and a political board where all the members are included in the City Executive Broad Delegation (Göteborgs Stad, 2020a). Regarding the area of the built environment, responsibilities of city planning and development of site and local plans are upon the City Planning Authority, and responsibilities of planning of traffic and public transportation are upon the Traffic & Public Transport Authority (Göteborg Stad, 2020a).

According to the municipal law, the governance in a municipality is grounded in the decisions, be they of principal or goal character, made by the City Council. The elected politicians have the possibility to suggest, decide and implement measures aligned with the political will in the city. The City Council's primary governance tool is the annual budget, and what is prioritized and emphasized here will have con-

sequences for all Committees, Administrations, public companies and their Boards. Committees also have the mandate to adopt steering documents related to their area of responsibility, which have implications on the work carried out in the administrations. Examples of these programs are *Equal Gothenburg*, the *Business Strategic Program* and the *Environment and Climate Program*. Often several Committees and Administrations are involved in the development of programs, where the programs are sent out for referral to concerned organizations. The term governance documents is an umbrella term, and further refers to the regulatory documents, that affect what the Committees, Administrations, public companies and Boards *ought* do and *how* it is going to be done (Göteborg Stad, 2020a).

Figure 3.1: Chart presenting how the *City of Gothenburg* is organized



3.1.2 Steering for a sustainably developing Gothenburg

In this section, some of the current governing documents such as the annual budget, programs and goals in the *City of Gothenburg* are to be presented. A brief description is made about the current situation in the city, in terms of social, environmental and economic challenges stated by the local government. This is followed by presentation of the locally adopted goal 15 - god bebyggd miljö, and presentation of the current status of Agenda 2030 and the local adaptation is made. Further, one of the municipal programs, the *Environment and Climate* program is brought up since it was found that the structure of the program has similarities with Agenda 2030 and the SDGs. Lastly, the planning process is to be explained to create a basic understanding on how the process of developing the built environment is carried out.

The municipal budget

In the 2020 budget, one challenge is said to be segregation and people in alienation. Another major challenge is related to global climate change and environmental footprint by humans, where one related issue needed to be managed is the mobility, since this to great extent is met by fossil fuel vehicles. One challenge related to economy is said to be the demographic changes of increased proportion of elderly citizens, and that fewer people need to support more people. A local environmental challenge is related to increased population utilizing natural resources, and hence that existing green areas are exposed to much wear and tear. To meet the current expansion of the city, the government aim to construct the city densely, sustainably and thriving. The current shortages of housing need to be managed through providing more dwellings such as co-operative and rented apartments, small houses, dwellings for students and elderly, preschools and schools (Göteborgs Stad, 2019).

Goal 15 - god bebyggd miljö (a good built environment)

As exemplified in the description of the budget, the area of the built environment can be coupled to several of these challenges. To handle sustainable development of the built environment, the *City of Gothenburg* has adopted twelve goals based on the national environmental quality goals and more specifically, goal 15 - god bebyggd miljö (a good built environment). The aim with this goal is to provide a good living environment where resources are used in a sustainable way (Göteborgs Stad, 2020c). According to Göteborgs Stad (2020c), the goal is difficult to achieve since it is comprehensive, including many aspects of the urban environment. In addition, the city should contribute to regional and national growth (Göteborgs Stad, 2020c). To achieve the goal the intentions stated in the site plan needs to be followed, which are to built where the connections to public transport already exists, and to be restrictive with building on green areas. Several other programs need be followed as well, such as, the *Site* plan, *Environmental* program, the *Action plan for decreased noise*, the *Traffic* strategy, the *Green* strategy, the *Extension construction* program, the *Bicycle* program and the *Climate strategic* program (Göteborgs Stad, 2020d). One of the local strategies is to build the city from the inside out and that densification should be performed in the areas with descent public transport. The city encourages the idea of densification, since it is a way of utilizing existing infrastructure and manage resources efficiently. Subsequently (and theoretically) the use of personal car transportation can be decreased and hence decrease the climate impact. On the other hand, the strategy needs to be followed without contribution to noise, worsened air quality and losses in the existing cultural and natural values (Göteborgs Stad, 2020c). The four milestones and indicators that could contribute to achieve goal 15 by 2020 are presented as:

1. Attraktiv bebyggelsestruktur (Attractive settlement structure) - (no concrete indicator presented on the *City of Gothenburg* webpage)
2. Minskade avfallsmängder och ökad resurshushållning (Reduced waste volumes and increased resource management) - the aim is to lower the household waste to less than 453 kg/person
3. God inomhusmiljö (Good indoor environment) - the annual mean radon values should be lower than 200 Bq/m^3 air
4. God ljudmiljö (Good sound environment) - 90 % of residents should have a outdoor level at 60 dBA equivalent level at exposed facade, 95 % of preschools and primary schools should have maximum 55 dBA equivalent level (at the play areas) and the city parks should have less than 50 dBA equivalent level (Göteborgs Stad, 2020c)

In the 2017 follow-up on the indicators showed that milestone 1) was possible to reach with more measures, though the trend is neutral, 2) may be reached and the trend is positive, 3) may be reached and the trend is positive, 4) is difficult to reach and the trend is neutral. The strategy for achievement of the goal is stated to be more coordinated work with physical planning which is to be developed after 2020, with opportunities to reach the goal by 2035. In comparison with the original national environmental quality goal 15, the targets have been adjusted and includes only some of the goal specifications where for instance the target of housing close by public transport is left out. Regarding what indicators are used and how the assessment of an 'attractive settlement structure' is made is however not possible identify (Göteborgs Stad, 2020c).

Agenda 2030

In contrast to Malmö and Stockholm, there has not been any political decision made with regards to an implementation of Agenda 2030, in the City of Gothenburg (Valencia, 2019). The City Management Office in Gothenburg did though present an evaluation on how the municipality could integrate Agenda 2030 in the existing governance system (Stadsledningskontoret, 2018). The assessment aimed in part to identify what Agenda 2030 targets and indicators that were managed in the governing documents. Findings showed that 100 of the 169 targets had a connection with the current goals in the municipality. The conclusion was therefore that there were a strong connection, at least at the goal level, between the SDGs and the municipal goals (Stadsledningskontoret, 2018).

Even in the absence of a local political agreement of an Agenda 2030 implementation, the framework is starting to flow into some of the sub-organizations in the municipal organization (Valencia, 2019). The City Management Office said that the advantages of using this framework are the common ground of language, that organizations can start communicating their sustainability work to the rest of the world, that the goals are universal and can be used for reporting and communicating on local and national levels, and within public and private organisations (Stadsledningskontoret, 2018). The Committee for Consumer & Citizen Service has been assigned the task

to develop tools and methods for using Agenda 2030 in operational planning, as well as for other political assignments (Stadsledningskontoret, 2018). According to Stadsledningskontoret (2018) these tools can provide clearer connections between internal goals and strengthen the couplings between Administrations, Committees, and the operations in the municipality. For what is known to us authors, this tool has not yet been made available.

According to Valencia (2019), definitions of target indicators varies among national organizations. As an example, SDG 11 has by RKA (Rådet för främjande av kommunala analyser - Council for the Promotion of Municipal Analysis) (2020), been suggested to include an indicator of demographic dependency ratio (demografisk försörjningkvot). This indicator is not included in the indicator set used by SCB. Another difference is related to target indicator 11.1.1, about inadequate housing. Apparently, RKA, SCB and the *City of Gothenburg* all use different definitions of what overcrowded housing is (Valencia, 2019). This shows that there are disparate meanings of the appropriate way to define people living in inappropriate housing conditions. Further, Valencia (2019) meant that the *City of Gothenburg* has focused more on producing indicators based on current available statistics, instead of the most suited indicators for particular SDGs. The assessment made by Valencia (2019) about the target indicators and their 'status' in the city of Gothenburg, can be found in Appendix A.3.

The Environment and Climate program

According to one interviewee municipal programs rarely states explicit targets or time frames, such as *"decrease levels of this emissions from this levels - to this level"* - G. Persson (2020). The new *Environment and Climate* program to be adopted in 2021, though contain goals, sub-goals and indicators for each goal level. The program is structured so that each theme - *Nature*, *Climate* and *Human* and their main goals - *"Gothenburg is rich in biodiversity"*, *"The climate imprint of Gothenburg is near zero"* and *"The Gothenburg citizens have a healthy environment to thrive in"* are broken down into sub-goals. The program also delegates key actors for each sub-goal such as concerned municipal Committees and Boards, which will be responsible for the goal fulfillment, and those that will be responsible and co-responsible *for strategies* are as well pointed out. The program states that the actions needed to meet the new goals are of a cross-sector collaborative nature, where both municipal organizations and external organizations must cooperate. The Environmental Administration answers for follow-up each second year, on both the progress on goals and the implementation process, and data is gathered continuously during the period of the program's validness (2021-2030). The program further relates the goals to other governance documents and legislation such as Agenda 2030, the Paris agreement, EU Directives and the Environmental Code (Miljöbalken) (Göteborgs Stad, 2020b). The aim is for the City Council to agree on a final version of the program by the end of this year (Näslund, 2020).

City planning and city construction

Nearly all processes of physical planning in Sweden is managed by the municipalities, which aims to be an open, transparent and democratic process, where different societal interests and individual rights are taken into consideration (Boverket, 2020d). The City Council is important when it comes to the planning and construction process, because they decide whether a plan should be conducted or adopted, and handles the process of consultations and revisions. However, in cases where the plans are not of a principal character or particular interest for the City Council (in accordance with the Planning and Building Act) the Planning and Building Committee could adopt local plans (Göteborg Stad, 2020b).

According to, Boverket (2019c) the building developer is responsible for using the correct construction product for each projects. In Sweden there is specific demands and requirements of the products, and these requirements can be found in implementing regulations from authorities, for example Boverket's building rules (Boverket, 2019c). The building developer is also responsible for the performed construction, and that laws and regulations are followed in the Planning and Building Act, the associated regulation, the building rules provided by National Board of Housing, and other regulations (Mittbygge, 2020). During the construction process different stakeholders manage different areas in the projects. For example, the municipal Planning and building Committee manages questions for individual cases, while the national government decides upon the planning and building ordinance. The Planning and Building Act is decided by the national government and the National Board of Housing develops regulations and general advice within the construction sector (Boverket, 2019f).

3.1.3 Interview stakeholders

Interviews have been held with 16 candidates representing some of the stakeholders from the industry, academia and the municipality. The thesis is mainly based on the conclusions and finding from the interviews.

Table 3.1: Interviewed people and their professional background

Name	*Interview Date*	*Professional Background*
Gunnar Persson	12 Feb 2020	Currently works with housing development at Framtiden Byggutveckling AB. Formerly employed as head of the planning department at the City Planning Authority in Gothenburg. Involved in a project on how municipalities implemented Agenda 21. Educational background in Architecture.

Name	*Interview Date*	*Professional Background*
Paula Femenías	24 Feb 2020	Currently works as an Associate Professor at the Department of Architecture and Civil Engineering at Chalmers. Conducts research focusing on sustainable development of the built environment. Has a MSc and PhD in Architecture from Chalmers.
Sara Pettersson	2 March 2020	Since five years been working with climate and environmental related questions, coordination, monitoring and Project Management at the City Executive Office. Has been working in the public sector throughout her professional career. Earlier worked with questions related to waste management at the City Administration. Educational background in Ecological Economy.
Gunilla Dörner Buskas	5 March 2020	Has been working as a Director of Sustainability at Göteborgs Stadshus AB since 2019. Earlier worked as a Development Executive for issues related to sustainability and management, and as a Municipal Executive assistant in the municipality of Ale. Has had politics as a hobby with a special interest in socially related questions. Education in Science of Law.
Karin Meyer	5 March 2020	Since three years been working as a Environmental Investigator at the Environmental Administration with questions related to biodiversity, environmental protection and observation and the development of site plans. Has worked in four municipalities with city planning and environmental administration, creation of natural reserves and development of policy documents for biodiversity. Studied Biology at the University of Gothenburg.

Name	*Interview Date*	*Professional Background*
Kristina Mjörnell	6 March 2020	Since six years been working as the Vice President of the Business and Innovation area of Sustainable cities and communities at RISE and Adjunct Professor in Building Physics at Lund University of Technology. Since sixteen years been working as a researcher at RISE. Earlier worked as a consultant at Scandia and White Arkitekter. MSc and PhD in Civil Engineering at Chalmers.
Eva Pavic	12 March 2020	Since seven years, been working at Johanneberg Science Park AB with urban development projects. Earlier worked at Tillväxtverket and the municipality of Kungälv. MSc i Ethnology and Culture studies and has studied International relations, EU administration and project management.
Anna-Johanna Klasander	12 March 2020	Currently works as a Director of Research and Development at White Arkitekter AB and in parallel at Chalmers Department of Architecture and Civil Engineering. Has worked at the City Planning Authority for three years. After that started at White Arkitekter AB and has been there since 2008. Educational background in Architecture at Chalmers followed by a PhD within Urban Design and Planning.
Nina Wolf	13 March 2020	Has been working at the Committee for Consumer and Citizen Service since 2016. Since 1997, been working at the Environmental Administration as an environmental investigator with urban planning, system manager, the Waste and Water Administration, and at Ecocentrum. Has studied Environmental Science at the University of Gothenburg.

Name	*Interview Date*	*Professional Background*
Ulf Östermark	2 March 2020	Currently works at Castellum as Development Manager for the project at the former airport site "Säve" - which according to the site plan is to be developed into an area for commercial and logistic purposes. Previously worked as Research and Development Manager at Förvaltnings AB Framtiden. Most of his previous work has been related to sustainability issues. Educational background in Chemical Engineering at Chalmers with a PhD in chemical environmental science.
Malin Östblom	24 March 2020	Since three years been working as an Environmental Strategist at Traffic & Public Transport Authority. Earlier worked as an Environmental Coordinator and Environmental Strategist in both private and public sector. Has been an Environmental Coordinator for the municipality for fourteen years and at the City Premises Administration. Studied Environmental Science at the University of Gothenburg.
Anna Säfsten	24 March 2020	Currently works as a manager of Environmental Strategists at Traffic & Public Transport Authority. Has been working as a manager since eleven years within the public sector. Studied and worked as an Environmental Inspector.
Charlotta Brolin	25 March 2020	Currently works as a Sustainability Specialist at Riksbyggen AB and been working there since twelve years. Earlier worked as an Environmental Consultant, and after that as a Technical Manager and part time with Environment and Quality at Riksbyggen AB. Has been an Environmental Coordinator, and then Project Manager of the area of reconstruction, combined with sustainability related questions at half time. Studied Environmental Engineering at the University of Kalmar.

Name	*Interview Date*	*Professional Background*
Ulf Moback	26 March 2020	Since twenty years been working with climate adaption as a Climate Strategist at the City Planing Authority. Has worked in the city for almost forty-one years, started on the Park and Landscape Administration in 1979 and then moved to the City planning Authority in 1991. Has been involved in the development of the site plan in 1993, 1999, 2009 and the one being adopted 2021. Has worked with local plans and moved to the strategic level later. Educational background in Landscape Architecture.
Henrik Levin	27 March 2020	Since five years been working as an Executive and Planning Leader at the City Executive Office with questions related to urban development. Has worked with development of local plans in the public sector and as a consultant. Studied Architecture at Chalmers.
Mikaela Lenz	1 April 2020	Since three and a half years been working as a Sustainability Strategist at Västfastigheter at the Region of Västra Götaland. Since 2008 been working with energy and environmental questions in mostly public organizations and mainly with hospital properties. Studied Energy Systems Engineering at Uppsala University.

4
Method

The project has been conducted from the end of January to the end of May in 2020. To conduct this study there has been a combination of methods with the intention of broadening the perspectives on the issue. Documents and scientific literature were studied to acquire information from municipal steering documents and to gain more in-depth knowledge about the research questions. In addition, a case study was performed consisting of interviews, making it dependent on contextual information that cannot be acquired through literature studies.

4.1 Literature study

A literature review was made to gain knowledge about previous work regarding the subject and identifying the information gaps. This was the starting point of the thesis, and provided guidance for the more in-depth literature studies that were to be done throughout the study. Relevant scientific literature was found through the following databases, selected due to their perceived legitimacy and comprehensiveness: Google Scholar, Web of Science, Science Direct, and Scopus. The website for the City of Gothenburg has also been visited to access previous and current public work, such as governing documents and documents clarifying annual municipal budgets. Additional information stemming from "grey literature" such as conferences, government reports and policy documents has also been used when needed.

Relevant research articles was found through following search words - "sustainable cities", "sustainably built environment", "sustainable development goals cities", "Agenda 2030, cities", "Gothenburg city, sustainable development, SDG", "SDG 11, sustainable cities", "national environmental quality goals", "indicators, sustainable development", "indicators", "SDGs, indicators", "Regeringen, Agenda 2030", "Göteborg, Agenda 2030", "Göteborgs stads, styrande dokument", "Göteborgs stads, miljömål", "Göteborgs stads, budget 2020", "Malmö, sustainable development, SDG", "Malmö, Agenda 2030", "Malmö, budget 2020", "boverket, bygg och fastighetsektorn", "klimatförändringar, Göteborg". In some cases the literature was also found through backtracking sources from selected scientific papers. Certain articles perceived to be relevant for this work are timeless, such as the Brundtland report. Therefore, it was chosen that no time boundaries should be set in the selection of literature. Relatively newly published articles were to be used for discussing Agenda 2030 considering the framework's release in 2015, and a mix of new and older articles on the topic of sustainable development of nations and cities. The quality of the

information was judged by the following indicators - times cited, journal of publication, field of research and author background. Another determinant of the quality of an article was the degree to which its information aligned with already existing knowledge and research results (i.e. makes it in a triangulation test), altogether providing a basis for whether the articles is to be used or not.

4.2 Interview study

Because of the complexity of sustainable development, it was decided that in-depth interviews with a small sample of stakeholders, would be the most appropriate for the purpose of this thesis. The choice of relevant stakeholders was done through so called snowball sampling, starting with contacting the author of a report, handling Agenda 2030 and its implementation in the city of Gothenburg. Also, Business Region of Gothenburg was contacted which provided recommendations about a contact at the City Executive Office. Further, considering the relatively short time frame, snowball sampling was only done initially. After ten interviews had been planned and booked, no more interviewees were asked about *further people* to contact, resulting in that around half of the interviewed persons had the chance to give suggestions of significant stakeholders. Additionally, the interviewees were assigned attributes so that their field of competence or interests were more easily revealed. These were developed by the authors to be 1) has been involved in the building sector, 2) has the possibility to impact how, when and where to construct the urban environment (from single projects to a strategic planning level), 3) has experience of integrated work with sustainable development (have worked with economic, social and environmental aspects of sustainability), 4) works with environmentally related questions, 5) works with socially related questions *and* 6) works with economically related questions. All candidates agreed upon the attribute that they were assigned. The purpose with the 'classification' was to enable the reader to more easily grasp their competence and experience. The outcome of this is presented in the result chapter.

This type of stakeholder involvement is referred to as issue-focused stakeholder management, characterized by a complex issue, mutual problem or challenge needed to be resolved in collaboration (Roloff, 2008). Since different perspectives on the issue was desired, stakeholder *width* was sought to be as broad as possible, where width refers to the chance given each members in a community to participate. Members and communities here refer to those stakeholders involved in the building sector in the city of Gothenburg (Edelenbos & Klijn, 2006). This in combination with the initial snowball sampling resulted in the selection of stakeholders that are described in chapter 3.

For all initial contact we used a general written script about the subject of the master thesis, and why we wanted to interview them. In some cases, we had to develop our description in order to clarify the aim and purpose of the interview. All of the interviews where planned ahead and followed a semi-structured design. A question scheme was developed beforehand and used for all interviews. Depending on the interviewees, some questions were slightly adjusted in terms of the relevance of the

question for that respondent. There were mainly three different areas to which the interviewees belonged: academy, industry or the municipality. In total 25 persons or organizations were contacted which resulted in 19 established contacts. When contacting an organization or company, the general email address was used which provided further contact at the specific organization. Three of the stakeholders person came in too late in the project process and had to be left out. One stakeholder recommended a previously contacted stakeholder since she did not find themselves as relevant to us. The remaining six of the contacted stakeholders did not reply at all.

In total there were 15 interviews made from February 2020 to the beginning of April 2020, whereof one interview has been conducted in writing due to the circumstances of COVID-19, and that an online interview was not possible to schedule. All physical interviews were audio taped and transcribed to reduce the data lost. The interviews were held in Swedish and then translated into English. Two interviews were done over video chat, but were also taped and transcribed. All interviews were held with one respondent at the time except for one group interview. So, in total there were 16 persons who contributed to the study. Three interviewees wanted the questions sent beforehand and the remaining ones did not know the questions before the interview. A summary of each interview was sent to each interviewee to allow for confirmation of their statements or possibility to adjust anything if desired.

4.2.1 Qualitative data analysis

The data from the interviews has been analysed in steps by the method developed by Russel Bernard (2006). The first step was to read the transcripts and make notes about the first impressions, followed by more carefully reading the transcripts again. The second step was to code the answers by labeling relevant words, concepts and opinions. The decisions about their relevance were made based on whether the words or concepts were repeated by several respondents, the respondent denoted it as important, referred to a common concept or that the information aligned with findings from literature. In step three, the code was categorized based on the similarities of the information. The transcribed, translated and categorized form of the interview is presented in the results chapter. A summary follows each results chapter section and constitutes the findings from the categorized data and the literature.

5
Results

The result chapter is organized in a way that the data gathered from the interviews are presented in approximately the same order as they were conducted. The interviews were divided into four segments, namely - *Introduction*, *Sustainability and the City of Gothenburg*, *Agenda 2030 & Indicators* and *Roles & Responsibilities*. All headlines except *Introduction* will be presented in this section. Questions from *Introduction* has been included under other relevant headlines, and/or added in the case study about professional background and current employment.

This chapter will present both results from the interviews and from the literature study. First, results from interviews are presented under each headline and sub-headline. In the end of each headline, a *Summary* section summarizes data from interviews together with literature findings. Results from the literature study has further 1) contracted to the section of background, 2) been the baseline for creating and developing the questions for the interviews and/or 3) been used to evaluate information from the interviews (found under *Summary*). The interviewees are referred to with the first letter in their first name followed by their family name, while authors of literature are referred to by their family name only.

Each sub-headline will present a collection of related questions from the interviews and the question of concern will be presented beforehand the data from the interviews. The questions have been numbered with Q1, Q2 and so forth, and all questions can be found in Appendix A.1 & A.2. Certain questions from the interviews were not included as they were evaluated to not answer to the aim or the research questions, or because they were asked only once. Q1-2, has been used in table 3.1 in the *Case study* chapter for presenting the interviewees and their professional background.

The stakeholders were classified in a way that each candidate has been given certain criteria. The selection of criteria are presented in relation to the result of the stakeholder classification and found in table 5.1.

1. has been involved in the building sector
2. has the possibility to impact how, when and where to construct the urban environment (from single projects to a strategic planning level)
3. has experience of integrated work with sustainable development (have worked with economic, social and environmental aspects of sustainability)
4. works with environmentally related questions
5. works with socially related questions
6. works with economically related questions

Table 5.1: Interviewed people and their assigned criteria

Name	*C1*	*C2*	*C3*	*C4*	*C5*	*C6*
Gunnar Persson	x	x	x	x	x	x
Paula Femenías	x		x	x	x	
Sara Pettersson			x	x		
Gunilla Dörner Buskas			x		x	
Karin Meyer		x	x	x		
Kristina Mjörnell	x		x			
Eva Pavic			x	x		
Anna-Johanna Klasander	x		x			
Nina Wolf	x		x	x	x	x
Ulf Östermark	x	x	x			
Malin Östblom	x			x		
Anna Säfsten	x			x		
Charlotta Brolin	x		x	x	x	x
Ulf Moback	x	x	x	x	x	x
Henrik Levin	x		x	x	x	x
Mikaela Lenz	x		x	x	x	x

5.1 Sustainability and the City of Gothenburg

5.1.1 Perspectives on sustainable development among stakeholders in the building sector

Q8-Q9

A smaller share of people (two out of sixteen) answered this question partly by saying that "the sustainable city" is a moving target. U. Östermark (2020) said that the *"sustainable city is something to work towards; a picture of a condition that is hard to reach in practice but something we may end up very close to*". A statement which aligned with what A-J. Klasander (2020) said about the sustainable city being *"a moving goal to aim for, because the conditions change constantly and so you need to constantly change the aim"*. Five out of sixteen interviewees used the Brundtland definition with the unity of the ecological, social and economical pillars of sustainability. G. Dörner Buskas (2020) said that there needs to be a balance between all of these dimensions. One the contrary, K. Meyer (2020) said that the Environmental Administration bases sustainability on the environmental dimension, the key factor for all other dimensions. Further saying that economy is the tool to reach our (humans) goal to feel well - the social dimension of sustainability. Two times an outlook where made for the future generations, but may as well be implicit in all others' answers. For instance, H. Levin (2020) said that - *"There is a tendency that one end up with discussing the environmental pillar (or the physical environment that the city constitutes) and in what way we may facilitate a good living standard for our future generations"*. N. Wolf (2020) also integrated a temporal dimension - *"Sustainable development means that people have access to what they need without compromising the ability for current and future generations. It´s about equal sharing within the planetary boundaries, now and in the future.*

Further, three interviewees brought up Agenda 2030 as writings that can frame what sustainability may look like. S. Pettersson (2020) said that the municipality's work with sustainable development is covered in the various municipal strategic programs. Further, she said that the City Management Office chooses the relevant programs that comprehend aspects of sustainability for each and every project. Therefore, the chosen programs varies between cases, but could for instance be the *Climate and environment program*, *Equal city*, *the Business strategic program*, the site plan and more. Though, she added that it may be easier to use the global goals since these are more general expressions. Some of the interviewees referred to writings that are found in the Agenda 2030 framework such as "leave no behind"; "equal opportunities"; "expressed and clear leadership"; "inclusive societies" (S. Pettersson, 2020) (E. Pavic, 2020).

Going into more detail and more specifically, to sustainable development of the built environment, interviewees brought up slightly different issues. Though one term was brought up repeated times by various stakeholders - *robust cities or robustness*. Robustness, explained as the capacity of the built environment in the city to manage

changes such as increased temperatures and rainfall. Further, A-J. Klasander (2020) weighed in other dimensions and not purely technical into the term robustness - *"A resilient city can adapt to different types of change and must be mixed in every way. Because then it can also be robust, socially and economically"* - Klasander, 2020. K. Mjörnell used RISE's division of 'the sustainable city' into six focus areas namely - *sustainable neighborhoods; sustainable lifestyles, resilient cities and communities, digitalization, urban mobility and integrated infrastructure.* Further, six interviewees referred especially to the environmental dimension by using terms as *more ecosystem services, more biodiversity* and more *'green in the city'.* On this topic, P. Femenías said that there need to be a balance between the green and hard materials. U. Moback (2020) said that *"A sustainable city is a city that does not spend the natural capital but only picks the interest of it".*

5.1.2 Stakeholders perception of the building sector in Gothenburg today

Q12

According to S. Pettersson (2020), the City of Gothenburg has highly set ambitions and goals; which doesn't always receive that much penetrating power. This perception of high level of ambition in the municipality were shared by G. Persson (2020) whom referred to the program *"Fossil-free Gothenburg".* Also, E. Pavic (2020) said that she thought the current sustainability work in the municipality is rather good with some positive examples. One example being a project shared by Johanneberg Science Park & the City Planning Authority. Intended to increase opportunities for citizens to engage in the development and construction of the built environment, coupled to digital tools. A project that she perceive to be sustainability *in its purest form.* S. Pettersson (2020) mentioned that there are administrations such as the City Premises Administration, being forerunners. This, because they pursue a project of a fossil-free preschool named "Hoppet", with the aim to acquire new experiences and knowledge. The pilot project "Hoppet" was brought up as a good example by also P. Femenías (2020). Further, S. Pettersson said that there are a lot of work carried out that are meaningful for the ecological sustainability, but not necessarily receives any attention since they are not 'excellence projects'.

A-J. Klasander (2020) said that the construction industry has been conservative but is starting to evolve - possibly, due to the generational shift in the sector. Hence, the sector has gotten conscious about sustainable development and sustainability. The same perception was shared by H. Levin (2020), P. Femenías (2020) and E. Pavic (2020) which all mentioned that the past few years so many things have happened in the sector. P. Femenías brought up that the industry have gotten really good at energy efficiency in buildings; and that *the interest is starting to increase for reuse and recycling of materials.* H. Levin went forth and said we've come rather far the last 5-6 years, when it comes to technical solutions and administrative systems. Especially on that side of sustainability that are about the impact on the natural environment - ecological sustainability. According to H. Levin, it is no longer a

great discussion about being sustainable - *The debate has become more mature. One chooses verification schemes on houses such as Miljöbyggnad or BREEAM.* Further, his impression is that more people talks about the life cycle analysis of buildings now; what materials that are good and bad. According to him, the environmental and energy cost was formerly largest for the maintenance phase of the buildings. Which is now shifted to the construction phase, as the environmental impact during the use phase has decreased.

According to S. Pettersson (2020) Framtiden Byggutveckling AB said that earlier they focused a lot on the ecological sustainability related to their construction. Whereas today the focus has shifted more towards the construction of economically sustainable buildings. Which according to her, then could be said to contribute to social sustainability through providing affordable housing - *"When talking about the broad concept of sustainability (social, economic and environmental), it can be a little contradictory"* - S. Pettersson, 2020. A perception that was confirmed during the interview with G. Persson (2020) employed at Framtiden Byggutveckling AB. This due to an increase of population and thus growing demand of housing, together with the company's need for 'more muscles' in financial means.

5.1.3 Challenges for the city of Gothenburg and the building sector

Q10

The people that were interviewed also had the possibility to provide their opinions about what challenges there are for the City of Gothenburg.

What was commonly brought up during the interviews were within both current and future time frames. One challenge is that ongoing building projects proceeds in a very high pace. The amount of planned projects are increasing and the question if we are building in terms of quantity rather then quality has been brought up. With the plan to construct at least 5 000 new dwellings each year i Gothenburg (Göteborgs Stad, 2020c), Framtiden AB aim to produce 1400 (Framtiden, 2020). The high building pace is something that has been brought up as a concern, from the academy, industry and the municipality itself. They express worry, that it might end up as the national 'million program' or that we are building too much, high, and dense with no room for green areas and biodiversity (A-J. Klasander, 2020), (K. Meyer, 2020). As P. Femenías (2020) mention during the interview - *"I get a little worried when I look at all these new projects that are planned, those high multi-storey buildings that will spread shadow over the whole city"*. Further, she thinks that there is too little time to be thoughtful and make use of existing knowledge. When building in this pace, other challenges occur such as managing the maintenance of ecological quantities and avoid long term mistakes. Regarding these difficulties, S. Petterson (2020) expressed that the work is happening simultaneously and on different places, the management is complex and the output lies in the future. She also claims that, as the city needs to develop in a sustainable way, some of the challenges

are to avoid degradation and maintaining the ecological qualities of the city.

Another concern that appeared embodied the former goal of densifying the city. H. Levin (2020) said that *"even if our buildings may have come better and more sustainable over time, the way in which we build the city doesn't appear to be that sustainable"*. In some interviews, the reasoning behind planning and constructing a dense city is preferable in the sense that it utilizes existing public transportation infrastructure. By doing this, one could decrease the use of personal cars to and from the city. Though one continue to construct suburbs with a great need for transportation in the city (U. Moback, 2020). According to K. Meyer (2020) there needs to be a balance between how dense the city should be and how much green areas there should be. This balance needs to be evaluated and discussed. According to M. Östblom and A. Säfsten (2020) densification of the city is challenging in the terms of increased noise and worsen air quality. The dense city puts a pressure on the current public transport that eventually needs an increase of capacity. G. Döner Buskas (2020) mentioned that in the future we will need to separate the transportation from the ground, either below or above the ground. Further, she thinks that *"Västlänken is absolutely necessary to manage the pressure on the infrastructure"* - G. Dörner Buskas, 2020.

U. Moback (2020) informed us that the Planning and Building Committee made a decision that the city is to build peripherally in all directions, which according to him is not sustainable in the long run. However, if extending the city in some directions one need to gather power, ensure that investments follow in terms of infrastructure, water, sewerage and roads. But also, that schools, kindergartens and other public services are in place and accessible. Otherwise, one cannot manage the resources needed, if the development happens a little bit here and there. On the subject of densification he says that the worries are justified. He continued to say that in site plan of 2009, the wish to build a denser city was pretty clear, even stated on the physical map. Though, they did not foresee was the high degree of exploitation that would occur. According to him, there are a lot of competition of land which will have consequences of crowded areas -

> *"In some cases it will be, I think, purely human-free environments. As an example, the area near the central-station will not be nice with that high degree of exploitation. A very though and rough environment, and also quite shady down on the ground. What is happening now is that the scale has changed to very high buildings in many places."* - U. Moback, 2020

C. Brolin (2020) also identifies the densification as something worth to consider even more. She said that, partly one could include more of the green values - *"for people to thrive one need a lot of green and daylight"* - C. Brolin, 2020. Further, she brought up the local plans as very important, since those are what construction companies are to follow. Conclusively, she said that one need to consider this now to not regret how the city's environment is built in 20 years ahead.

According to P. Femenías (2020) there is also challenges related to climate change - *"The impact on the environment due to climate change is of course an area that we need to work with"*. She further mentioned consequences such as rising sea levels and risk for landslides; and that real estate owners in the area of Majorna have expressed that the urban district may be exposed to risks related to landslide. G. Dörner Buskas (2020) said that the location of the city near the river will be a challenge under current climate change. She further thinks that there will be a need for large investments to secure areas near the river (such as Frihamnen) (G. Dörner Buskas, 2020). Also, S. Pettersson (2020) brought up climate change adaptation as an important area of consideration. In the interview with H. Levin (2020), he stated that one challenge is to construct the city to become more robust -

> *"We have a large amount of researchers that are doing a great job with trying to guess, or assess, how much the sea level will rise and how much more it will rain. And based on that, we have, or we are to build some kind of protection."*

The ability to adapt to sudden unknown changes in the city is further something that is a challenge for the municipality. Levin also mention that a different mindset is needed in order to improve this ability.

N. Wolf (2020) said that when it comes to city planning and construction of urban districts, many requirements in laws and regulations need to be considered -

> *"here are at least 10 different administrations or companies, bringing in their aims, demands and expectations. In addition, the buildings need to have certain standards, such as having the capacity to stand over time. This, together with the great amount of regulations makes it difficult to bring in new requirements on circularity upon all other demands."*

Also, building guarantee, the traceability of materials and the fear of not receiving any bids, adds on to that difficulty (N. Wolf, 2020). Further, N. Wolf claimed that going into these kinds of city planning discussions with only papers and wishes is not enough. Here, regulations, laws, or clear and explicit steering documents on the national and local level are needed. Regarding *whom is to start? The municipality or the industry?* According to N. Wolf the solution is that

> *"one need to develop simultaneously, both the supply and demand side, to avoid the 'chicken or the egg' causality dilemma. Also, since it is difficult to motivate construction projects driving costs, on a regular basis, we may need to offer something else to the market, to speed up circular transition and to reach our sustainability goals. This could for example be an agreement of requesting a large volume of circular construction projects, over time."*

K. Mjörnell said that we must utilize what is already built and use it a long as possible; and when there is an actual need to build something new one must to do it as good as possible - *"Often, the lowest environmental impact, cost and impact on social sustainability is when nothing is built".*

5.1.4 Perception of the municipal governance

Q37, Q11

One of the research questions to be answered, was how well the political mandate periods and short term goals works with long term visions as in Agenda 2030 and the national environmental quality goals. A majority of the interviewees, both acting in the municipal organization, former public employees and private sector stakeholders were in consensus that it is a noticeable problem. In addition, this question enabled the interviewees to provide more general perceptions of the system of governance in the city.

H. Levin (2020) grouped the governance or steering tools in three large groups; the annual budget, the governing documents as in programs and plans, and the division of responsibilities according to regulations within administrations or companies. Furthermore, he said that the work with budgeting differs among the municipalities in Sweden. The municipal budget and resource allocation is decided on each year but can contain multi-annual measures. In some municipalities the political parties can have a budget throughout their mandate period, where the platform is described together with an annual budget. He continued to say that the politically decided steering documents have a certain life span and will be valid for as long as it is decided. Though, his experience is that long-term goals in those governing documents; and political shift or shifts in focus in the politics; could change the the interest in actually implementing them from the political side. The City Council could initiate a process of cancelling whatever governing document they want. On the contrary, the public officials often understands it as they have an assignment to realize them anyway (H. Levin, 2020).

G. Persson (2020) claimed that the four year mandate period is not enough. Because the first year is spent on learning and understanding; the second year used to introduce reforms and changes; and the third and fourth year used to implement them. In addition, many of the elected parties become cautious when elections gets closer (G. Persson, 2020). A-J. Klasander (2020) said that it works really badly and is a huge problem; which is becoming more and more apparent for her. P. Femenías (2020) said that various stakeholders in companies and organizations in Gothenburg, declare that the political governance is problematic; and definitely a problem when it comes to long-term visions and goals. One are provided with a directive, which a couple of years is replaced with another. Especially when it comes to sustainability, one need to have more far going plans; not least when it comes to the climate change issue. Hence, the national agreements such as Sweden becoming climate neutral in 2045, must go beyond the short political mandate periods. Those must not be pos-

sible to tear down if we are to meet these goals (P. Femenías, 2020).

S. Pettersson (2020) said that the short term and the long term perspectives are hard to handle. Usually, governing documents stretch over a period of 10 years and a political cycle reiterates every 4^{th} year. Further, the short term goals as those expressed in the annual budget are not even there in 4 years. According to her, this makes a kind of imbalance, especially for public officials. That the most important governing document suddenly can come to change to another - *"Sometimes these things are synchronized and everything is fine, when they pull in the same direction"* - S. Pettersson, 2020. She thinks that the governance system in Gothenburg are rather complex with approximately 60 governance documents - *"This year for example we will pay special attention to this and this and sometimes these are even in conflict with each other"* - S. Pettersson, 2020. As an example, she brings up the climate and environmental program being a more long term form of governance than the annual budgets. Even if the budgets change a little bit from year to year, and one need to navigate from it a bit. One have at least pointed out the direction. Further, she said that maybe Agenda 2030 could provide with broadness as well as direction instead of this short term shifts; the possibility to gather around it over time.

Difficulties in having a clear course when the political composition or priorities suddenly shifts, is a challenge according to A. Säfsten (2020). Referring to the time span of the annual budgets, and the far more long term activities as performed or planned at the Traffic and Public Transport Authority. She continued with saying that if the politics would change really much, they could have a lot of difficulties in doing their jobs. To manage this, one need to carefully recognize ones base mission and if that has a sustainable direction, and a kind of momentum not being changed because of an election, then it is good. M. Östblom (2020) said that it would be devastating if the traffic strategy were teared apart every 4^{th} year. Because one would never know which foot to stand on during their planning. According to her, they now see some tendencies of not wanting to densify as much as previously, instead build in the periphery areas with villas. This, because one wish to keep the families with children in the municipality. So the preconditions have changed a bit and this she thinks it could be rather tiresome for all that works with these questions. K. Meyer (2020) said that the short mandate period and the environmental politics is a challenge. Thus, it would be preferable to have a common agreement between the parties to work more long term. Therefore, the *Climate and environment* program is important since it is brought up to the City Council where all the parties are. If reaching an agreement of the program, then we should follow the program no matter who has the control in the municipality. It is still a challenge, since a new budget is introduced each year with allocation of resources by which we need to react upon. According to her, the City of Gothenburg though always welcome the environmental questions (K. Meyer, 2020). On the topic of Agenda 2030, K. Mjörnell (2020) said that it is difficult with these different time spans, since working towards Agenda 2030 is a very long term process. Thus, one need to look at Agenda 2030 as something that the municipality takes a decision about at a higher level and

that cannot be changed in every mandate period (K. Mjörnell, 2020).

Also, G. Dörner Buskas (2020) does not think that political mandate periods and short term goals works well with the long term visions and goals. Especially not when considering the political situation that is right now, being characterized by too much short term thinking. According to her, the municipal administrations need to a greater extent stand by the long term programs, goals and the agenda. *"We've having a hard time politically, where trust is decreasing because we've not worked with these questions with enough long term thinking - a huge difficulty of course"* - G. Dörner Buskas, 2020. U. Moback (2020) sees the same kind of problem. According to him, the political composition has for more than two decades been of a red colour, with a smaller replacement of the blue parties for a mandate period. Something that now has changed. His impression is that it has become a haywire in the politics in Gothenburg, with parties of discontent making a mess. As for now he doesn't experience that much of long term thinking as before. According to U. Östermark (2020) this subject is the heel of Achilles when it comes to democracy; managing the long term guidance and balance this with the current needs.

> *"Within sustainability lies the perspective of the future generation and that is quite philosophical. In my point of view this is a critical issue but at the same time it's interesting. If we humans as mankind will manage to see beyond our own existence."*- U. Östermark, 2020

Challenges in the organizations

Challenges related to the organizations operating in the municipality with regards to sustainability work, were discussed. Since the organizations have different aims, responsibilities and are situated in different parts of the city organizations (or are external to it); their answers differed a lot. However, there were some alignment in some of their answers.

G. Dörner Buskas (2020) raised the issue about the boards, administrations and their collaboration. She said that the same adults live, work and uses the public transport; and their children lives in the houses, goes to preschool and elementary school. Hence, she stated that this interplay is really important. Hence, collaboration is needed in those cross-boundary and trans-disciplinary subjects such as climate change adaptation, transportation infrastructure and equality and socioeconomic differences. According to K. Meyer (2020), one challenge for the Environmental Administration is to provide their knowledge and cooperate in the right context with the other administrations. N. Wolf (2020) said that her administration rarely becomes involved in the city planning and questions regarding the built environment. So they have not until now consulted in questions about circularity - *"The building sector is an important area when talking about circularity (...) we need to be supportive and push trough the question."* - N. Wolf, 2020.

Several interviewees highlighted the need for more coordination in the municipal organization. These were people involved directly with the municipality and people external to the municipal organization. S. Pettersson (2020), said that there are challenges related to being a decentralized organization, especially within areas of city planning and urban construction. This, because several organizations are involved with these questions such as the Real Estate Administration, the City Planning Authority, Älvstranden Utveckling AB among others. According to Pettersson the current organizational structure have been perceived to be too split or divided. Apparently, actors in the city organization have been signalling that there are a lot of effort and energy put in coordinating themselves and come to reach agreements. Consequentially, less time and energy are left for progressing on goals which could have effects on issues like sustainability (S. Pettersson, 2020). U. Moback (2020) said that *"the municipal organization is complex since it's so fragmented. Each part has its own rules which they are following, which often leads to sub-optimization. That's a big concern to me"*. According to G. Dörner Buskas (2020) has Göteborg Stadshus AB organized their sustainability work in a committee; where meetings are held to discuss complex questions to create a shared understanding of them. Though, she thinks that the other side of the city, the City Administrations, have a too much shattered organization; making it hard to grasp the whole. Issues related to the environment are taken care of by the Environmental Administration; the Social and Resource Administration have their issues; the City Management Office theirs and so on. Though several administrations are really passionate about their things and work -

> *"If having a relatively strong board, one is able to push questions about for example a new environmental governance system or climate and environmental program. Although, it often end up having one dimension of sustainability receiving more recognition than other dimensions; and that is a huge challenge."* - G. Dörner Buskas, 2020.

Also N. Wolf (2020) brought up the challenge with being a lot of diverse actors in a streamlined organization -

> *"In the context of the built environment, city planning and circular economy, these horizontal questions need trans-boundary work among the municipal administrations. We need coordination to receive a large impact. It is rarely expressed that one administration, should be coordinators in a certain context, including both collaboration and co-creation between different actors in the city administration and with external stakeholders. That function is currently lacking and it is needed. However, the new climate and environment program will more directly point out who are to coordinate which strategies among actors in the who municipal organization."*- N. Wolf, 2020.

She concludes that this will be an important document for them forthcoming.

According to P. Femenías (2020) several organizations have very diverse policies and routines - *"Some in the municipality are very skilled, but it is important that this knowledge is spread in the municipal organizations"*. For K. Mjörnell (2020) a great challenge is that often only one question receives focus at a time. As an example, there has been a lot of effort in only building in wood or only focusing on energy efficiency - *"When it comes to sustainability, we need a holistic view and have people working together. We need to share budgets and costs and involve everyone in decision making to make sure we don't sub-optimize."* - K. Mjörnell, 2020. She further meant that, to meet the challenges of society today, one need to change the way of working and probably, to some degree, rethink how to organize oneself.

A mapping of Agenda 2030 with the existing municipal goal was done by the researcher Sandra Valencia and the City Management Office where S. Pettersson (2020) was one of the employees involved. S. Pettersson (2020) said that one of the outcomes of this project was the identification of trade-offs and synergies within the existing municipal goals. Which according to her was really appreciated (S. Pettersson, 2020). On the same topic N. Wolf (2020) said the municipality is good at developing programs, but identification of goal-conflicts and synergies is really needed - *"Else you provide resources to develop programs where the substance may contradict each other. Which in the end can affect the progress on other goals to become neutral or even at minus"*. This subject of the municipal organization were also discussed in the interview with A. Säfsten and M. Östblom (2020). Säfsten said that several organizations are involved in the planning phase. The largest three being the Traffic and Public Transport Authority, the City Management Office, *and* the City Planning Authority. She continued with that it is really important that the site plan and planning programs on regional level are connected. Because there are many conflicting goals and ideas of what is best, what should be prioritized and in what order things should be done. According to her, the difficulties lies in that the administrations and boards are very different.

Furthermore, H. Levin (2020) said that from a sustainability perspective, there are challenges to find the balance in how to support the City Administrations in their collaborations. He stated that the questions regarding the society and urban construction always has been horizontal questions. To his impression, the latest years he has been working, city planning have to a greater extent been expected to consider even more aspects -

> *"We have one municipal organization, and that is possibly also natural. Then we try to gather different kinds of subjects in different administrations; and tries to optimize them within the boundaries for an administration; to reach as high level of effect as possible. Subsequently, we've been very good on an number of things. But also that we have an increased an exponentially increasing need for coordination."* - H. Levin, 2020.

He continued to say that the City Management Office has to find a balance in that, to secure that the coordination works sufficiently well; together with clarifying that it is still the administrations that are to collaborate. He concluded with saying that it is not desirable to transform it to a single large administration.

In addition, A. Säfsten (2020) said that in present time the public sector faces financial constraints, so there are internal priorities within the organization all the time - *"We have all these new projects but also the projects were we maintain the existing stock"* - A. Säfsten, 2020. Further she stated that the environmental unit has a small subset of people, and an even smaller subset of money. Therefore, it is difficult to enable those innovative projects that are needed. She further brought up COVID-19 and its uncertain consequences; and concluded that earlier, she would possibly have answered the target conflicts between different modes of transportation.

5.1.5 Prioritized measures according to stakeholders in the building sector in Gothenburg

Q17

The interviewees were asked about suggestions on what measures to introduce to make the building sector more sustainable at present state.

From P. Femenías (2020) point of view, there is a need for a more holistic perspective in the sector. She further said that people and their life-styles should be in focus. This more human-centered consideration was also made by, U. Östermark (2020) saying that he supports the development of sustainability certifications that includes humans. Also, he wishes for a factor of an attractive urban living environment in these schemes.

Furthermore, P. Femenías (2020) said that we ought to built with long term sustainable qualities that is tenable and where materials are possible to reuse. Since future development is not possible to foresee, she encourages construction that is adaptable and flexible. Also, that one should have the possibility of changing or adjusting a buildings functions when needed - *"To create generic buildings that can be used in many ways (...) that we construct buildings that people actually like, so they can exist for a long time"*. Also, N. Wolf (2020) brought up the issue of more flexible constructions when talking about improving circularity - *"There is a need to extend the lifespan and construct more flexible buildings"*. Where also she, stressed that one need to start building for future disassembly and reuse. U. Östermark (2020) said that one cannot use up all resources there is, and that one need to find the solutions -

> *"The way of constructing needs to change in such way, that it is cheaper to build sustainable than not sustainable, when it comes to taxes and incentives systems (...) the sector might also need some kind of economic carrot to initiate the process."*

N. Wolf (2020) said that we have to prioritize resource efficiency, take advantage of the current resources and use them with circularity as a goal. So, in the long run, the inputs in the system could be adjusted for reuse and circularity. K. Meyer (2020) furthermore suggested prioritized measures to be directed to sustainable construction, and such measures as more energy efficient buildings. C. Brolin (2020) expresses the need to include more reuse which is a problem today since there is no direct guidelines and requirements for it. Further, she claimed that CO_2 emissions is cheap, and that it is a lower cost for buying new products in relation to that of reuse and recycling.

During the interview with S. Pettersson (2020), merely ecological aspects where brought up. Where she claimed that one need to prioritize biodiversity, ecosystem services, change hard surfaces to green, improve transportation infrastructure and more. Also, she expressed that the city must adapt to current climate change and become resilient, and that we need to be more innovative and try new solutions - *"We need these pilot studies or projects, where one has the courage to test new things, like 'Hoppets' preschool that pushes the limits, being far away from becoming the norm"* - S. Pettersson, 2020. K. Meyer (2020) mentioned that we need to focus more on the surrounding environment, green areas, playgrounds and so forth. She further said that one need to adapt new constructions in relation to its surrounding, not the other way around. Apart from the two former suggestions she brought up: noise, air quality, water management, biodiversity, recreation, outdoor activities, transportation and material use as important areas of consideration. Areas that should be prioritized according to C. Brolin is air pollution and green surfaces. For M. Lenz (2020) the highest priority is the climate load from construction materials.

G. Döner Buskas (2020) were mainly talking about social sustainability. She believes that prioritization should be towards measures that holds over time. She mention that the inner city need more spots that enable social activities, with green areas and decreased segregation. In the interview she said - *"The political situation is sensitive in the city, even in the country, which easily results in short term political measures, at least that's what you hear in the debate"* - G. Dörner Buskas, 2020.

K. Mjörnell (2020) argue for a holistic perspective, when it comes to the social, ecological and economical dimensions and that we need to start to measure and keep track of our impacts. Today, there are good measurements performed on the economical dimensions, and the ecological part is slowly starting to increase with tools such as Life Cycle Assessments (LCAs). However, the social dimension is lacking indicators and to be able to develop these, we need to understand *"what social sustainability is"* - K. Mjörnell, 2020.

One suggestion of the main challenges for the city was said to be the shortage of housing. H. Levin (2020) states that one main challenge the city is facing is to secure housing possibilities for the citizens. According to him, we need to develop accessible apartments. Since the prices for buying or owning an apartment has become too expensive for some social groups, and the queues has become to long for

rented apartments. Further, H. Levin (2020) said that the city must be coherent when is comes to the housing politics. It should include help and support for people with difficulties to enter the housing market. In the interview he said that - *"This is a really political question, if we should or not, have a special system for those that cannot afford an apartment or house on the regular market"*. Additionally, he said that in governmental assessments one has concluded that there are deficiencies in the competition in the whole building sector. Which consequentially leads to a less innovative sector. H. Levin further meant that this leads to a market, that doesn't support a development for securing all potential consumer groups - *"Although consumer exist, the absence of competition on the producer side has not stimulated any creation of this market"*. U. Moback (2020) also raised concern about the city planning, urban construction and the market - *"The sector is driven by the market and the market is not always sustainable"* - U. Moback, 2020. However, he concluded with that the land allocation requirements on materials and how to built in a sustainable way is a steering in the right direction.

According to E. Pavic (2020) we need to prioritize the collaborations between different business, and to understand the importance of learning from each other. From her experience their work are *"right in time"*, they are growing and receiving more missions which indicates that they are making a difference. *"We tie research to our part-owners, which more easy enable the latest research to get utilized"* - E. Pavic, 2020. A-J. Klasander (2020) brought up measures to prioritize such as understanding the meaning of the global goals, break them into sub-goals and connect them to our businesses. She states that educational efforts, legislation, learning gradually, more developing projects is essential to work with towards a more sustainable sector.

5.1.6 Summary - Sustainability and the City of Gothenburg

Perceptions about the concept of sustainable development

The definition of sustainable development, more specifically the Brundtland definition, has been challenged because of it's perceived vagueness. Certainly the meaning of the concept can be interpreted in numerous ways. Hence, to work towards a common and covet direction, people need to share a common understanding of what this means (Holmberg & Larsson, 2018). Five out of sixteen interviewees used social, economic and environmental pillars of sustainability, and a majority meant that there needs to be balance between all dimensions. The perception of K. Meyer (2020) differed, where she said that the environmental dimension is the key-factor for the economic and social dimension. E. Pavic and S. Pettersson (2020) referred to Agenda 2030 when trying to define sustainable development. S. Pettersson further said that the SDGs may be better to use than the municipal programs, since those are more general expressions. During the interviews with A-J. Klasander and U. Östermark (2020) sustainable development were said to be a moving target. A-J. Klasander added that therefore one need to calibrate the path towards the goal to have sustainable development.

Perceptions about sustainably built environment

With regards to sustainably built environment, the term *robustness* was used by several interviewees. This term seems to be related to the term resilience, used to describe properties of ecosystems. Resilience is for instance defined as the *"ability for a system, be a group of individuals, a forest, a city or an economy to deal with change and continue to develop"* (Stockholm University, 2020). Resilience is often used in contexts of ecosystems and biodiversity (Elmqvist et al., 2003). Definitions of the term also imply that the state of a system is kept within some critical thresholds (Folke et al., 2010). Robustness when used by the stakeholders inferred capability of the city to adapt and manage changes. During the interview, A-J. Klasander (2020) said that a resilient city must be mixed in every way to be robust, also economically and socially.

Perceptions on the 'current state of sustainability' in the building sector

Opinions about the current state of the building sector were rather positive among several stakeholders. A-J. Klasander (2020) meant that the building sector has been conservative but now starts to evolve, with the generational shift as a suggested reason. According to H. Levin (2020), the subject of sustainability is no longer challenged in the building sector. Several interviewees meant that many things have happened in the building sector the past few years (P. Femenías, 2020) (E. Pavic, 2020) (H. Levin, 2020). P. Femenías brought up examples of increased energy efficiency and growing interest in reuse and recycling. Boverket (2020c) confirms in the 2019 *Environmental Indicator* report, that the average energy consumption per m^2 of buildings has decreased. However, total energy use in the building and real estate sector have increased with 9 % since 2008. Since 2016, the total impact on the environment from national construction is said to have increased for environmental indicators of greenhouse gas emissions (3 %), nitrogen oxides (2 %), particles (2 %) and health hazardous chemicals (9 %). These indicators comprises of emissions from both domestic production and imported building products. Though the amount of emissions between 2016 and 2017 shows a domestic decrease of greenhouse gas emissions with 2 % it is outweighed by emissions from imported building materials (Boverket, 2020c).

H. Levin brought up the technical improvements and current common use of environmental verification schemes, such as *Miljöbyggnad*. On the contrary, H. Levin said that improvements are more related to single artefacts and not the entire management of city planning. According to Boverket (2019d) the a sustainably built environment is one of the major challenges. Nonetheless, municipalities and cities are said to proceed towards a more holistic view on the city development, and invests more in public transport, bicycle lanes and walking paths. The building sector is further said to have taken measures to manage the environmental impacts of buildings from a life cycle perspective. In the follow up on the locally adapted national environmental quality goal 15 - god bebyggd miljö (a good built environment), the goal is not projected to be met by 2020. This aligns with the perception of H. Levin,

that management of the sustainably built city is not improving as much as certain environmental aspects of single buildings (Göteborgs Stad, 2020c).

S. Pettersson (2020) meant that the former focus of Framtiden Byggutveckling (2020) was the ecological sustainability, whereas the focus of today is to deliver affordable housing and contribute to social sustainability. This was something brought up by also G. Persson (2020). The issue of housing shortages is further reflected in the annual budget for 2020. Since Framtiden Byggutveckling is a public company, situated under the politically lead Göteborgs Stadshus AB, the political steering has implications on what issues receives the most focus (Göteborgs Stad, 2019).

High building pace

Interviewed stakeholders from academy, industry and the municipality expressed worry regarding the current high constructing pace in Gothenburg. One said that it may end up as another 'million program'. According to Boverket (2019a), the current building pace in Gothenburg is historically high (Boverket, 2019a). During the time-period of 2011-2020, 2017 resulted in the highest amount of new constructed housing in Sweden, with approximately 68 000 dwellings. This amount comprised of 63 000 new built housing and 5 000 of new housing through refurbishment. This amount drastically decreased following years because of the dampening in national conjuncture and subsequent price fall (Boverket, 2019b). It is estimated that in total, 64 000 dwellings need to be built each year in Sweden (Boverket, 2019a). Based on projections by Statistics Sweden of the population increase in Gothenburg, the National Board of Housing estimates that 99 900 dwellings need to be built by the year of 2027 (Boverket, 2018b) (SCB, 2019). This lies well above the 2019 constructed amount of housing of 2 547 in Gothenburg (Boverket, 2018b).

Social challenges

According to P. Femenías (2020) there needs to be a more holistic perspective in the sector, where individuals and their lifestyles are in focus. U. Östermark (2020) shared this perception, and said he supports the development of certifications that includes humans aspects, and factors that contain the 'attractive urban living environment'. According to Colantonio (2007), social sustainability has not been prioritized in the same manner as the ecological and economical dimensions in assessments of sustainability. Further, the assessments of social sustainability have been mostly based on national statistics, and focused on indicators of basic human needs, equity, health and demographics. Recently development have though resulted in various hybrid indicators that includes aspects of participation and governance (Colantonio, 2007). The lack of social indicators was brought up by K. Mjörnell (2020), which said that there is a need to first understand *"what social sustainability is"*.

Densification of the city

Several interviewees brought up the subject of constructing a denser city. U. Moback (2020) said that large competition about land is observed, and meant that the City Planning Authority did not foresee the high degree of exploitation that now occurs. He is expecting that some central areas will be purely human-free, with rough and though environment and shade on the ground (U. Moback, 2020). According to Naturvårdsverket (2020) the solution to meet the challenge of increased population in cities, is to construct more denser urban environments. This could contribute with that lead to less amount of agricultural productive land is transformed, energy consumption decreases and existing infrastructure is better utilized. On the contrary, this could cause environmentally related problems such as increased noise and more air pollution (Naturvårdsverket, 2020). As suggested by the Environment Protection Agency (2020) politicians need to take clear standpoints and deliberate considerations to address this. C. Brolin (2020) said that densification should be considered more, and said that the local plans are very important, since those are what construction companies follow. On the contrary, the Planning and Building Committee has now made a decision to build peripherally in all directions (U. Moback, 2020). That will according to him, not be sustainable in the long run. U. Moback (2020) added that if building peripherally, one need to ensure that investments are done in infrastructure, water, sewage and roads. Demands on social services such as kindergartens, schools and public services, must also be met (U. Moback (2020).

Reuse and recycling in the building sector

According to P. Femenías (2020) the interest has increased when it comes to reuse and recycling in the building sector. N. Wolf (2020) informed that in her work with circular economy, she recently was involved in the building sector. However, she thinks that there are a number of obstacles, when it comes to reuse and recycling in the building sector. The many requirements in laws and regulations, the need of buildings to meet certain standards, building guarantees and traceability of building materials, where some issues she brought up (N. Wolf, 2020). According to the Swedish Environmental Protection Agency, one third of the total materials wasted annually comes from the building sector during construction, refurbishment and demolition (Naturvårdsverket, 2019a). The reduction of wasted materials in the building sector has been said to be of national priority (Naturvårdsverket, 2019a). Due to EU directives regarding the handling of waste, Sweden should increase its reuse and material recycling of non-hazardous materials with 70 % by 2020 (European Commission, 2018). Nationally, 50 % of the material flows identified from building and demolition activities were recycled in 2016. However, large amount of material flows could not be identified, and were left out in the waste statistics (Boverket, 2020b). Because of the insecurities, the Swedish Environmental Protection Agency cannot confirm that the goal of 70 % recycled building material has been reached. The general counter-arguments of reuse and recycling of materials from construction and demolition, is that the quality of these are hard to assess. Another is that work-

ers may be exposed to health-risks as materials can contain hazardous substances (European Commission, 2018).

Climate change

Another concern that was brought up by the interviewees is the subject of climate change, and more specifically climate change adaptation. Currently, there are no guidelines from the national government on how to manage this, and national and international support is needed (S. Pettersson, 2020). Depending on climate politics and future greenhouse gas emissions, sea levels are expected to rise between 29 and 110 centimeters (IPCC, 2019). It has also been projected that southern parts of Sweden will be more exposed to rising sea levels than the northern parts (Boverket, 2019e). According to P. Femenías (2020) real estate owners have talked about that landslide will be a problem in the area of Majorna.

Political mandate periods and long-term goals

The perception of U. Moback (2020) is that there is currently lack of long term thinking in the municipality. In the 2018 election, it was a change in the political coalition, where former government consting of Social Democrats, Green and Left parties, was replaced by Moderates, Liberals, Christian Democrats and Centre (Valencia, 2019). Due to this shift, and the presence of parties of discontent, U. Moback thinks that the politics is currently in a haywire. Among the majority of interviewees, short mandate periods and long term visions and goals were perceived as difficult to handle. H. Levin (2020) said that the City Council and Committees decide about the life time of steering documents. They also have the mandate to cancel programs and plan whenever they want. A political shift could hence change the interest to implement programs or plans. On the contrary, he thinks that public officials sometimes feel that they have an assignment to realize them anyway (H. Levin, 2020). Additionally, A-J Klasander (2020), G. Persson (2020), P. Femenías (2020), S. Pettersson (2020), A. Säfsten (2020), M. Östblom (2020), G. Dörner Buskas (2020), U. Östermark (2020) and K. Mjörnell (2020) meant that the short mandate periods and long term goals are difficult to handle or is a challenge. K. Meyer (2020) clarified the importance to bring up programs, such as the new *Climate and Environment* program, to the City Council were all the parties are. K. Mjörnell (2020) expressed that it is of importance, that all parties agree on long term goals related to for instance climate change or Agenda 2030, so they are not cancelled due to changes in politics. In the report from Valencia (2019) it was said that the political coalition influences decisions regarding new public assignments of Agenda 2030. After the election in 2018, the new political coalition of Liberals, Centre, Moderates and Christian Democrats has not focused on giving new tasks related to this.

The organizational structure of the municipality

Sustainable development is said to be a so called *'wicked problem'*, and that *"it is so complex that it challenges the traditional disciplinary and policy boundaries fail to deal with it. That it defies traditional disciplinary and policy boundaries"* (Loorbach, 2010) (Rittel, 1973). Hence, Hansson, Arfvidsson, and Simon (2019) suggest that governance for sustainability demands collaboration across administrations, to avoid silo effects and measures that may be counter-acting. The streamlined structure of the Gothenburg municipal organizations, is something that interviewees see challenges in. That the organization is decentralized poses difficulties for the employees, because a lot of coordination is needed to manage subjects that goes beyond the boundaries of single administrations. According to S. Pettersson (2020) the municipal organization is too split, and a challenge certainly when it comes to city planning and urban construction. N. Wolf (2020) brought up that questions related city planning, the built environment and circular economy need trans-boundary collaboration. U. Moback (2020) meant that the municipal organization is complex since it is so fragmented, where administrations has their own rules which often lead to sub-optimization. K. Mjörnell (2020) argued that sustainability need to be approach in a holistic way, and one needs involve everyone in decision making to ensure that one does not sub-optimize areas. G. Dörner Buskas (2020) said that the City Administrations are shattered which makes it difficult to grasp the whole. Further, she informed that Göteborgs Stadshus has created a committee involved with sustainability to create a shared understanding around complex issues. S. Pettersson (2020) meant that the need for administrations to coordinate themselves, costs resources such as time and energy, and may impact on the possibility to reach the municipal goals. This could also have implications on the progress on goals related to sustainable development (S. Pettersson, 2020).

Prioritized measures

Three out of fifteen interviewees brought up that one need to extend the life time of buildings, and increase reuse and recycling in the building sector (P. Femenías, 2020) (N. Wolf, 2020) (C. Brolin, 2020). One suggestion provided by P. Femenías was that one need to create more generic building, that people like and that could be used for many purposes. In addition, U. Östermark (2020) brought up that one need provide financial incentives to construct more sustainable.

According to S. Pettersson (2020) one need to prioritize biodiversity and ecosystem services, and change hard surfaces to green. Further, the city has to adapt to current climate change and become resilient. K. Meyer (2020) also brought up biodiversity and added that recreational areas are important. Furthermore, she meant that one need to focus on the surroundings of buildings, green areas and play grounds. G. Dörner Buskas (2020) also brought up green areas as important to plan for and added that one need more spots in the city to socialize on.

K. Mjörnell (2020) said that currently one is good at measurements on the economical dimension, and start to get better on the ecological dimension, with tools such as Life Cycle Assessments (LCAs) of buildings. On the contrary, social sustainability is lacking indicators and one need to develop these to understand what *"social sustainability is"* (K. Mjörnell, 2020). Also U. Östermark (2020) said he wished to see sustainability certificates that includes humans and wishes for a factor of 'attractive urban living environment' in these schemes.

Both H. Levin and U. Moback (2020) brought up the housing market as an important area for consideration in time ahead. H. Levin (2020) meant that there is a lack of competition on the producer side. He further said that this have consequences on the housing opportunities for citizens that have difficulties to enter the market because of expensive prices, high rents or long queues to access rented apartments. The aspect of expensive housing was confirmed by Boverket (2018a) saying that housing prizes has increased substantially the last years. In an assessment of the national market competition Konkurrensverket (2018a) stated that the national market competition is going overall well, except for two important areas, where one of them is the building sector. According to Femenías (2004) this has been a problem of the building sector for many years. This situation is dependent on various factors, where some are going to be shed a light on. In a study conducted by, Konkurrensverket (2006) some factors were said to be that 1) half amount of apartments included in their survey were built by the top four developer on the market between 2002-2003 (these developers own a large market share). In a report published by Boverket (2018a) it was stated that increased market concentration is an important indicator that points towards weakened competition. Larger companies are further observed to increase their share of the total turnover in the building sector (Boverket, 2018a). The factor 2) is when larger developers procure, it is usually done through negotiation rather than through competition (i.e. on the "closed"market rather than on the "open" market) (Konkurrensverket, 2006). According to Boverket (2018a) it was stated that the low competition can be caused by 3) the weak development in labour productivity, witch leads to reduced innovation pressure and binds resources that would otherwise have been released to other uses of the economy. The authority, Konkurrensverket (2018b), has in they report *"Bättre konkurrens i bostadsbyggandet"* (better competition in housing construction) identified three areas that should be prioritized to improve the competition in the building sector, especially concerned with the housing market. The prioritizes measures resulted in, 1) public procurement of housing construction, 2) municipal site specific requirements in housing construction and 3) competition in the building materials industry. According to Konkurrensverket there needs to be 1) investigation if there are other reasons except variation in the economic situation, that affects the amount of offers made, 2) investigation if municipality site specific requirements is still a problem for the building sector. If the building regulations are different in different municipalities is it difficult for the businesses to learn from previous work and make use of this learning in new projects 3) the material cost is almost half of the total construction costs and that it is mainly why the authority sees an need in more studies within this area. There are areas where the prizes are increasing

fast. The reason for this increase can be founded in worsen competitiveness or be a result of requirements such as certifications (Konkurrensverket, 2018b).According to the Swedish government the defective competitiveness is one of the reasons to why the construction costs are increasing (Regeringen, 2019). The government has decided on an assignment that aim to investigate the area of public procurement, though it has been noted that the numbers of offers has decreased. The report of the assignment need to be done before 14 of December 2020.

5.2 Agenda 2030 and indicators

5.2.1 Adoption of Agenda 2030

Q23, Q30

The use of Agenda 2030 in the organizations

During the interviews the respondents where asked whether they were familiar with Agenda 2030 and the SDGs and if they work with them. All of them knew about the framework but few of the organizations have integrated them into their own work. Those using it directly as a basis for their sustainability work were the Consumer and Citizen service administration, Riksbyggen, RISE, WHITE Arkitekter and Castellum. Further, the Environmental Administration uses them by relating the SDGs to the local goals in the new *Environment and Climate* program.

As one of the private actors included in this thesis, U. Östermark (2020) informed that Castellum has connected their work to Agenda 2030, by using the thematic areas and relating the SDGs to the company's goals. K. Mjörnell (2020) informed that RISE bases their own work on the Agenda both internally and with clients. According to A-J. Klasander (2020) White Arkitekter has broken down the SDGs into sub-goals, working especially with SDG 11 about sustainable cities and communities. In addition, she mentioned SDG 17 about partnerships as being particularly important. Also, Agenda 2030 is directly included in the work performed by Riksbyggen according to C. Brolin (2020).

Turning to the City of Gothenburg, it appeared that the work with Agenda 2030 is not clearly outspoken (politically) here as for instance in Malmö and Stockholm (Valencia et al., 2019). According to S. Pettersson (2020), Malmö have had a strong political will to adopt the agenda through the delegation of clear and direct tasks. Also, she said Stockholm has recently adopted it in their budgets and created a special Agenda 2030 Council. Further, she claims that the city has strong steering towards sustainability, but less political weight is being put on Agenda 2030 (S. Pettersson, 2020). This was confirmed by H. Levin (2020) saying that *"Even though Agenda 2030 is currently not being a part of the municipal budget, Gothenburg has a strong steering towards sustainable development since many goals are connected to Agenda 2030"*. On the contrary, H. Levin (2020) stated that the work with Agenda 2030 is in progress. Also, S. Pettersson (2020) said that the City Management Office

has received the task to include Agenda 2030 in the follow-up of the annual budget. On the contrary, there has not yet been any decision made about indicators to measure this. Further, it is not explicitly said to be a 'sustainability follow-up'. The Göteborgs Stadshus representative G. Dörner Buskas (2020) said that she wants to relate the sustainability work in her organization much more with the global goals.

Also, the municipal administrations representatives were asked this question. K. Meyer (2020) said that they have evaluated what parts in the Agenda that correlates to the environmental goals at the Environmental Administration. N. Wolf (2020) said - *"I think we are the only administration that has Agenda 2030 as part of our core business"*. Where their main focus has been directed to SDG 12 about sustainable production and consumption (but they have as well adopted SDG 8, SDG 10, SDG 11 and SDG 13). M. Östblom (2020) brought up that - *the City Management Office have done a follow-up of today's governing documents and looked into whether our programs are sufficient, to say that we work with the Agenda 2030 goals"*. U. Moback (2020) informed that the framework was studied during the process of developing the new site plan. Where they concluded that most of the goals and especially SDG 11 is met in the site plan that is to be adopted. M. Lenz (2020) said that *"Our new goals are developed from them, and our budget raises the need to work it"*.

Is there a need for a framework such as Agenda 2030 in the city of Gothenburg?

During the interviews we asked the interviewers if they think that Gothenburg needs Agenda 2030 integrated in the municipal governance system. The response was quite diverse from the stakeholders interviewed.

Those who agree on that the City of Gothenburg does not need Agenda 2030 argue that the municipality already has enough of programs and plans. G. Persson (2020) thinks that Sweden does not need the framework since one already have strategies that are similar to the Agenda 2030. Further, meant that more programs might cause encounter problems. K. Meyer (2020) argued that the Agenda 2030 is great on a global level, but is not needed in the municipality. Also U. Moback (2020) thought the framework is unnecessary as the municipality has so many programs and that the 17 SDGs is not perspicuous enough. He further argued that it would be better to have fewer programs with more pointedness. M. Lenz (2020) meant that another sustainability program to her experience, would be less effective. She also said that - *"The best thing is to try to integrate the aspects in the financial control documents and in the decision-making processes."*

The *yes* side in this matter argue for the importance of working with broadness. P. Femenías (2020) meant that Agenda 2030 has a pedagogical value with writings that are broad and visual, including subjects as equality, education and poverty that are important aspects. K. Mjörnell (2020) thinks that it is important to have some kind of framework to relate to, else things becomes unclear and fuzzy. According to

her, benefits with Agenda 2030 or common frameworks *in general* are that different stakeholders are brought closer together. M. Östblom (2020) meant that using Agenda 2030 as a framework in the city will help guiding the work; one gets an overall view of what has been done and what is missing. In that way, it will be clearer to see what one need to prioritize. In the same interview, A. Säfsten (2020) shared this perception. Further said that by using this, people in working with the same questions in the complex municipal organization, could more easily identify and help each other. G. Dörner Buskas (2020) thinks that Agenda 2030 definitely should be integrated in the budget and in the system for follow-up. She further mentioned her previous employment in Ale Municipality, where they worked with Agenda 2030 explicitly -

> *"For example, we formulated things around sustainable production and consumption and sustainable cities and communities, and under that writings we had different orientations. It would be fantastic if we could do something like that here (...) Agenda 2030 should work as a form of umbrella concept in the municipality."* - G. Dörner Buskas, 2020.

There has also been some ambiguity whether the framework of Agenda 2030 is necessary or not. S. Pettersson (2020) said that - *"We, the officials, could use Agenda 2030 as a tool to reach the goals we already have, and use it to surface the potential synergies and goal conflicts between them"*. Further, she thought that the national environmental goals are in some way the sub-goals to Agenda 2030. On the other hand she is not convinced that having a local sustainability program is the solution. Since the city already has program such as, *Equality Gothenburg*, the *Environmental Program* and the *Business Program*. To include all 17 SDGs in the budget would be a too wide form. In governing terms there needs to be clear directives in the formulation of goals to acquire any effects (S. Pettersson, 2020). She also says that *"we need to ensure that we have the methods to reach the goals"*. In the interview with N. Wolf (2020) she says - *"I think, it might be an advantage for our politicians to make it clear that we are working towards the Agenda 2030 goals."* On the contrary, she is not sure that a new program or plan with focus on the Agenda 2030 is the solution. Instead the goals in Agenda 2030 should be connected to the current programs and plans. C. Brolin (2020) is not sure if the municipality should integrate Agenda 2030 framework though they already has the climate strategy program where the climate is considered. To H. Levin (2020) it is not clear if the municipality should build their framework around Agenda 2030 -

> *"I think rather that we will continue to evaluate whether we want to replace parts of the framework with Agenda 2030 or if we want to build on the frameworks that we have, and work with follow-ups, or some form of analysis whether our own work leads to the achievement of the goals or not."*

Anna-Johanna did not explicitly answer the question though she thinks that - *"Agenda 2030 is a global framework and it points out the seriousness of the issue*

and puts the demands in a context."

5.2.2 Need for a coordinating sustainability organization

Q26

The participants were asked if the city needs some kind of central coordinating organization to strengthen the sustainability work among the municipal sub-organizations.

S. Pettersson (2020) does not argue for, but think it would fill a function to have a 'sustainability secretariat'. Further, she meant that the involvement around Agenda 2030 could be done in various ways. For instance, it could be a place where public administrations and public companies could meet and exchange experiences, inspiration, knowledge, methods and working practices. She concluded that the framework encircles all the municipal activities - education, health, city planning, traffic planning - everything; and referred to the results from the Agenda 2030 mapping of the municipality. Though, she remarked the difficulties in terms of practicality - *"If one ought to gather a reasonable amount of people, who are invited and for what purpose?"* Also that not all the administrations and companies have a sustainability executive. As a result of the complexity and size of the municipality, she understands why politicians hesitates - *"It is hard to gather everyone under the same roof and have that kind of coordination."* According to S. Pettersson (2020) one should at least try, but then there needs to be directives about doing this.

E. Pavic (2020) expressed that there is a need for clearly expressed leadership to enable the work with goals and strategies, in combination with more coordination. So that administrations work towards the same direction and with the same comprehension. The coordination should gather current challenges and questions from the administrations and integrate everyone to be able to share experiences and work towards same goals - *"To my impression the city has a great need for this coordination"* - E. Pavic, 2020. A-J. Klasander (2020) share a similar opinion, but denoted that she does not longer work in the municipal administration and may not be entirely updated with current situation. However, she *thinks* that there is a need for more close coordination between the administrations (not especially around Agenda 2030, but sustainable development in general). This, because there are a hierarchy in these administrations, and some administrations have more 'self-esteem' than others. Though, she said that they have started to 'talk the same language'. By more coordination, she thinks it would be easier to proceed to action and become stronger. Further, she thinks that various administrations, not only the City Planning Authority, the Real Estate Office and Traffic & Public Transport Authority, but also those concerned with school and social issues, must be involved earlier in city development questions and processes.

N. Wolf (2020) thinks that there should be a coordination but says -

> *"I would probably not be interest in another coordinating function that only looks at it from a strategic perspective and follow up. What I think is missing is coordination around doing (...) I think we can make use of the sustainability strategists or innovation experts that are already working in the administrations and companies. It could be part of their employment."*

Further, she thought that this coordinating body could be called a *Sustainability Office* and that it should not only consider Agenda 2030 but sustainability in general. However, H. Levin (2020) is not so convinced. He agree that the city need to strengthen coordination between the administrations around all kinds of issues. H. Levin referred to the investigation of Agenda 2030 and the municipal goals by Valencia (2019) - *"In that material it can be noted that, we as a city work with many of the goals, and on the majority of goals we have a governance that points in the same direction as the goals."* In the interview with G. Dörner Buskas (2020) the outcome was that the city needs more horizontal coordination - *"Though the world is getting more complex and integrated, there is a need to deal with more aspects at the same time"*. Something that she said Göteborgs Stadshus AB has developed processes for by the establishment of a sustainability council. On the other hand U. Moback (2020) has a slightly different opinion and says -

> *"I am unsure of that actually, the municipal principles have for a long time been to, push the questions as far down as possible in the organization. So that the effects come more directly. If there is a central function instead, then it can easily become rather heavily worked and take a lot of time. So that's why I hesitate."*

C. Brolin (2020) doesn't work at the municipality but has another perspective and says - *"I think that it is needed. Especially in Gothenburg since the different administrations is quite far apart from each other and sometime they do not agree on things."* M. Östblom (2020) thinks the city need some kind of coordination to support and follow the goals & strategies around Agenda 2030. She means that it needs to be a clear vision in the city and for the officials. M. Lenz (2020) said that - *"It might be good since one of the outcomes from the project pursued by Sandra Valencia and Urban Mistra Futures were that the City of Gothenburg has certain plans that are counterproductive against Agenda 2030"*.

5.2.3 Sustainability managed with focus on wholeness

Q29

Though Agenda 2030 and the following goals often are stated as integrated and impartible, we asked if sustainability is managed with focus on the wholeness in the city.

According to E. Pavic (2020) this is something they are working with, *"we are not perfect, but there is a interest in working towards a wholeness"*. Though there is a need for coordination in the administrations, to have the opportunity to work towards the same goals, and to have resources allocated for the purpose. U. Moback (2020) states that the City Planning Authority is trying to work with the wholeness but that it is hard. From H. Levin's (2020) point of view, both the municipality and the City Management Office is working with the wholeness. He says - *"At the level of the City Management Office, it is quite clear that we handle it with an emphasis on the wholeness"*. He also claims that it is hard to do it at the level of administrations, and that is why there is a need for collaboration. A-J. Klasander (2020) says that White Arkitekter AB try to work with the whole picture. Further, that in the start of each building project they agree with clients on which goals are the most relevant to focus on. When it comes to the municipality, she thinks that it might be a need for more focus, broader responsibilities, better coordination and stronger leadership - *"Leaders that dare to lead, since there are many talented and competent people working at the municipality"* - A-J. Klasander, 2020.

G. Dörner Buskas (2020) don't think that there is a focus on a sustainability as a whole in the municipality or in the city at large. Within Göteborgs Stadshus AB there are initiative in emphasizing the wholeness and indivisibility - that no goals is more important the other. G. Dörner Buskas means that all goals needs to be integrated simultaneously, with the knowledge that there will be goal conflicts. K. Meyer (2020) argues that people need to work with different areas. In this sense, Agenda 2030 is not useful to work by in the municipal administrations. She continued to say -

> *"If one does not know where each piece of the puzzle leads, one cannot make the puzzle. It will not add up to a picture. Hence, it is the City Management Office task to bring together the work done in the municipality."*

A. Säfsten (2020) means that since the municipality is a large organisation, there need to be areas that are more responsible for some goals and vice versa. At Västra Götaland Regionen (VGR) they have selected the aspects that they have the greatest possibility to impact on, the other goals are more sporadically worked with (M. Lenz, 2020).

According to G. Persson (2020) the municipality has the overall view, and then the goals are divided within the different departments depending on the goals. Though, he says it isn't easy for the departments to have the overall view since the probability for goal conflicts exists. He also mention that sometimes they need to focus on the most important aspects.

S. Pettersson (2020) meant that this area is hard to get together. To integrate the ecological, social and economic areas simultaneously. There are difficulties in doing this because of the complexity of the question and large municipal organisation. On

the other hand, she thought that managing sustainability with wholeness, is possibly one of the strengths with Agenda 2030. Though the aim is to see how the goals are interlinked, despite that there is problems in finding methods and ways to work with it. U. Östermark (2020) argues that the municipality as a whole should have a bigger and wider perspective when it comes to sustainability. In opposition to, that the companies could focus on the goals that they find is more relevant for their business. Further saying that - *"You cannot give everything equal focus. Because then you will not have any energy left to focus on what is the most important. You need to have some kind of gradient"* - U. Östermark, 2020.

5.2.4 Perceptions on sustainable development indicators

Q31-Q33

All of the interviewees said that indicators can contribute with more sustainable development within the area of the built environment. Though to varying degree, depending on whether it was about social, economic or environmental aspects. Also, several interviewees talked about the limitations as well as advantages of using indicators in this context.

According to G. Persson (2020) we need to have some kind of metrics. P. Femenías (2020) said that - *"All these systems, how course or general they may be, is needed for having something to presuppose"*. U. Moback (2020) thought that you absolutely could use indicators to measure sustainable development since measuring things gives you something - *"It creates possibilities for rectification if one notice that we're heading in the wrong direction"*. A-J. Klasander (2020) meant that not everything in the world is possible or meaningful to measure. But that it is important to try to track where the development is going and point out successes where feasible. To K. Mjörnell (2020) indicators are only useful - *"If you can use them to measure current situation and future improvements, to see if one have reached the goals"*. U. Östermark (2020) said that there are more to measure than decreased emissions of CO_2. He thinks we need to measure also level of education and equality.

N. Wolf (2020) agreed with that indicators can be used as a tool to measure sustainable development. But that it is a challenge to develop goals and indicators. She raised some concern about the process to develop measurable goals; when the measurability becomes the most important thing. That one risk to end up with a little bit too simple goals -

> *"Like this isn't possible to measure in a clear and distinct way, then we need to have a measurement that is 'about how many people we have informed about this'. But then we are not sure what people did with this information afterwards. So it doesn't actually say anything."*

She continued with saying that in her organization they've had several discussions about which goals they could have, that actually reflect what they want to achieve.

She stated that municipalities and organizations are struggling with setting good goals and corresponding indicators.

H. Levin (2020) said that

> *"We measure terribly much in society. We have quite a lot of measuring points and statistics, and its quite difficult to choose which ones are better or worse. Also, you need to follow them for quite long time. Like 15-20 years in order to really see the differences. So, it is important that you choose indicators and stick to them. If you discover that the indicator wasn't that good after all, and decides to change it. You need to start all over again. So I find it difficult with indicators, to find the right one."*

He also said that indicators sometimes tend to have their own life - *"It is difficult to know if your business is steering towards getting the best result for that indicator, or if it is used to make the best possible result for the citizens"*. He concluded however, in relation to measuring nothing it's still worth to have them.

According to M. Östblom (2020) -

> *"It is really nice to have indicators for different things. Preferably, if one can find indicators that are applicable to several different organizations so one can report about the same things, and see ones own progress in relations to others too. Also, to make it possible to sum up against a building sector level. That the building sector have decreased its climate impact with this much for example! It would give strength and motivation to work with certain things."*

When it comes to the building sector and issues concerning the environmental impacts from construction. P. Femenías (2020) brought up the different environmental verification schemes for buildings (such as Miljöbyggnad, BREEAM and LEED) - *"They are not telling everything but could provide some form of direction"*. S. Pettersson (2020) said that there are a lot of concrete indicators in the building sector. Regarding the difficulties to obtain those - *"It would require a research project to obtain them"*.

According to E. Pavic (2020) *"One need to do evaluation and follow the city's work in certain areas in a qualitative way in addition to the quantitative. Else they just become information"*. This opinion was also held by S. Pettersson (2020); saying that within ecological sustainability, indicators are useful. Possibly that also holds for the social dimension. Though some indicators are not able to stand by themselves, and need a qualified analysis to create some form of meaning. A-J. Klasander (2020) pointed to that legitimacy is an important property of indicators. So that actors feel that they are understandable, meaningful and possible to follow-up. However, if having to many indicators you may risk to only sub-optimize, a reason for miss-

ing the whole. K. Meyer (2020) thought both qualitative and quantitative goals are needed, since we can't measure everything. One need to find indicators that measure what we want to know more about. Measure the development in important matters so we can see how it evolves (K. Meyer, 2020). According to N. Wolf (2020), there are also difficulties about finding the reasons for why which effects are obtained - *"What did we actually contribute with here and what would happened any way? Are there any other factors that may have affected it?"*. C. Brolin (2020) raised some concern about that - *"One need to be careful and not put too much time and energy on measurement and administration without making things happen"*.

Furthermore E. Pavic (2020) thought that solely Agenda 2030 indicators will not be sufficient to use in the municipality. During the interview, she referred to the indicators suggested for Swedish municipalities and especially those directed cities as suggested by the Rådet för Kommunal Analys (RKA) (the council for municipal analysis. Further, she gave the recommendations to utilize the previous work with indicator development by Organisation for Economic Co-operation and Development (OECD). Which constitute a great amount of indicators - *"They have put a lot of time into this and I hope one look at what is already done."* - E. Pavic, 2020.

Gunnar Persson (2020) said that *"The problem with the ozone layer is almost gone, that is something easy to measure. Something that is hard to measure is happiness"*. In relation to the city of Gothenburg, he said that some critique may be directed towards those programs, where it is only given that one wish to *decrease this with 10 %* But where it is not specified from which baseline and thus to what specific levels. To him that is pointless. *"Normally, one does not read 'lower emissions from 2 million tons to 1 million tons' in the programs"* - G. Persson, 2020.

5.2.5 Summary - Agenda 2030 and indicators

Perceptions on the need for implementing Agenda 2030

There were diverse perceptions of the interviewees both regarding the need of implementing Agenda 2030 in the City of Gothenburg, as well as, *how* the SDGs could be implemented. According to SDSN (Sustainable Development Solutions Network) (2015), the SDG indicators could be used as a *report card* to measure the current state and advances, or it could be used as a *policy tool*, to support policy-makers in implementing strategies and direct resources. The term policy is rather broad and refers to a formulation of something that are to be achieved, being for instance a goal formulation. Policy tools are then instruments that are used to implement certain policies or achieve the *objectives*(Ali, 2013). These could for instance be taxes, budgets or other governance documents. The interviewees that interpreted the implementation of Agenda 2030, in the form of an additional program, one of the public policy tools, were in consensus that it would not be the right way forward. G. Persson (2020) and U. Moback (2020) meant that addressing the goals in a separate program is not needed since the city already has so many programs and plans. K. Meyer (2020) said that the framework is great on a global level, but not suited in

the municipality. U. Moback (2020) said that 17 SDGs are not perspicuous enough and promotes few programs with more pointedness. According to Valencia (2019) the municipality already has a strong steering towards sustainability. Therefore, it may not be unexpected that an additional program is perceived as needless. According to M. Lenz (2020) an additional program would be less effective and promoted that aspects of sustainability should be included in financial control documents. In alignment with this, G. Dörner Buskas (2020) said that she wish for Agenda 2030 to be integrated in the annual budget and follow-up system. About studies of sustainability frameworks and indicators. Pintér, Hardi, Martinuzzi, and Hall (2012) said that latest development has shown tendencies towards becoming an 'indicator zoo', where the focus is more on development of these, rather than addressing the issue of their capability to impact policies and the results of these. As elaborated on above, policy tools have various forms and therefore one need consider in what way Agenda 2030 could add value for the municipality.

Several interviewees thought that Agenda 2030 can be useful in the local context and had various reasons for that. For instance, M. Östblom (2020) said that the SDGs can give an overall view of what has been done and what is missing. This falls under the function of the SDGs as a *report card*. K. Mjörnell (2020) meant that one need to relate the work to some kind of framework, and said that using Agenda 2030 or common frameworks *in general*, could bring different stakeholders closer together. In the Regeringskansliet (2018) action plan, same points of references and shared language are said to be the benefits of Agenda 2030. A. Säfsten (2020) meant that by using Agenda 2030, one could more easily identify people that are working with the same thing. This was something that E. Pavic (2020) also brought up, saying that people at different places in the municipal organization often struggle with the same issue, and argued about the need for more coordination. P. Femenías (2020) said that the framework is useful because it is broad and has a pedagogical nature. N. Wolf (2020) said that politicians would have an advantage in making it clear, that the municipality work towards Agenda 2030. She though meant that the SDGs should not be handled in a separate program, but instead be connected to existing programs and plans. H. Levin (2020) thinks that there should be an evaluation of whether the municipality's own goals lead to the achievement of the SDGs or not.

S. Pettersson (2020) said that Agenda 2030 encircles all the municipal activities such as education, health, city planning and traffic planning, and argued that Agenda 2030 can be used as a tool to surface synergies and conflicts among the goals that the municipality already has. To use the 17 SDGs and their 169 targets and 231 unique indicators may though not simplify the task to investigate current municipal governance documents, since the vast numbers of targets and indicators themselves could constitute complexity. Therefore Griggs et al. (2014) suggests that a seven point scale can be used by policy makers, to systematically investigate how the goals are interlinked, by using a scale that goes from cancelling (-2) to reinforcing (+2) (cancelling, counteracting, constraining, consistent, enabling and reinforcing) to see how the goals interact. As an initial step Griggs et al., advised that starting with one of the SDGs and then walk through all other SDGs to surface the inter-

dependencies of the goals. If positive interactions is found, policies or objectives that enable cross-sector results could be created (Griggs et al., 2014). Potentially, this method of systematically assess municipal goals and targets, is what S. Pettersson meant is needed.

Perception of the need of a 'sustainability unit'

It has been argued that when organizations implement Agenda 3030, they usually pick the most relevant SDGs for their activities. This could have consequences on the 'comprehensive sustainability', as there is an imbalance in how much attention is payed to various dimensions of sustainability (Valencia et al., 2019). In the City of Malmö, these difficulties are addressed by the creation of a sustainability unit, intended to support the municipality of implementing Agenda 2030 (Valencia et al., 2019). Since Agenda 2030 is not formally implemented in Gothenburg, an organization involved with purely Agenda 2030 objectives may not be necessary or relevant. Therefore, the question was asked if some kind of central coordinating organization is needed locally. S. Pettersson (2020) said that a sustainability secretariat can fill a function. She said that this could be a place where public administrations and companies could gather to exchange experiences, knowledge, working practices and methods. She though added that there are difficulties in terms of practicality, regarding *whom* should be included and for what *purpose*. She concluded that it is hard to gather everyone under the same room and therefore she understands why politicians hesitates. She though thinks that one could at least try (S. Pettersson, 2020).

According to E. Pavic (2020) clearly expressed leadership combined with more coordination is needed, to enable the work with goals and strategies, so that people can work towards the same direction. More coordination was also suggested by A-J Klasander (2020), that promoted more *close* coordination between administrations to work on sustainable development *in general*. The arguments were that there are challenges that need to be addressed when some Administrations are more dominant than other (A-J. Klasander, 2020). N. Wolf (2020) said there is a need for the coordination primarily around the *doing* and not on a strategic level. G. Dörner Buskas (2020) argued that as the world is getting more complex and integrated one need to deal with more aspects at the same time.

There were also those that said that a central organization is unnecessary, since one have worked with pushing questions as far out in the municipal organization as possible (in the Administrations). This has been done to get more direct effects in the municipality. U. Moback (2020) meant that with a central organization, processes easily become rather 'heavily worked' and the work takes a lot of time. K. Meyer (2020) said that people need to work with different areas, otherwise it will be difficult to have each piece of the puzzle adding up to a whole picture. She further thought that the City Management Office is responsible to bring together the work in the municipality.

Perspectives of a holistic management of sustainability

According to Valencia et al. (2019) most local authorities arrange their organization in departments based on sectors. Consequentially, areas such as the environment, social aspects and city planning are become treated in 'silos'. Even though the public staff in the City of Gothenburg is encouraged to collaborate across departments, the political Committees are still ordered thematically, which can result in a potential lack of political anchoring, and support of trans-boundary programs. In the case of a potential Agenda 2030 implementation, this pose challenges as the SDGs require horizontal efforts and collaboration. (Valencia et al., 2019).

According to U. Moback (2020) it is difficult to work with the wholeness, but this is something the City Planning Authority tries to do. To H. Levin (2020) it is clear that the work at the City Management Office is done with emphasis on the whole. G. Dörner Buskas (2020) meant that she does not think the municipality works with sustainability as a 'whole' in the municipality, in that sense that goals are integrated and treated as equally important. A. Säfsten (2020) argued that in such a large organization as the municipality, one need to have different degrees of responsibilities for goals in various sub-organizations. S. Pettersson (2020) meant that it is hard to simultaneously integrate all aspects of environmental, social and economic, because of the complexity in the question and large municipal organization. U. Östermark (2020) meant that in opposition to private companies that can choose the SDGs most relevant for them, the municipality as a whole should have a bigger and wider perspective when it comes to sustainability.

Perceptions of sustainable development indicators

Gallopin (1996) initially defined an indicator by the translation of the word from Latin - *"to indicate, to announce, to give notice of, to determine and to estimate"*. Further, he meant that these descriptions tell more about the function or purpose of indicators rather than the nature of them. Therefore, Gallopin (1996) added definitions from other literature - *"measure that summarizes information relevant to a particular phenomenon, or a reasonable proxy for such a measure"* (McQueen, 1988) or *"a variable hypothetically linked to the variable studied, which itself cannot be directly observed"* (Chevalier, 1992). Meadows (1998) provides another, but associated definition, that indicators are *"partial reflections of reality based on uncertain and imperfect models"*. Models could for instance be mental models, that are based on our perceptions of reality (Meadows, 1998). In the process of developing indicators, one could then claim that socially constructed values are put into them.

All of the interviewees agreed upon that indicators can be used to measure sustainable development in cities. Several though elaborated on the limitations of indicators, as well as the lack of indicators for social sustainability. Further, it should be denoted that sustainable development is a process and not a static condition. With regards to this, H. Levin (2020) said that indicators used to track sustainable development is a time bound process; they must be followed for a long time, around 15-20

years, in order to really see the progress. He further said that, when noticing that an indicator was not that good after all, one need to start all over again. He said that even though it is a difficult task, one need to choose the 'right' indicators and stick with them (H. Levin, 2020). Another issue related to indicators was brought up by N. Wolf (2020) saying that when measurability becomes the most important thing, it can result in the development of too simple indicators. She exemplified this by saying that an indicator that is, 'number of informed people', is insufficient if not knowing what people did with this information afterwards. She stated that municipalities and organizations are struggling with setting good goals and corresponding indicators (N. Wolf, 2020). In addition H. Levin (2020) brought up that one may become mislead in the process of using indicators, when trying to get the best possible result for certain indicators and consequentially, miss the goal of best obtained results for the citizens. This aligns to some extent with what N. Wolf (2020) meant, about choosing indicators that are not purposeful for the ultimate means of their use.

Bossel (1999) argued for that one need to have indicators to tell whether we are on the path for sustainable development. For any system being a community, a city or a nation, one need to create an understanding of what is important for the viability of this specific system. According to Holman (2009) studies of Sustainable Development Indicators (SDIs) have usually been directed towards either the production of rational indicators, or their potential capabilities to increase knowledge and empower citizens. It is argued that less research have been focused on their impact on changing policies. Holman (2009) further concluded that sustainability is a social construction, which makes this field rather disordered. However, SDIs were by Miller (2005) said to be able to help politicians and staff in local governments, communities and academia to frame what sustainability is, conceptualize the relationships between nature and human systems, and open up for discussions of new innovations (Miller, 2005).

Regarding the SDGs and indicators, IAEG-MDG (Inter-Agency and Expert Group on MDG indicators) (2013) and SDSN (Sustainable Development Solutions Network) (2015), proposed several criteria before the development of the indicators. These were that they should be simplistic, capable to 'stand alone', possible to measure to a low cost, and that they should have direct implications on policy-making. The SDG indicators therefore aimed to be applicable to specific sectors, and to provide appropriate and trustworthy information, that could be used when developing policies (Hansson et al., 2019). In a pilot project pursued by Simon and Arfvidsson (2015), indicators related to SDG 11 and the urban environment were tested in various cities, where Gothenburg was one of them. Three of the target indicators was said to be easy to report on by the local government. These were, 11.3.2 on whether urban and regional development plans exist, 11.3 on legislation that promotes citizen participation in urban planning, and 11.B.1 on implementing risk reduction and resilience strategies. They further concluded that target 11.3, handling democracy in urban planning, does not contribute with anything but a check mark. According to Simon and Arfvidsson (2015) this exemplifies the difficulties in getting a balance between reduced number of indicators, one of the proposed SDG indicator criteria,

and expressions that are too general, so that they become of little relevance in the development of policies. What was further argued by Simon and Arfvidsson (2015) was that the targets and indicators purposed to assess city sustainability, need to be integrated into existing governance system. If they are not properly integrated, their relevance will decrease as reporting become simply a burden for authorities.

5.3 Roles and responsibilities

5.3.1 Perceptions of responsibilities for reaching sustainability goals of the city

Q38a

The interviewees were asked what actors they perceive as important for meeting goals for sustainable development. Several said, everyone living and operating in the city has some kind of responsibility. When it comes to the goals set by the municipality, several denoted that the responsibility of fulfillment is by the municipal organizations. However, single administrations have often not the sole impact on issues, but need to collaborate with each other.

S. Pettersson (2020) said that everyone has a responsibility, though added that certain stakeholders need to take an extra responsibility when it comes to their specific areas. K. Meyer (2020) said that politicians have a huge importance especially when it comes to the development of laws. However, since development of laws is a very slow process and takes several years, citizens and businesses also play a major role. This because they have the capability to form associations and can speak their opinions (K. Meyer, 2002). According to K. Mjörnell (2020) every citizen are important since each decisions made by them have consequences on social, ecological and economic sustainability. Therefore, the responsibility is upon all citizens to reach the city's sustainability goals - *"People that choose to investments, rent a local or do a renovation, transport themselves or decides about buying something. All those activities they perform will have an impact on the three sustainability aspects"*. N. Wolf (2020) said that - *"The simple answer is that everyone has a responsibility. The problem is though that when saying everyone have responsibility, it often results in no one taking it"*. She continued saying that it is difficult to answer whom has the *greatest* responsibility, because stakeholders will have different kinds -

> *"All has to identify their roles, take a step back and reflect over the potential each and everyone has. Based on what roles, they also have the obligation to take steps forward by using this potential."*

H. Levin (2020) said that many of the politically set goals in the City of Gothenburg, presuppose that the entire society is changed. For instance, to decrease the emissions in the city traffic and use of personal cars must decrease. Inferring that the responsibility is upon the Gothenburg citizen. He continued with saying that

one cannot say that there isn't any responsibility on the individual level and referred to that the individuals also has power to influence the politics - *"If the citizens are not satisfied with policies and goals that are determined they simply vote for other politicians".* - H. Levin, 2020.

Four of the respondents further meant that politicians or public officials in the municipality, plays a significant role in this context. M. Östblom (2020) said that the city's sustainability goals is the municipality's responsibility to fulfill. This opinion was also held by H. Levin (2020) that said that the politically determined goals, almost always is the responsibility of the relevant administration to reach, often in collaboration with others and often several at once. M. Östblom (2020) meant that single administrations or committees haven't the sole impact in any of the specific goals. She went forth and said that the municipality can create the preconditions for companies, public sector and visitors to act in certain desirable ways. For instance travel with public transport or bicycle instead of private cars,

> *"The municipal organizations cannot force people to do certain things and so we cannot reach our sustainability goals only from the things we do. What we can do is to push it is far as we can, based on the prerequisites that we have."*

She continued to say that this holds for the national sustainability goals as well. If only some of the regional or municipal organizations work towards them, there will be no fulfillment of the goals. A-J. Klasander (2020) said that the you cannot take away the responsibility of the politicians, because those have the mandate to make decisions. Further, the public officials must adapt to what is requested by the political leaders - *"One must as well have a steady bureaucracy and well-informed officials that are experts in their fields and as such can guide the politicians. But sometimes this fails".* M. Lenz (2020) indirectly referred to mandate owners by saying that those who set the financial frameworks define more than they know - *"If no financial resources are invested in the sustainability work, there won´t be much accomplished".*

G. Persson (2020) said that the past years he has started to think that, when it comes to environmental concerns large structural changes are needed. Further, he said that minor (or individual) actions such as sorting household waste and eat vegetarian food is as well important for people to understand what it is about. Further, added that these things are possibly not going to make the largest differences (G. Persson, 2020).

According to A. Säfsten (2020) the question of sustainability is nothing that can be resolved in isolation. She says that there are enormously important actors in the region and for the city - *"For instance Volvo, a company which has many employees living in Gothenburg or near the city. Where the consequences due to COVID-19 in such businesses are really unsure".* She claimed that such an actor can have a huge impact on how the politics reasons - *"What is perceived as important for the society*

is something that we haven't been forced to think of before". Apart from private actors she brought up academia, such as Chalmers University of Technology and Sahlgrenska Akademin. Also, organizations acting as a bridge between academia and the business - Johanneberg Science Park. According to her, these have the mandate and ability to push the development in a certain direction. G. Dörner Buskas (2020) as well denoted the academia as important, and highlighted that the city could be better to include research and knowledge in their work. She claimed that some cooperation is being carried out but that it tends to be more individual projects - *"I wish to see more outspoken and long term collaboration".* According to her, the current politically elected have directed financial resources to the academia, stating that those will be important collaboration partners.

5.3.2 Perceptions on responsibility to increase 'sustainability' in the construction sector

Q38b

The interviewees also provided their opinions on whom are responsible to increase sustainability in the building sector. Several brought up the municipal administrations and companies as well as national government and departments as important in this context.

Several turned their head to the national and municipal governments. G. Persson (2020) said that the government sets the rule of the game. What is decided by Boverket is what is steering them - *"They decide how things are going to be built, but where and when is up to the municipality".* A concern to S. Pettersson (2020) related to the building sector, is the subject of climate adaptation. According to her, help is needed both from national government and international organizations

> *"This is not an issue that could be resolved by solely the City of Gothenburg. The nation needs to step up, not to forget the European Union which govern us directly through policies and regulations in the environmental field."*

P. Femenías (2020) argued that the municipal organizations and companies have the responsibility, since they are financed by public capital - *"They should be forerunners and show the rest of society how it is done".* S. Pettersson (2020) said that the planning Administrations and Committees need to take more responsibility; for instance the Real Estate Office, City Planning Authority and Park and Environment. As well as the municipal companies such as Framtiden Utveckling AB and Älvstranden Utveckling AB. U. Östermark (2020) brought up that the other actors, has the City of Gothenburg not control over in the same way. Though he added that there are possibility for the municipality to 'give carrots' by including requirements in land allocations - *"Being either guidelines for environmentally modified construction (miljöanpassat) or demand of certain proportion of social contracts of the constructed apartments".* G. Dörner Buskas (2020) thought that the City Planning Authority

together with the committees are important. She added that one could possibly have more requirements assigned land trough land prescriptions (markanvisningar). These requirements could be constructing more of certain buildings, or to construct cheaper houses. She further argued that one could question whether one should take the market price for a land area or property (G. Dörner Buskas, 2020). It should be noted that several respondents said that the municipality is a large landowner as compared to others municipalities.

C. Brolin (2020) said that the city has the main responsibility because they set the framework for the work her company performs - *"When we buy land from the city, they assign it certain requirements. Those requirements then should contribute to achieving the city's goals. So they are absolutely responsible".* In addition, she thinks that the municipality should be restrictive and allocate land for the companies that wish to meet the city's goals, and not those who wont meet the demands. U. Moback (2020) said that the municipal have the opportunity to take the lead. Also he stated that, on the basis of the law of site and building construction (PBL), the City Planning Authority sets the boundaries. However, the actual content is determined by those actors that demand and perform the actual construction - *"So there are these individual stakeholders in the building sector important as well. Those that are actually doing".* U. Moback further informed that the former process of developing the site plan were done by solely the City Planning Authority, and were sent out to the other administrations and committees for referral. On the contrary, the new site plan to be adopted in 2021, has evolved in collaboration with the Traffic Office, the Real Estate Office and Park and environment administration. With the purpose that other administrations will be aware of the decisions about long term land use in the municipality.

A-J. Klasander (2020) thinks that building contractors alone, cannot have the responsibility for increased sustainable development in the construction sector - *"How high aspirations they even may have, they need capable consultants with competence as well. Which then again cannot be done without building contractors wanting it".* S. Pettersson (2020) said that those that perform the actual construction, they often do as the law tell them to do - *"If they are engineers, they seek to find solutions. If you put laws and regulations on energy or material demands, then they are about to solve that".* P. Femenías (2020) said that she hope for a shift so that even private stakeholders feel social responsibility. Further, she thinks that they are forced to do this now, if they ought to find motivated employees - *"Those motivated employees or young professionals that are attracted by companies that works on their sustainability".* G. Dörner Buskas (2020) said that the city could learn more from the private actors - *"Because they have had a competitive advantage in working sustainably, in a way that has not yet challenged the public sector".* She claimed that these companies been forced to do it because customers otherwise would go somewhere else -

> *"They have acted much more rapid, but some caution should be made about the companies using it only for branding purpose and disillusion their customers (...) A challenge in the building sector not least, in these*

production chains that does not reflect what is being spoken higher up in the hierarchy. At the top they are usually very skilled".

According to G. Persson (2020) important actors could be his employer Framtiden Utveckling AB and those that develops new technology or can provide more sustainable solutions. Being for example those manufacturing solar panel manufacturers; the concrete industry innovating their products using fly ash; or those that construct wooden houses. To conclude, he said that technology development is really important in this context.

5.3.3 Whom have an impact on how the built environment is developed?

Q39

In site and local plans, the municipality have the power to decide how land is to be used and what are to be built. But who has the actual possibility to impact on how the built environment is constructed?

When it comes to the development of the built environment, H. Levin (2020) said that the Planning and Building Committee has the responsibility to coordinate actors such as the Traffic & Public Transport Authority and the Waste and Water Committee among others. This, to ensure that all demands on electricity, water, streets, roads and parks are considered on the specific site. Then they also have the responsibility to conduct socially consistent analyzes or childcare consistent analyzes in there projects. So many are involved and have the ability to influence on higher level decisions. Further, the Real Estate Office and corresponding committee is important here, as they manage the finances around the exploitation; both in situations when the municipality is the land owner and when it is not. Furthermore, in the planning and building process, a number of actors are involved. But final decisions are taken by the Planning and Building Committee, the Property Management Committee and the City Council. The responsibility however, is shared with those who own land or a property and wish construct something. Especially when the building contractor want to develop their own land and it's not municipally owned. Then it is to a large extent the property owner that push for what is to be built and how it should be designed. H. Levin (2020) concludes that it is clearly a collaborative process with the city and explains the reasoning behind - *"Even if the city can govern with the law of plan and construction (PBL), the intention with the law is that the municipality should not come in and govern 'with its whole hand'".* According to H. Levin (2020) the purpose of the law is to ensure a number of societal effects; and so it is up to the property developer, to decide on the design of their buildings.

U. Östermark (2020) said that all major actors such as land or property owners, building contractors and consultants affects *what and how* the built environment develops - *"Still, the municipal administrations and companies have most of the di-*

rect impact since they could say - do this!" K. Mjörnell (2020) also denoted the municipal responsibility -

> *"Since it takes care of the early and most important events. The decisions to conduct a new plan, change or upgrade an area. Though, the private land or property owners are no exception, those that wish to do something with their land. Every actor involved in the early phases being an architect, consultant or entrepreneur have the opportunity to influence".*

Though K. Mjörnell (2020) concluded that it all comes back to the municipality and the property developer that want something to be done. C. Brolin (2020) argued that since the city have a monopoly of planning - *what* is to be built is determined by them. Providing a remark on that *how* it is to be built is more dependent on the land owner. K. Meyer (2020) said that the decisions are made by the boards, but numerous and various people are involved throughout the process. The administrations in the city, the neighbourhoods and citizens could also affect the decisions, when plans are publicly distributed for people to review.

A-J. Klasander (2020) said that, even if the municipality has a planning monopoly, they could exercise a lot more power than they do today. Regarding the question why one doesn't, she answered that it is often rather convenient to be compliant to developers - *"Especially now when the willingness to create plans for new projects is high because officials are pressed to deliver housing".* Further, A-J. Klasander claims that densification is now exaggerated because of this pressure and as a consequence the buildings become a little bit too high and the courtyards a little bit to narrow - *"You temporarily solve a problem, but the urban environment as a whole will not be sustainable in the long term".* Further, she brought up Stockholm and its densest areas as an example -

> *"Where children get to play on rubber mats and plastic grass, and the preschools are to small. Where parks are not large enough to withstand wear and tear of so many people. You loose both the sensory experience of nature, but also the ecosystem services - that the soil takes care of rainwater, the greenery takes care of the temperature with heat waves and rainfall".*

She continued with that the long-term values and economic values go long-term lost on this.

U. Moback (2020) said that the City Planning Authority and certainly the Planning and Building Committee decides with basis in the law of planning and building (PBL). Also, in the City of Gothenburg the Park and Environment administration are involved, which is usually not the case in a municipality. He further added that the property owner or the exploiter are affecting pretty much. E. Pavic (2020) said that when a real estate developer receives a building permit *"The will and final im-*

pact, what lastly determines how it is to be built are in the hands of the real estate developer. They have the ability to choose, sustainable materials or not". Further, the building contractor decides what requirements and demands to be put on the subcontractors that they employ. Together with the overall sustainability aspects that the actor have the muscles and will to work with. To E. Pavic (2020) -

> *"Smart developers, develop and are not afraid to ask; they delegate means to make the sustainability principles concrete and they plan time well. There are those that communicates air and those that actually do; those that takes sustainability seriously within their economic boundaries. The really brave, develops their business models and can construct new business models through their sustainability work"*.

According to A-J. Klasander (2020) it is the developers' market now. So even if the planning process includes consultations with stakeholders, they often takes place so late in the building process so that it becomes on the margin that one could have an opinion of what is being built. She claims that Sweden has not yet formed a good way of handling this.

5.3.4 Summary Roles and responsibilities

Responsibilities to reach sustainability goals of the city

There were a consensus among five interviewees, about the shared liability when it comes to sustainable development. Where several said that *all* people living and operating in the city, need to do what are within their reach and capability. K. Mjörnell (2020) said that all activities that are performed by citizens, being for instance, people's investments, renting of locals or renovations, transportation or consumption of goods, have an impact on every aspect of sustainability (K. Mjörnell, 2020). S. Pettersson (2020) meant that everyone has a responsibility, though certain stakeholders need to take an extra responsibility when it comes to their specific areas.

A-J. Klasander (2020) said that one cannot neglect the responsibilities of the politicians, since those are mandate owners. M. Lenz (2020) said that those that sets the boundaries in financial means impact on whether sustainability work is to be carried out. Which according to the authors of this thesis holds for politicians in the government, since they make decisions about the annual budget for instance. According to A-J Klasander (2020), for politicians to be able to make informed decisions, public officials with expertise and knowledge are needed. K. Meyer (2020) as well referred to politicians and their mandate in law-making. She though remarked that development of laws is a very slow process, why also citizens and businesses play a major role, as they can form associations and speak their opinions. Additionally, it was said that some issues are difficult to handle autonomously by the local government. On this topic, S. Pettersson (2020) said that in context of climate adaptation, help is needed from higher level governments, such as the national government and European Union. Further, M. Östblom (2020) and H. Levin (2020)

meant that the sustainability goals of the city, are the responsibility of the municipal organization to fulfill. One of the arguments were that the municipality could create the preconditions so that citizens could act in certain desirable ways. H. Levin (2020) further meant that single administrations, or other organizations within the City of Gothenburg, rarely have the sole impact on these goals but in collaboration with each other. This is exemplified in the new *Environment and Climate Program 2021-2030* (out on referral), where all Committees and Boards is responsible to integrate the goals and plans into their business, by identifying and prioritize the relevant measures for their areas of responsibility. This is needed for the municipality to achieve the selected goals (Göteborgs Stad, 2020b). It is further stated that the municipality has the central responsibility to reach global sustainability goals and national environmental quality goals; but need to coordinate the work together with academia, business, residents and other cities (Göteborgs Stad, 2020b).

Additionally, remarks were made for the significance of the private sector when it comes to reaching the city's sustainability goals. According to Regeringskansliet (2018) large parts of Swedish businesses say that they see sustainability as a competitive advantage. This aligns with what G. Dörner Buskas (2020) said about private companies - *"They have had a competitive advantage in working sustainably, in a way that has not yet challenged the public sector"*. She claimed that these companies have been forced to focus on sustainability, otherwise their customers would go somewhere else. She concluded with saying that these are organizations could the *City of Gothenburg* learn from.

Who can impact on the built environment

According to the Planning and Building Act, the responsibility of urban planning is upon the municipality. The interviewees were though asked the question about what other actors, have the possibility to influence decisions on how the built environment develops in Gothenburg.

The national and municipal governments were repeatedly suggested as important role players. The national government sets the rules of the game and what is decided by Boverket, is what the building sector need to comply with. G. Persson (2020) said that the national government decide *how* things are to be built, but where and when is more up to the municipality. U. Moback (2020) said that on the basis of the Planning and Building Act, the City Planning Authority sets the boundaries, but the actual content is determined by actors that perform the actual construction, being either public or private actors.

Regarding the question whom have an impact on how the built environment is developed, several denoted the Committees and Administrations as major role players. U. Moback (2020) informed that formerly, the site plan was developed by solely the City Planning Authority. The new site plan have though been developed in collaboration with the Traffic Office, Real Estate Office and Park and Environment Administration. Purposed to increase the awareness among various Administra-

tions, of the long-term land use in the city. H. Levin (2020) said it is clearly a collaborative process, where the Planning and Building Committee is responsible organization to coordinate actors, such as the Traffic & Public Transport Authority, the Waste and Water Committee and others; collaboration is needed to ensure that various societal services and demands, such as electricity, water, streets, parks and social services (trough socially consistent analyzes) are considered in the development of urban areas. Further, the final decisions are taken by the Planning and Building Committee, the Property Management Committee and the City Council. Though, H. Levin (2020) remarked that even if the municipality governs on the basis of the Planning and Building Act, the intention with the law is to ensure that the municipality should not govern 'with its whole hand'. K. Mjörnell (2020) said that the municipality takes care of the early and most important events, when decisions are made for conducting a new plan, change or upgrade an area. C. Brolin (2020) argued that since the city have a planning monopoly and what is to be built is determined by them. On the contrary, how it is built is more up to the land or property owner. G. Dörner Buskas (2020) said that mandate owners have the possibility to impact more on the urban development through land prescriptions. In alignment with this, A-J. Klasander (2020) said about that the municipality with regards to the planning monopoly, could exercise a lot more power than they do today. On the question why they does not, she answered that it is rather convenient to be compliant, especially since one is currently pressed to deliver housing. She said that consequentially, the houses become a little bit too high, and the courtyards a little bit too narrow. She concluded with that one may temporarily solve the problem of housing shortage, but risks are that it will not be sustainable in the long term. According to her, it is the building contractors market now. So even if consultations are made during the building process, it usually comes in very late, why one rarely are able to impact on it (A-J. Klasander, 2020).

S. Pettersson (2020) said that the planning Administrations and Committees need to take more responsibility, such as the Real Estate Office, the City Planning Authority and the Park and Landscape Committee, as well as the municipal companies, Framtiden Byggutveckling AB and Älvstranden Utveckling AB. U. Östermark (2020) remarked that other actors than the municipal organizations, can not be controlled by the *City of Gothenburg* in the same way. He went forth and said that one are only able to influence those actors by providing "carrots" for certain outcomes, through specifying requirements and demands in land allocations. Several interviewees also accentuated that the municipality is a relatively large landowner, as compared to other municipalities. C. Brolin (2020) said that for her company, the framework is set by the municipality, and if they assign land certain requirements, then these should be aimed to meet the goals of the municipality. P. Femenías (2020) said that public companies and organizations have the responsibility, since they are financed by public capital and should be forerunners.

Several interviewees also said that land owners and building contractors could to impact 'pretty much', especially in cases where those are land or property owners. P. Femenías (2020) said that for those companies to be attractive employers for moti-

vated employees and young professionals, must work with sustainability. G. Dörner Buskas (2020) said that the private sector have had sustainability as a competitive advantage, which has not challenged the public sector in the same way. Because of this, private companies have acted much more rapid. On the topic of private actors, A-J. Klasander (2020) said that building contractors cannot alone, have the responsibility of sustainable development in the construction sector, they need capable consultants with competence as well. Nevertheless, consultants cannot inflict if building contractors is not demanding it as well (A-J. Klasander, 2020). According to K. Mjörnell (2020), private land or property owners are important when they decide to do something with their land.

From literature it was found that the planning process does not always proceed with transparency throughout all phases. In the report from Ingo, Berglund, and Pemer (2018) three projects and the decision-makings in Stockholm were analyzed, and all of them highlights the recent years strategic challenges in urban construction. The results and conclusions from the report is based upon decision protocols and other documents from planning and construction processes, as well as statements from the daily press and programs from the different political parties (Ingo et al., 2018). The main findings from the report was 1) project conditions were in reality decided outside the planning process, 2) the projects has been pursued in the same direction regardless of political majority, 3) planning knowledge, environmental goals and cultural historical values was not respected, 4) the holistic view was missing, 5) all three projects have major quality deficiencies, 6) the lack of transparency and difficulty in demanding responsibility reduces the legitimacy of political decisions and 7) urban planning in Stockholm needs to be strengthened (Ingo et al., 2018).

The results from this chapter will be the basis for the following chapter aiming to discuss the findings from literature and interviews.

6
Discussion

This chapter aims to discuss the different and similar results from both the literature and interview study. The three major areas of focus, *Sustainability and the City of Gothenburg*, *Agenda 2030 and indicators* and *Roles and responsibilities* is kept as a framework for how the discussion is arranged.

Sustainability and the City of Gothenburg

From the interviews, it was found that the Brundtland definition of sustainable development is recognized among several interviewed stakeholders. Aspects of economic, social and environmental were often said to be equally important. One interviewee though meant that the environmental dimension is the key-factor for all other dimensions, where economy within the boundaries of the environmental dimension is used to meet the goal of human well-being. This was the most environmentally centered perspective, present among the stakeholders involved in this study. Eight out of sixteen interviewed stakeholders based their definitions upon already written expressions, such as Agenda 2030 or the Brundtland definition. Three mentioned Agenda 2030, whereas none used the national environmental quality goal 15 - god bebyggd miljö (a good built environment) to frame the 'sustainable city'. It therefore seems that Agenda 2030 is payed much more attention, than the national environmental quality goal 15. This is rather interesting, though goal 15 is adopted by the municipality. The reasons may be that there is a lack of focus and communication about the goal and follow ups, or that the goal mainly focuses on the built environment and it's impact on the environmental dimension of sustainable development, and therefore narrowly defines the sustainable city. Possibly, one of the milestones related to goal 15 defined as 'an attractive living environment', could be perceived as rather vague. There is little information available about if, *or* how, the progress on the goal is measured or followed up. One interviewee in fact, directed some criticism with regards to the vagueness of the goal. One could also elaborate on that Agenda 2030 has gained a momentum, as it spreads among various levels of governments and organizations nationally. However, it is certainly difficult to define the exact definitions of the sustainable city, and presumably, there are as many definitions as we are people on earth. This may be why the broad and deliberate Brundtland definition of sustainable development has received that much penetrating power. The various interpretations that though follow when using general definitions, poses challenges to find one way to approach sustainable development and is why one need to be more specific when it comes to sustainably built environment.

During interviews the 'sustainable city' was repeated times said to be a moving target, and that the components of it change over time because of changed conditions. Because we continuously learn what environmental, economic and social dimensions of sustainability should comprise of. A solution to a problem of today, may therefore not be the same solution suggested tomorrow. This was exemplified when interviewees brought up the municipal goal to construct a denser city. National and local governments have proposed that the urban environment should be developed more in central areas than in outer regions. By constructing in central areas, existing resources such as public transport and social services could be better utilized. A benefit from this would be that less people use personal cars, which leads to less congestion, greenhouse gas emissions and air pollution, among other negative consequences from a more sparsely built city. U. Moback (2020) said that the current high degree of exploitation was not expected and some central areas may now be purely human-free, as the urban environment becomes very shady and tough. Even though the problem of housing shortages may be met by densifying the city, the long-term social sustainability could be put at stake when people come to displeasure certain urban areas. The city's built environment should be constructed in a way that people enjoy to live, work and socialize in these areas. As P. Femenías (2020) said planning and constructing the city cannot be done in a purely technical manner, but must be done with consideration of humans in it. K. Meyer (2020) denoted the importance of finding the balance, since there are both advantages and drawbacks with densification. Managing the city and it's built environment is certainly a complex task, and resolving one problem can trigger other problems or affect other areas negatively. When stakeholders in the city tries to solve the housing shortages and potentially decrease the environmental impact through densification, other challenges could occur such as increased noise, worsen air quality, high pressure on public transport and water & sewage system and insufficient amount of green areas. However, according to U. Moback (2020) the municipality did not expected this high degree of exploitation. It seems that the intentions of city planners and authorities have been good, but the real estate and housing market may have put the development in a potentially unsustainable direction. Developing a coherent and sustainably built city, is an area needed to be further addressed.

The term robustness with regards to planning and constructing the sustainable city was used by several interviewees. This term may be translated into the capacity of the constructed city to withstand changes. Because the future is unknown, we need to be able to manage and adapt our societies to new conditions. P. Femenías (2020) said that concerned actors need to consider that function of a building should be possible to change over time. By designing and constructing buildings with flexibility, one could avoid that well-functioning buildings are demolished simply because they are not fancied anymore and hence, avoid that material resources become unnecessarily wasted. Arguably, one way to move towards a more circular economy is to first *rethink* the use of certain buildings, before turning to *reuse* and *recycling* of materials. K. Mjörnell (2020) meant that the least impact on the environment and economy, potentially also social sustainability, is to use what is already built as long

as possible. This may in general be true, and not least when it comes to material efficiency. For other technical performance issues, such as energy efficiency, toxicity of building materials and indoor climate and comfort, assessments are needed in each and every case. As concluded by the National Board of Housing, the energy consumption of older buildings are often much higher than new constructed buildings. One therefore need to compare alternatives of using existing buildings and constructing new, and their impacts on social, economic and environmental dimensions in life cycle assessments (LCAs) to be truly sure.

The city as a physical artefact will forth need to manage consequences of climate change, such as increased temperatures (heat waves) and precipitation. In Gothenburg, among other places located by the ocean, sea level is expected to rise even under current increase of global mean temperature. A challenge will then be how to manage the urban environments located near the river. G. Dörner Buskas (2020) said that a lot of financial resources are needed to handle this in a proper way. With regards to climate adaptation, S. Pettersson (2020) said there is a need for national and international support, since it is a too difficult problem for the municipality to resolve by itself. Except for various levels of government, private actors will be important, since they own and construct on land located near the river. Arguably, both public and private companies need to share both risks and costs. Also, they will need to collaborate to find proper technical solutions to address this challenge. Except for companies, researchers play a major role when it comes to assessing and guessing what impacts on the built environment will be. This area thus constitutes an example of how important the interplay between actors is.

The general perception about the building sector among stakeholders interviewed, was that actors are becoming more and more aware of the subject of sustainability. Several respondents said that sustainability is included in their every day work. One interviewee further meant that organizations that neglect the subject of sustainability may put their future businesses at stake. Furthermore, one interviewee meant that companies must work with sustainability to appeal young professionals. It was also said that the city has high reaching goals when it comes to sustainable development. This is reflected in the current budget, where Gothenburg aims to be a leading city in mitigation of climate change. It is though worth to mention that the interview study was conducted with already involved people, and it is uncertain whether this is shared by those that are not into the subject of sustainability. However, it has been improvements in the building sector the past years, especially when it comes to energy consumption per m^2 of building. But solely focusing on single objectives such as energy efficiency, may imply that other significant ones are set aside. This was something K. Mjörnell (2020) brought up when saying that there has been a lot of focus on *only* energy efficiency and buildings constructed in wood, for instance. Every step taken in the right direction is nevertheless desired, but actors involved with the building sector must be able to account for several other aspects at a time of buildings and their impacts. The total energy consumption and environmental impact has further increased the last decade, which may be partly due to increased population and need of housing. For certain time intervals,

greenhouse gas emissions from national production in the building sector decreased. This could depend on several factors, such as lesser amount of construction projects pursued. It is further worth to mention, that this was outweighed by emissions from imported building materials. Decreasing the number of national environmental impact indicators, by letting emissions happen elsewhere, will not lead to an actual improvement in environmental terms. Therefore, private companies must start to take more responsibility regarding what environmental impacts imported building materials come with. They also need to create a more comprehensive strategy, to construct buildings and infrastructure sustainable in other environmental means than for instance energy efficiency.

Regarding the current situation of the building sector, H. Levin (2020) meant that the structure of the city does not follow the same pattern of improvements, as for single buildings. Then question is *why are not cities following the same pattern?* A potential explanation might be that buildings is usually constructed by one organisation (or several in cooperation) and then maintained by either the same, or another organisation. Hence, it is easier to keep a coherent work strategy when it is the same organisation manage the construction. This is usually not the case for a city, since it is of a completely different complexity than a single building. In a city, various actors in the construction sector in different constellations must interact with for instance authorities, and come together in several areas. It is certainly not an easy task to develop a city that is coherent and sustainably built. An insight from the interviews were that there are problems in the City of Gothenburg when talking about cooperation between the Committees, Administrations, Boards and public companies. Considering the fact that also external actors of the municipal organization need to interplay with it (and each other) the complexity increases. It is however, not possible to conclude that 'bad' or insufficient cooperation among these actors is the underlying cause why the built environment in Gothenburg may not be developing sustainably. To ascertain this more investigations are needed.

The challenges related to the work on sustainable development *in general*, were during interviews said to be an organizational matter. The large municipality with greatly differing sub-organization in terms of 'self esteem' or power, were said making it difficult to collaborate. The perceptions of interviewees acting in various parts of the city, such as the Administrations, public companies and the private sector, was that there is a lack of coordination. Consequentially, public officials in different parts of the municipal organization, often struggle with the same issues, when they instead could be helping each other. It was further argued that the municipal organization is too fragmented or split, where one interviewee meant that this is certainly a challenge when it comes to city planning and urban construction. The benefits from more or *better* coordination could thus be the increased possibility to progress on sustainability goals, when time and energy are left to proceed on goals of certain matters. Sustainable development is said to be a 'wicked problem' that challenges the traditional organizations involved with policy, and therefore one may need to rethink on how to organize oneself, and allow for collaboration across departmental boundaries. The consequences from insufficient collaboration is the lack

of awareness of how certain aspects relate to each other, and that goals in programs provisioned by different administrations, may even be in conflict with each other. If understanding how goals are interrelated, one could benefit from synergies and allow for progress in several sustainability dimensions. One interviewee requested a tool that could comprehend all aspects of sustainability, and be used to reveal potential goal synergies or trade-offs. Further, this interviewee argued that Agenda 2030 could be used to identify these relations between the municipal goals. Some may though perceive Agenda 2030 itself pose challenges when it comes surfacing goal conflicts and synergies.

9 out of 16 interviewees said that mandate periods is a challenge when it comes to having long-term goals. It was said that mandate periods of four year is too short when long-term goals usually extends over longer time periods than this. Anything can happen during an election, and the City Council and Committees can decide on changes or cancellations of programs and plans. From one of the interviews it was understood that the current situation in Gothenburg is currently in a haywire. Since it was a shift in political coalition in the 2018 election, from Social Democrats, Green and Left parties to a new coalition of Moderates, Liberals, Christian Democrats, the Centre and 'parties of discontent', there has been some interruption in the municipality. During several interviews it was therefore said that when there are shifts in political focus, it is important that long term goals are kept going. Because else public officials may not be able to plan and conduct their work. It is thus preferred and possibly crucial that long-term goals are agreed upon by the entire City Council and all Committees.

Most of the prioritized measures suggested by the interviewees mainly concerned either social or ecological (or both) dimensions and where of both procedural and political nature. Some of these where to extend the life time of buildings and build with more flexibility. Planning for biodiversity and ecosystem services was one of the political measures and considered to be extremely important. Except for the value of these in environmental terms, they were also said to contribute to human quality of life. The importance of indicators and to improve measurements to be able to see any progress towards sustainability were suggested as another important procedural measure. Perhaps the most important political and procedural measure for Gothenburg, seemed to be solving the housing shortage. Furthermore, the issue of the subsequent high building pace has been discussed among several interviewed candidates that expressed worry. Some meant that densifying the city may result in that the environment is set aside, and that increased noise, worsen air quality and decreased green areas, could be future problems. This could in the long run compromise the long-term social sustainability if actors involved with the built environment puts less focus on constructing for 'humans' and livable neighborhoods. Except for the municipality's responsibility to take this into account in city planning, businesses need to be innovative and managing construction of their land with these things in mind.

Agenda 2030 and indicators

From interviews with representatives from the private companies Castellum, White Arkitekter and Riksbyggen, it appeared that they integrated Agenda 2030 into their business. Some by selecting the SDGs that are most relevant for their operations. Since this is not a representative sample of all private actors in the construction sector, other companies may use other frameworks than Agenda 2030. During interviews with public representatives, it appeared that around one out of nineteen Administrations have integrated Agenda 2030 in their operational work, being the Consumer and Citizen Service and the state owned research institute RISE. The SDGs are though included in the new *Environment and Climate* program provided by the Environmental administration. To conclude, it seems that all *private* companies included in this study, and relatively few *public* organizations have adopted Agenda 2030. This could be a result of the competitive advantage in using well-known sustainability frameworks, and that the public sector is not challenged by the market in the same way. Since the framework is well-established, it could appeal customers, share-holders, future employees and other relevant stakeholders that recognize the labelling. Companies that have the obligation to perform sustainability reporting may use Agenda 2030 because of its broadness and perceived legitimacy. Presumably, it is easier and reasonable to utilize sustainability goals that are already developed, instead of developing own goals and targets. The lack of an adoption in the municipal organization depends on the lack of a politically determined adoption of the framework by the City Council.

In 2017, the City Executive Board by petition from the political parties (Social Democrats, Green and Left parties) requested a municipal investigation on how the Agenda could be systematically integrated into the current steering in the City of Gothenburg (Stadsledningskontoret, 2018). Conclusion drawn from this investigation was that many of the set goals were in line with the SDGs. The governance form of steering by goals in programs and plans was further said to well align with Agenda 2030. Based on the findings from this study, it seemed that the political interest to include Agenda 2030 in policy tools such as budgets or programs, is smaller today compared to 2017. Considering that the municipal organization is decentralized, power can be found further away from the City Council (in Committees). The sporadic local adoption thus appears to be dependent on the occurrence of so called 'SDG-champions' being for instance the Environmental Committee or Administration. As earlier said, the SDGs are included in the new *Climate and Environment* program, where the Administration has evaluated how the SDGs relates to their own developed goals. In addition, the Consumer and Citizen Service has integrated Agenda 2030 into their core business, and N. Wolf (2020) mean that they are probably the only administration that has done this. This is presumably because some municipal stakeholders are compassionate about the issue of sustainable development and find Agenda 2030 to be significant in this context. That the framework infiltrates in parts of the City organization may also happen because cities are not isolated systems. Administrations such as the Environmental and Consumer and Citizen Service were said to have an exchange of information, knowledge, insights

and experiences, with administrations in other municipalities. Factors such as the national government legitimization of Agenda 2030 by development of a national action plan, the integration of Agenda 2030 in the budget of Malmö, and that local researchers are involved with studies about SDGs and the implementation, all influence Committee's and Administration's adoption.

One insight that appeared during this study was that Agenda 2030 can be integrated in various ways. The suggestions varied from integration of the aspects in the financial control documents, to adjusting the global goals to fit the activities in each organization. On this topic, U. Moback (2020) said it is not preferred if Agenda 2030 and all 17 SDGs, would be the basis for the goals set by the local government, because it would be a too wide form. Regarding the need of an 'Agenda 2030 program' he argued that one would benefit from having fewer programs with more pointedness. In total four interviewees said that an additional municipal program or plan handling entirely Agenda 2030 is not needed locally, because the municipality already has a strong steering towards sustainable development through programs such as *Equal Gothenburg*, *The Business Strategic Program*, and the new *Climate and Environment Program*. S. Pettersson (2020) further said that the municipal programs are numerous and elaborated on a number of approximately 60. According to the authors of this thesis this amount seem to be rather difficult for public officials to be fully involved with. Adding a new program to an already vast amount of programs might cause encounter problems, if all these governing documents should be followed. H. Levin (2020) had an interesting approach when it came to the question if there is a need for a framework such as Agenda 2030. Though it was discussed if the adoption of the framework is worth the effort and the resources (time and energy). He meant that the solution might be to either replace parts of the current frameworks with Agenda 2030, build on the current programs with the SDGs, or work with follow ups or other forms of analysis regarding whether the municipal work contribute to the achievement of the SDGs. This might be a reasonable step to take by keeping the current goals and utilize some of the argued 'soft' advantages with Agenda 2030. The more rational capability of using SDGs and their indicators for sustainable development were shown to be harder to assess because of argued lack of research, when it comes to the framework's capacity in policy-making. Considering that Agenda 2030 was adopted rather recently, and that it is still relatively immature, it may be expected that more research of the framework's impact on policy-making is under way. This could provide more insights and knowledge from 'best practices' in time ahead.

Roles and responsibilities

Regarding whom have the responsibility to progress on local sustainability goals, several interviewees said that everyone has a responsibility, being individuals, organizations, business, academy, municipality, counties among others. The question instead lies in what type of responsibility and how long the responsibility extends. Stakeholders have different potential to influence decisions. One of the important actors were said to be the politicians, as they decide on financial frameworks which

have implications for Administrations and public companies. The politicians and public officials have the possibility to create preconditions to that citizens could choose to live a more sustainable life. This could for instance be strategies to make public transportation more appealing for citizens to use. The mandate of politicians however, does not go beyond decisions about financial incentives and city planning. Citizens must further choose to make use of this transportation mode. It could therefore be of importance for actors to come together and make more sustainable decisions. One interviewee brought up that politicians want to be re-elected, which influences how far they ought to go with reforms and measures in certain matter. To what extent local politicians are making decisions solely with regards to being re-elected is difficult to assess. Possibly, some caution is taken in connection to new elections, but politicians also want to impact on societal development for the better. In Sweden, individuals can impact on politics since they can use their vote in what parties that should govern the municipality. They could also create competitiveness on the market that influence and push actors to move towards more sustainability. Regarding development of the built environment, the city has a planning monopoly and creates the boundaries that the building sector and individuals need to comply with. On the basis of the Planning and Building Act, citizens can also impact on plans of urban environment development. Due to results from the study handling certain planning processes in Stockholm, it appears that these processes does not always proceed as democratic and transparent as intended by the national government. There may be several driving forces behind this, such as the lack of felt responsibility towards the democracy system, that mandate owners have hidden agendas, or that they wish to act in the interests of citizens, but without asking about their opinions. This is a major and complex issue that certainly could constitute a research area itself. However, in the context of the built environment, Agenda 2030 and SDG 11 is important, as it brings up matters as public participation in planning processes.

According to some interviewees, the power that the local municipality possess in this matter is not used as much as it could. Three out of sixteen said that the municipality can exercise a lot more power, trough for instance land prescriptions. What prescriptions that could be assigned land could be to construct with as little environmental footprint as possible, or to built more of certain type of building. The reason why the municipality do not exercise this power, was by one interviewee said to be because officials are pressed to deliver housing, and that it is rather convenient to be compliant to developers. According to the interviewed stakeholder this has consequences on that the densification is now exaggerated. This results in that the buildings become a little bit to high, and the courtyards a little bit to narrow. It could further imply that the urban environment will not be sustainable in the long term. Nonetheless, many decisions are made before developers receives building permits, where also laws, regulations and recommendations must be followed. Therefore, there is a joint with different stakeholders that can influence the decisions for the built environment.

7
Conclusion

This chapter is organized in a way that the research questions of this thesis are presented in the beginning of each paragraph. The text that follows presents the conclusions drawn from findings from the literature and the interviews.

7.1 Conclusions of the aim

Local perceptions of using sustainability frameworks such as Agenda 2030

The aim of this thesis was to assess what perceptions there are, of using a sustainability frameworks such as Agenda 2030, among stakeholders involved in the built environment in the city of Gothenburg. The argued advantages of using Agenda 2030, is that it can provide a common ground of knowledge, potentially stimulate new collaborations, and contribute with the same points of reference for private and public companies, by conceptualizing what sustainable development is. Since Agenda 2030 is legitimized by the national government and starts to spread among municipalities and organizations, the argued advantages of using the SDGs seem to be more emphasized than the potential challenges that arise during the process of implementation.

Since the municipality is a large and rather complex organization, the implementation of Agenda 2030 is certainly not done in a sweep. An implementation of the framework primarily requires a political will, but also resources such as labour, time and energy, to localize the SDGs in the established governance system. Interestingly, all the private companies involved in this study currently use Agenda 2030 either internally, with clients or both. That private actors are not obliged to choose all SDGs but can pick the relevant SDGs for *their* operations, reduces the complexity of the comprehensive set of goals. For private companies that lack an established system for reporting on sustainability, it may be convenient and reasonable to utilize existing sustainability frameworks. Private companies (or other stakeholders) adopting the framework do not solely 'pick' the framework, since work must be put into localize the SDGs even in their operations. SDG 11, in comparison with goal 15 - god bebyggd miljö (a good built environment), captures several more important aspects that concern the built environment, and should take place in the debate of what is a 'sustainable city'. Since goal 15 is one of the environmental quality goal, and arguably takes the environmental perspective in these matters, Agenda 2030 provides with a new way of thinking when it comes to the built environment

and its impact on the social, environmental and economic dimension of sustainable development.

Agenda 2030 can serve either the function of being a report card, or be used as a managerial tool. For any purpose that the municipality would decide to adopt the framework, the original targets and indicators need to be developed to increase their relevance for measuring local progress, and to make them relevant for policy-making. The target 11.3.2 - *"Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically"*, brings up matters as democracy and transparency in the planning process, which from a global perspective is crucial. In Sweden, the Planning and Building Act however implies that citizens should have the possibility to impact on how the built environment develops. Consequently, this indicator becomes only a ticked box. How the planning processes in reality proceeds, and to what extent citizens perceive them to be transparent and democratic is though left out in the statistics. It may however, not be feasible to measure this in an appropriate and trustworthy way.

Five years have passed since Agenda 2030 was established, and ten years remains to achieve the goals by 2030, therefore little time is left for deciding about the local implementation. Considering that the development of indicators for the *Environment and Climate* program took around half a year (where additionally one year is reserved for referral and adjustments of the entire program); and that a local adoption of Agenda 2030 not merely concern SDG 11, but additional sixteen goals, the work to update the indicators will require much effort, time and resources. Further, the global SDGs does in general not say anything about levels for when 'sustainability' is reached, or what progress that is sufficient to say when the goals are achieved. Considering that ten years are left to progress on the goals (and if necessary to make adjustments of policies), little time remains to be able to say that one are on the path to the 'sustainably developing city' by 2030. The question is whether the local government is to make use of the momentum that the framework has gained, and bring about an ambitious and feasible action plan to increase urban sustainability.

The impact from the SDGs on the local politics and policy-making and whether outcomes actually can become better with an adoption remains uncertain. The existing goals in the current municipal programs and plans have been said to be connected to sustainable development, which at a superficial level implies that Agenda 2030 is not needed locally. There are however not any policy document, such as a program, that solely handle the built environment in a way that promotes statistics to be gathered on several aspects of sustainability. Without any framework for sustainably built, environment the municipality must rely on motivated and ambitious politicians, public officials and innovative stakeholders within the area of the built environment, that strive for increased sustainable development in this context. Researchers argue that indicators are needed to assess whether one are on the path of sustainable development. Our suggestion is therefore that the municipality can utilize research from Valencia (2019) providing an assessment of current local available statistics related to especially SDG 11. As well as, utilize the knowledge and

insights of driven people working in the City of Gothenburg. We, the authors argue that SDG 11 is a more comprehensive goal than goal 15 - god bebyggd miljö (a good built environment) and that it connects better to sustainably developing built environment than the latter.

Perceptions of the 'sustainable city'

The Brundtland definition leaves a lot of space for our own imagination. The meaning of sustainable management of the built environment may therefore vary among actors. By establishing a common perception about what the 'sustainably built city' means, increase the possibility for actors to jointly move in one direction. Interviewed stakeholders used terms as constructing with flexibility or *robustness* and this can be the initial step towards defining the sustainably built city. How these objectives can be translated in practical means, are though not apparent, as they are more visions than achievable goals. This is why concrete targets are needed to 'achieve' the goal of the sustainably built environment. Agenda 2030 has the possibility to assist the municipality with a framework that comprises of several important matters. Questions regarding political will, time and resources to develop and increase the relevance of the targets and indicators, for the City of Gothenburg, are still affecting factors. Therefore, the work put into developing the new *Environment and Climate* program seems to be right in time. It is therefore a suggestion for other municipal Administrations to make use of the experiences and knowledge from the implementation of the program in time ahead.

Indicators used to assess sustainable development

Though the concept of sustainable development covers aspects such as the social, economic and environmental, indicators purposed for the assessments of sustainable development must cover these pillars. According to all interviewees indicators can be used for assessment of sustainable development but some caution was stressed regarding the process of using indicators. This was for example the difficulties in choosing the right indicators and to stick with them, since there needs to be measurements during a long time to be able to see the progress. In the continuous use of indicators one must also make sure that the purpose of measuring does not get lost during the process. It should also be recognize that in the process of finding the right indicators lies judgment of what is perceived to be important to measure. When properly used, indicators provide guidance and this is why we need them. Indicators related to the environmental aspects such as level of particulate matters (PM) are easy to asses and enable assessment of environmental sustainability, where means can be introduced to decrease the amount (if the cause of why PM is released in the air is apparent). The level of noise in a city, may be reasonable to have as a social (health) indicators, since levels perceived as acceptable by humans is known. Level of income per working citizen may be an indicator that partly can contribute assessment of economic sustainability. The difficulties however, lies in the integration of various indicators and how much attention is given each of these indicators. According to one interviewee, there is a lack of social indicators when

it comes sustainable development, and said to be something important to consider forthwith. To be able to do this, one need to understand *what social sustainability is*. In conclusion, the expectation of what an indicator can provide, needs to be upon what a 'simple' measurement can deliver. Since indicators purposed to assess sustainable development are variables constructed from mental models, we need to ensure that we know what we are doing in these processes.

7.2 Conclusions of research questions

Local preconditions, challenges and prioritized measures

The interviewees were asked the question what they see as the current state and local challenges of the built environment, and what they see as prioritized measures to increase sustainability in the area of the built environment. The findings were of diverse character. One of the repeatedly expressed worries were related to the high building pace in which one currently construct the city. Another challenge was said to be the construction of a more densely built city, and that one may not be able to ensure that environmental and social qualities are kept under these circumstances. Other challenges were related to climate adaptation, and lack of national or international support for this issue. More accentuated challenges was said to be the lack of an established market for more reuse and recycling in the building sector, and the lack of competition in the building sector resulting in a housing market that does not provide housing for all citizens. A selection of prioritized measures with regards to the building sector proposed by the interviewees, was to extend the life time of buildings and prioritize biodiversity and ecosystem services by planning for green areas. We as authors argue that these areas should be addressed where local (as well as national) priorities must be considered beforehand.

Political mandate periods and long term goals

Though long term goals usually are longer than four years (the time span of a mandate period), the interviewees were asked the question if there are any issues with long-term goals and the mandate periods. The overall impression was that there are difficulties in having long term goals, since there can be a shift in political composition or in political focus, causing programs or plans to be cancelled. Therefore it is important that the entire City Council agrees on long term goals, such as those in Agenda 2030, so that these are preserved even though there can be a shift in political focus.

Need for a central 'sustainability' organization

Results from the interviews showed that the structure of the municipal organization was perceived as fragmented. The complexity in being such a large organization, with greatly differing Committees and Boards in terms of power and 'self esteem', was said to require much coordination to be done. This was said to have potential implications on the work with programs and plans, and consequentially, on the work

with sustainable development. The response to how this problem can be resolved did not point in a single direction, where some meant that a central organization would lead to inefficient collaboration. While others meant that one could at least try to gather people for common purposes. This question is conclusively a complex one, that needs to be addressed with more research and local investigation to find the solution that suits the municipality the best.

Who has the responsibility to reach the sustainability goals in the city

Reaching the sustainability goals in the City of Gothenburg requires something from everyone, meaning that all the stakeholders (i. e. companies, individuals, academia, authorities and municipality) in the city have responsibilities towards achievement of any sustainability goal. Considering that stakeholders act within different areas, have different mandate and possibility to impact decisions, their responsibilities will be different. With regards to the primary governance tool, the City Council sets the financial boundaries, which will have implications for all work carried out in Committees, Administrations, Boards and public companies. In addition, individuals and companies have the responsibility to make sustainable decisions in their everyday life, and push for higher demands on the market towards more sustainable solutions. Conclusions that can been draw is that some stakeholders has greater opportunities to influence change, and need to make use of this opportunity, to support the pursuit of a more sustainable city.

References

Ali, M. (2013). Assessment of Policy Instruments. *Sustainability Assessment*, 99–106. doi: 10.1016/b978-0-12-407196-4.00008-8

Bossel, H. (1999). *Indicators for Sustainable Development : Theory , Method , Applications Indicators for Sustainable Development : Theory , Method , A Report to the Balaton Group*. International Institute for Sustainable Development.

Boverket. (2018a). *Konkurrenssituationen inom bygg-och bygg-materialindustrierna i andra länder* (Tech. Rep.). Karlskrona: Boverket.

Boverket. (2018b). *Regionala byggbehovsberäkningar 2018–2027.* Retrieved from https://www.boverket.se/sv/samhallsplanering/bostadsmarknad/bostadsmarknaden/behov-av-bostadsbyggande/byggbehovsberakningar/

Boverket. (2019a). *Bostadsbyggandet stabiliseras.* Retrieved from https://www.boverket.se/sv/samhallsplanering/bostadsmarknad/bostadsmarknaden/indikatorer/

Boverket. (2019b). *Boverkets indikatorer.* Retrieved from https://www.boverket.se/globalassets/publikationer/dokument/2019/boverkets-indikatorer-december-2019.pdf

Boverket. (2019c). *Ditt ansvar som byggherre - Boverket.* Retrieved from https://www.boverket.se/sv/byggande/byggprodukter2/ditt-ansvar-som-byggherre/

Boverket. (2019d). *Fördjupad utvärdering av God Bebyggd Miljö 2019.*

Boverket. (2019e). *Klimataspekter och tidsperspektiv.* Retrieved from https://www.boverket.se/sv/PBL-kunskapsbanken/planering/detaljplan/lansstyrelsens-tillsyn/tillsynsvagledning_naturolyckor/tidsperspektiv/

Boverket. (2019f). *Om Boverkets regler för byggande - Boverket.* Retrieved from https://www.boverket.se/sv/byggande/regler-for-byggande/

Boverket. (2020a). *Bygg- och fastighetssektorns energianvändning uppdelat på förnybar energi, fossil energi och kärnkraft.* Retrieved from https://www.boverket.se/sv/byggande/hallbart-byggande-och-forvaltning/miljoindikatorer---aktuell-status/energianvandning/

Boverket. (2020b). *Bygg- och fastighetssektorns uppkomna mängder av avfall.* Retrieved from https://www.boverket.se/sv/byggande/hallbart-byggande-och-forvaltning/miljoindikatorer---aktuell-status/avfall/

Boverket. (2020c). *Miljöindikatorer 2019* (Tech. Rep.). Stockholm: Boverket.

Boverket. (2020d). *Så planeras Sverige.* Retrieved from https://www.boverket.se/sv/samhallsplanering/sa-planeras-sverige/

Boverket. (2020e). *Utsläpp av växthusgaser från bygg- och fastighetssektorn.* Retrieved from https://www.boverket.se/sv/byggande/hallbart-byggande-och-forvaltning/miljoindikatorer---aktuell-status/vaxthusgaser/

C40. (2019). *C40.* Retrieved from https://www.c40.org/why_cities

Chevalier, R. B. L. S. Y. M. I. C. , Serge; Choinière. (1992). *User's guide to 40 community health indicators.* Ottawa, ON. Retrieved from http://www.cwhn.ca/en/node/24252

Colantonio, A. (2007). *Measuring Social Sustainability: Best Practice from Urban Renewal in the EU* (Tech. Rep.). United Kingdom: Oxford Institute for Sustainable Development (OISD). Retrieved from http://www.brookes.ac.uk/schools/be/oisd/sustainable_communities/index.html

Edelenbos, J., & Klijn, E. H. (2006). Managing stakeholder involvement in decision making: A comparative analysis of six interactive processes in the Netherlands. *Journal of Public Administration Research and Theory*, *16*(3), 417–446. doi: 10.1093/jopart/mui049

Elmqvist, T., Folke, C., Nyström, M., Peterson, G., Bengtsson, J., Walker, B., & Norberg, J. (2003). Response diversity, ecosystem change, and resilience. *Frontiers in Ecology and the Environment*, *1*(9), 488–494. doi: 10.1890/1540-9295(2003)001[0488:RDECAR]2.0.CO;2

European Commission. (2018). *EU Construction and Demolition Waste Protocol and Guidelines.* Retrieved from https://ec.europa.eu/growth/content/eu-construction-and-demolition-waste-protocol-0_en

Femenías, P. (2004). *THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY Demonstration Projects for Sustainable Building: Towards a Strategy for Sustainable Development in the Building Sector based on Swedish and Dutch Experience* (Tech. Rep.). Göteborg: Department of Built Environment & Sustainable building.

FN-förbundet. (2016). *FN Fakta. Agenda 2030 - 17 gemensamma mål stort framsteg för mänskligheten* (Tech. Rep.). Stockholm: UNA SWEDEN.

Folke, C., Carpenter, S. R., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: Integrating resilience, adaptability and transformability. *Ecology and Society*, *15*(4). doi: 10.5751/ES-03610-150420

Framtiden. (2020). *Om Framtiden-koncernen - FramtidenFramtiden.* Retrieved from https://framtiden.se/om-framtiden-koncernen/

Gallopin, G. C. (1996). Environmental and sustainability indicators and the concept of situational indicators . A systems approach. *Environmental Modeling & Assessment*, *1* , 101–117.

Geng, Y., Fujita, T., Bleischwitz, R., Chiu, A., & Sarkis, J. (2019). Accelerating the transition to equitable, sustainable, and livable cities: Toward post-fossil carbon societies. *Journal of Cleaner Production*, *239*(1954), 118020. Retrieved from https://doi.org/10.1016/j.jclepro.2019.118020 doi: 10.1016/j.jclepro.2019.118020

Global Taskforce of Local and Regional Governments. (2016). *FOR LOCALIZING THE SDGs :* (Tech. Rep.). Global Taskforce of Local and Regional Governments. Retrieved from https://

sustainabledevelopment.un.org/content/documents/commitments/818_11195_commitment_ROADMAPLOCALIZINGSDGS.pdf

Göteborg Stad. (2020a). *Facknämnder.* Retrieved from https://goteborg.se/wps/portal/start/kommun-o-politik/kommunens-organisation/namnder/facknamnder/!ut/p/z1/04_Sj9CPykssy0xPLMnMz0vMAfIjo8ziAwy9Ai2cDB0N_N0t3Qw8Q7wD3Py8ffyDXI30wwkpiAJKG-AAjgb6BbmhigCKWMGl/dz/d5/L2dBISEvZ0FBIS9nQSEh/

Göteborg Stad. (2020b). *Planprocessen.* Retrieved from https://goteborg.se/wps/portal/start/byggande--lantmateri-och-planarbete/kommunens-planarbete/detaljplanering/planprocessen/!ut/p/z1/hY7BCoJAGISfxuv-v9Tm2s0ORippEGh7CZVtFVxX1q2Fnj47BkVzG-YbZoBDBXysH72sba_Helj8hW-uhZ-c2M6PMN-HMR7OaREf0yzHNIDyH8CXGH8oQkiA94

Göteborgs Stad. (2019). *Budget 2020 Göteborgs Stad* (Tech. Rep.). Gothenburg: Göteborg Stad.

Göteborgs Stad. (2020a). *Göteborgs Stadshus AB - Göteborgs Stad.* Retrieved from https://goteborg.se/wps/portal/start/kommun-o-politik/kommunens-organisation/bolag/goteborgs-stadshus-ab/!ut/p/z1/hY5RC4IwHMQ_ja_7_5dTZm9LIogKCkLbS6isKTgnczXo02ePQdG9Hfc77kBCCXKoHp2ufGeHqp_9RabXM8UjX1GBG84RRY77dZ4cKJ4Qin-AnGP8IYGwBdnVhoTGECQpYynNGMbZgiYsT

Göteborgs Stad. (2020b). *Göteborgs Stads miljö- och klimatprogram 2021-2030* (Tech. Rep.). Göteborg: Göteborg Stad.

Göteborgs Stad. (2020c). *Mål: God bebyggd miljö - Göteborgs Stad.* Retrieved from https://goteborg.se/wps/portal/start/miljo/goteborgs-tolv-miljomal/om-god-bebyggd-miljo/!ut/p/z1/04_Sj9CPykssy0xPLMnMz0vMAfIjo8ziAwy9Ai2cDB0N_N0t3Qw8Q7wD3Py8ffw9g031wwkpiAJKG-AAjgb6BbmhigAt9q7V/dz/d5/L2dBISEvZ0FBIS9nQSEh/

Göteborgs Stad. (2020d). *Styrande dokument i Göteborgs Stad.* Retrieved from https://goteborg.se/wps/portal/start/kommun-o-politik/planer-styrdokument/styrande-dokument-i-goteborgs/!ut/p/z1/hY6xDoIwGISfhrX_D0WKbnUwAXUwUcEuBkgtJJSSUm3i04ujicbbLvdd7kBACWKoHp2qXGeGqp_9RSTXU4iHdB1yTPkGMTtnIc23xyjeUyj-AWKO8Yc4Qg6iqzXxjSZIFixBliwZjWlEKQ

Grahn, N. (2007). *Vy över Göteborg.* Retrieved from https://www.flickr.com/photos/niklasgrahn/571057869https://creativecommons.org/licenses/by-nc-nd/2.0/

Griggs, D., Smith, M. S., Rockström, J., Öhman, M. C., Gaffney, O., Glaser, G., ... Shyamsundar, P. (2014). An integrated framework for sustainable development goals. *Ecology and Society*, *19*(4). doi: 10.5751/ES-07082-190449

Handl, G. (2012). *Declaration of the United Nations conference on the Human Environment (Stockholm declaration), 1972 and the Rio declaration on Environment and Development, 1992* (Tech. Rep.). Retrieved from www.un.org/

law/avl

Hansson, S., Arfvidsson, H., & Simon, D. (2019). Governance for sustainable urban development: the double function of SDG indicators. *Area Development and Policy*, *4*(3), 217–235. Retrieved from https://doi.org/10.1080/23792949.2019.1585192 doi: 10.1080/23792949.2019.1585192

Holman, N. (2009). Incorporating local sustainability indicators into structures of local governance: A review of the literature. *Local Environment*, *14*(4), 365–375. doi: 10.1080/13549830902783043

Holmberg, J., & Larsson, J. (2018). A sustainability lighthouse-supporting transition leadership and conversations on desirable futures. *Sustainability (Switzerland)*, *10*(11). doi: 10.3390/su10113842

IAEG-MDG. (2013). *Lessons learned from MDG monitoring from a statistical perspective.* (Tech. Rep.). New York: United Nations (UN).

Ingo, S., Berglund, K., & Pemer, A. (2018). *Hur Kunde Det Bli Så Här?* Gyllene Snittet bokformgivning AB.

IPCC. (2019). The Ocean and Cryosphere in a Changing Climate.A Special Report of the Intergovernmental Panel on Climate Change. *Intergovernmental Panel on Climate Change*, 1–765. Retrieved from https://www.ipcc.ch/srocc/chapter/summary-for-policymakers/

Konkurrensverket. (2006). *Bättre konkurrens i bostadsbyggandet!* (Tech. Rep.). Stockholm: Konkurrensverket.

Konkurrensverket. (2018a). *Konkurrensen i Sverige 2018* (Tech. Rep.). Stockholm: Konkurrensverket.

Konkurrensverket. (2018b). *Konkurrensverkets rapportserie 2018:7. Bättre konkurrens i bostadsbyggandet. En uppföljning av utvecklingen 2015–2018 samt* (Tech. Rep.). Stockholm: Konkurrensverket.

LFM30. (2020). *Så utvecklar vi tillsammans en klimatneutral bygg- och anläggningssektor i Malmö.* Retrieved from http://lfm30.se/

Loorbach, D. (2010). Transition management for sustainable development: A prescriptive, complexity-based governance framework. *Governance*, *23*(1), 161–183. doi: 10.1111/j.1468-0491.2009.01471.x

McQueen, H., D.; Noak. (1988). Health Promotion indicators: Current status, issues and problems. *Health Promotion*, *3*, 117–125. Retrieved from https://books.google.se/books?id=APGZcZGF9W4C&pg=PA223&dq=Health+promotion+indicators:+Current+status,+issues+and+problems,+Health+Promotion+3&hl=sv&sa=X&ved=0ahUKEwj146mymqTpAhWM26QKHeSkDQYQ6AEIKDAA#v=onepage&q=Healthpromotionindicators%3ACurrentstat

Meadows, D. (1998). Indicators and Information Systems for Sustainable Development. A Report to the Balaton Group. *The Sustainability Institute*. Retrieved from http://www.sustainabilityinstitute.net

Miller, C. A. (2005). New civic epistemologies of quantification: Making sense of indicators of local and global sustainability. *Science Technology and Human Values*, *30*(3), 403–432. doi: 10.1177/0162243904273448

Mittbygge. (2020). *Ansvarsfördelning - Mittbygge.* Retrieved from https://www.mittbygge.se/formell-processgang/tank-pa-innan/

ansvarsfordelning.html
Näslund, L. (2020). *Göteborgs nya tuffa klimatplan: Så ska 1,5-gradersmålet nås - DN.SE.* Retrieved from https://www.dn.se/nyheter/sverige/tuffa-planen-klar-sa-ska-goteborg-na-klimatmalet/
Naturvårdsverket. (2019a). *Bygg- och rivningsavfall.* Retrieved from https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Avfall/Vem-gor-vad/Bygg--och-rivningsavfall/
Naturvårdsverket. (2019b). *Miljökvalitetsmålen - Naturvårdsverket.* Retrieved from https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljokvalitetsmalen/
Naturvårdsverket. (2020). *Miljökvalitetsmålet God bebyggd miljö - Naturvårdsverket.* Retrieved from https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljokvalitetsmalen/God-bebyggd-miljo/
Pintér, L., Hardi, P., Martinuzzi, A., & Hall, J. (2012). Bellagio STAMP: Principles for sustainability assessment and measurement. *Ecological Indicators*, *17*, 20–28. Retrieved from http://dx.doi.org/10.1016/j.ecolind.2011.07.001 doi: 10.1016/j.ecolind.2011.07.001
Rangstedt, F. (2019). *Miljömålssystemets historia - Naturvårdsverket.* Retrieved from https://www.naturvardsverket.se/Miljoarbete-i-samhallet/Sveriges-miljomal/Miljomalssystemet/Miljomalssystemets-historia/
Rees, W. (1992). Ecological footprints and appropriated carrying capacity: What urban economics leaves out. *Environment and Urbanization*, *4*, 10.
Regeringen. (2019). *Bättre konkurrens i bostadsbyggandet Beslut* (Tech. Rep.). Stockholm: Regeringen.
Regeringskansliet. (2018). *Agenda 2030 - handlingsplan* (Tech. Rep.). Stockholm: Regeringskansliet.
Rittel, M., H.W.J; Webber. (1973). Dilemmas in general theory of planning. *Policy Sci*, *4*(1973). Retrieved from https://doi.org/10.1007/BF01405730
RKA. (2020). *Agenda 2030 - Nyckeltal.* Retrieved from http://rka.nu/agenda2030.2868.html
Roloff, J. (2008). Learning from Multi-Stakeholder Networks : Issue-Focussed Stakeholder Management. *Journal of Business Ethics*, 233–250. doi: 10.1007/s10551-007-9573-3
Russel Bernard, H. (2006). *Research Methods In Anthropology - Qualitative and quantitative approaches* (Fourth ed.). Oxford: AltaMira Press.
Satterthwaite, D. (1992). Sustainable cities: Introduction. *Environment and Urbanization*, *4*(2), 3–8.
SCB. (2019). *Oförändrad byggtakt under det första kvartalet 2019.* Retrieved from https://www.scb.se/hitta-statistik/statistik-efter-amne/boende-byggande-och-bebyggelse/bostadsbyggande-och-ombyggnad/nybyggnad-av-bostader/pong/statistiknyhet/paborjad-nybyggnation-av-bostadslagenheter-1a-kvartalet-2019-preliminara-uppgifter/
SCB. (2020). *Genomförandet av Agenda 2030 i Sverige - Delredovisning av den*

statistiska uppföljningen, mars 2020 (Tech. Rep.). Stockholm: Statistiksa centralbyrån. Retrieved from www.scb.se

SDSN. (2015). *Indicators and a monitoring framework for the Sustainable Development Goals: Launching a data revolution for the SDGs.*

Simon, D., & Arfvidsson, H. (2015). *Pilot Project to Test Potential Targets and Indicators for the Urban Sustainable Development Goal 11: Final Report* (Tech. Rep.). Göteborg: Mistra Urban Futures. Retrieved from http://www.mistraurbanfutures.org/en/pilot-project-test-potential-targets-and-indicators-urban-sustainable-development-goal

Stadsledningskontoret. (2018). *Göteborgs Stad Stadsledningskontoret, tjänsteutlåtande* (Tech. Rep.). Göteborg: Stadsledningskontoret.

Statskontoret. (2019). *Agenda 2030 i myndigheter, kommuner och regioner* (Tech. Rep.). Stockholm: Stadskontoret.

Stockholm University. (2020). *What is resilience?* Retrieved from https://www.stockholmresilience.org/research/research-news/2015-02-19-what-is-resilience.html

Sveriges miljömål. (2020). *God bebyggd miljö - Sveriges miljömål.* Retrieved from https://www.sverigesmiljomal.se/miljomalen/god-bebyggd-miljo/

United Nations. (1972). United Nations Conference on the Human Environment (Stockholm Conference). Stockholm. Retrieved from https://sustainabledevelopment.un.org/milestones/humanenvironment

United Nations. (1992). *Sustainable Development Goals: Knowledge Platform.* Retrieved from https://sustainabledevelopment.un.org/outcomedocuments/agenda21

United Nations. (2003). *The Habitat Agenda Goals and Principles, Commitments and the Global Plan of Action The Habitat Agenda Goals and Principles, Commitments and the Global Plan of Action Chapter I-Preamble* (Tech. Rep.). Retrieved from http://www.unhabitat.org/declarations/habitat_agenda.htm

United Nations. (2013). *World Economic and Social Survey 2013 Sustainable Development Challenges* (Tech. Rep.). New York: Department of Economic and Social Affairs.

United Nations. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development.* Retrieved from https://sustainabledevelopment.un.org/post2015/transformingourworld

United Nations. (2017). *New Urban Agenda.* Retrieved from www.habitat3.org

United Nations. (2020a). *Promote Sustainable Development | United Nations.* Retrieved from https://www.un.org/en/sections/what-we-do/promote-sustainable-development/

United Nations. (2020b). *Sustainable Development Goals.* Retrieved from https://sustainabledevelopment.un.org/sdgs

United Nations. (2020c). *UN Department of Economic and Social Affairs Population Division 2018. World Urbanization Prospects: The 2018 Revision.*

UNSD. (1992). *United Nations Conference on Environment & Development* (Tech. Rep.). Retrieved from http://www.un.org/esa/sustdev/agenda21.htm.

Valencia, S. C. (2019). *Localisation of the 2030 Agenda and its Sustainable Devel-*

opment Goals in Gothenburg , Sweden Report written by : Reviewed by City Authority Staff : Sara Pettersson and Lena Risfelt (Tech. Rep.). Göteborg: Mistra Urban Futures.

Valencia, S. C., Simon, D., Croese, S., Nordqvist, J., Oloko, M., Sharma, T., ... Versace, I. (2019). Adapting the Sustainable Development Goals and the New Urban Agenda to the city level: Initial reflections from a comparative research project. *International Journal of Urban Sustainable Development*, *11*(1), 4–23. Retrieved from https://doi.org/10.1080/19463138.2019.1573172 doi: 10.1080/19463138.2019.1573172

Västra Götalandsregionen. (2019). *Befolkningsprognos Västra Götaland 2019-2040.* Retrieved from https://alfresco.vgregion.se/alfresco/service/vgr/storage/node/content/workspace/SpacesStore/d42314c3-c179-4528-b0b6-38171d33abf1/Befolkningsprognos2019-2040.pdf?a=false&guest=true

WCED. (1987, 1). Our common future: report of the World Commission on Environment and Development. *International Affairs*, *64*(1), 126–126. Retrieved from https://academic.oup.com/ia/article-lookup/doi/10.2307/2621529 doi: 10.2307/2621529

WHO. (2015). WHO | Millennium Development Goals (MDGs). *WHO*. Retrieved from https://www.who.int/topics/millennium_development_goals/about/en/

A
Appendix

A.1 Questions included in the result chapter

This section present the questions that is included in the result chapter.

Inledning

Q1. Vad har du för bakgrund?
Q2. Vad arbetar du med idag och hur länge har du gjort det?

Hållbarhet inom kommunen, ert företag

Q8. Hur skulle du definiera hållbara städer alternativt en god bebyggd miljö? (Gunnar)
Q9. Hur skulle du definiera en hållbar stad?
Q10. Vad är enligt dig, Göteborgs stads utmaningar inom hållbarhet när det kommer till den bebyggda miljön?
Q11. Vad finns det för utmaningar inom er verksamhets arbete när det kommer till hållbarhet och den byggda miljön?
Q12. Vad är din syn på stadens olika aktörer och det nuvarande hållbarhetsarbetet inom byggsektorn och den bebyggda miljön?
Q17. Vad är enligt, dig åtgärder som bör prioriteras för att göra byggsektorn och bebyggd miljö mer hållbar?

Agenda 2030 och indikatorer

Q23. Känner man på xx till ramverket Agenda 2030 med tillhörande mål och är det något man kommer att arbeta med?
Q26. Vi har läst att vissa kommuner har stärkt samordningen av arbetet med hållbarhet och/eller Agenda 2030 på en central nivå. a. Hur har ni valt att göra? Finns det en sådan samordande grupp dedikerad hållbarhet/Agenda 2030 hos er?
b. Behövs det en organisation som samordnar arbetet mellan kommunens olika nämnder och förvaltningar? i. Om ja, varför?
Q28. Om du är insatt i kommunens mål och planer, i vilken grad anser du att visionen har översatts i kommunens planer? (Planer kan då vara detaljplan, andra styrdokument, osv)?
Q29. Agenda 2030 och målen poängteras ofta vara “integrerade och odelbara, de

hänger ihop och inget mål är viktigare än något annat för att uppnå hållbarhet." Är hållbarhet en fråga som hanteras med tonvikt på helheten a) i ert företag? b) inom kommunen?
Q30. Anser du att det finns ett behov av ytterligare ett till ramverk så som Agenda 2030? Finns det risk att det blir mer utav ett "administrativ arbete" och resursanvändning tas från den post som skulle kunna användas till att faktiskt göra"// Anser du att det finns behov av ett till ramverk (utöver nationella miljömålen) som FNs Agenda 2030? Kan agendan tillföra någonting nytt? // Anser du att det finns ett behov av ytterligare ett ramverk som Agenda 2030? (Utöver program som redan finns, miljöprogram, näringslivs strategiskt program, jämlikt Gbg?
Q31. Kan man med hjälp av indikatorer mäta hållbarheten i a) er verksamhet? b) inom byggsektorn och den byggda miljön?
Q32. Kan man med hjälp av indikatorer (såsom de 232 hållbarhets indikatorerna) göra byggsektorn mer hållbar?
Q33. Är indikatorer ett verktyg som kan bidra till en mer hållbar byggsektor?

Ansvarsfördelning och roller

Q37. Hur väl tycker du att "politiska mandatperioder" och kortsiktiga mål, fungerar tillsammans med långsiktiga mål och visioner så som dessa i Agenda 2030? Finns det risk att vissa frågor lyfts åt sidan i tider av lågkonjunktur osv (Gunnar) // Hur fungerar "politiska mandatperioder" och kortsiktiga mål, med långsiktiga mål och visioner som Agenda 2030 eller miljökvalitétsmålen?
Q38. Vilka personer, organisationer tycker du har en avgörande roll/ansvaret att nå hållbarhetsmålen? // Vilka intressenter tycker du spelar en avgörande roll/har ansvaret att nå a) hållbarhetsmål i staden? b) hållbarhetsmål inom byggsektorn och bebyggd miljö?
Q39. Vem har mandat att ta beslut och påverka hur den bebyggda miljön ska se ut? // Stadsbyggnadskontoret fattar i detalj- och översiktsplaner beslut gällande hur den bebyggda miljön ska se ut, men vem är det som faktiskt kan inverka på hur och vad som byggs? // Stadsbyggnadsnämnden (och KF) fattar i detalj- och översiktsplaner beslut gällande hur den bebyggda miljön ska se ut, men är det fler (aktörer) som kan inverka på hur och vad som byggs?

A.2 Questionnaire for the interviews

This section summarizes the questions that has been part on the interview study. The questions which are marked with bold text is the questions that has been asked in almost all interviews, the question marked with italic text is question that has been developed throughout the interviews. The question with both bold & italic text is specific for the interviewers from the industry. Finally the questions with no marking is the question that has only been brought up once.

Inledning

Q1. Vad har du för bakgrund?
Q2. Vad arbetar du med idag och hur länge har du gjort det?
Q3. Vad är er verksamhet inom xx främsta mål? (Vart befinner ni er i Göteborgs Stads organisation?)
Q4. Hur ser organisationsstrukturen ut inom Framtiden AB ut då med tanke på att företaget är uppdelat i Framtiden Byggutveckling AB och Förvaltnings AB Framtiden? (G. Persson)
Q5. På vilket sätt kan xx påverka byggsektorn och bebyggd miljö?
Q6. Vad är miljöförvaltningens relation till, den bebyggda miljön och byggsektorn, markägare? (Karin)
Q7. Om det är företag: Hur ser samverkan ut mellan xx och Göteborgs stad (kommunen)?

Hållbarhet inom kommunen, ert företag

Q8. Hur skulle du definiera hållbara städer alternativt en god bebyggd miljö? (G. Persson)
Q9. Hur skulle du definiera en hållbar stad?
Q10. Vad är enligt dig Göteborgs stads utmaningar inom hållbarhet när det kommer till den bebyggda miljön?
Q11. Vad finns det för utmaningar inom er verksamhets arbete när det kommer till hållbarhet och den byggda miljön?
Q12. Vad är din syn på stadens olika aktörer och det nuvarande hållbarhetsarbetet inom byggsektorn och bebyggd miljö?
Q13. Vad är din/er syn på Göteborg stads hållbarhetsarbete gällande byggsektorn och den byggda miljön? (G. Persson)
Q14. Känner ni på Framtiden AB till vad Göteborg stad har för mål och visioner för en hållbar stad? (G. Persson)
- Inom SDG (Mål 11 - Sustainable cities and communities) “Make cities and human settlements inclusive, safe, resilient, and sustainable”
- Inom nationella målen (Mål 15 - God bebyggd miljö), Boverkets rapport fördjupning av miljökvalitetsmålet God bebyggd miljö, 2019
Q15. Finns det andra städer eller projekt man kan ta lärdom av i Göteborg?
Q16.Hur upplever du nuvarande situation inom byggsektorn och med hållbarhetsar-

betet? (E. Pavic)
Q17. Vad är enligt dig, åtgärder som bör prioriteras för att göra byggsektorn och bebyggd miljö mer hållbar?
Q18. Vad tycker du om sektorn så här långt? (P. Femenías)
Q19. Vad, förutom tekniska åtgärder såsom högre energieffektivitet kan göra att vi bygger och använder byggnader mer hållbart? (P. Femenías)

Agenda 2030 och indikatorer

Q20. Använder ni er av GRI eller annat verktyg för hållbarhetsredovisningar?(U. Östermark)
Q21. Vad är er "relation" till de svenska miljökvalitétsmålen? (U. Östermark)
Q22. Känner ni till Agenda 2030 och hållbarhetsmålen? (U. Östermark)
a. Finns det ett värde i att använda sig av målen på stadsnivå?
b. Kan dessa stärka bygg och förvaltningssektorns hållbarhetsarbete?
Q23. Känner man på xx till ramverket Agenda 2030 med tillhörande mål? Är det något man kommer att arbeta med?
Q24. Förutom de svenska miljökvalitétsmålen, känner man på stadsledningskontoret ramverket Agenda 2030 med tillhörande mål? (S. Pettersson & K. Meyer)
Q25. Känner ni till mål 11 om en hållbar stad och isåfall, kommer ni att samarbeta med andra organisationer med detta? (K. Meyer)
Q26. Vi har läst att vissa kommuner har stärkt samordningen av arbetet med hållbarhet och/eller Agenda 2030 på en central nivå. a. Hur har ni valt att göra? Finns det en sådan samordande grupp dedikerad hållbarhet/Agenda 2030 hos er?
b. Behövs det en organisation som samordnar arbetet mellan kommunens olika nämnder och förvaltningar? i. Om ja, varför?
Q27. Känner ni till mål 11 i Agenda 2030 om en hållbar stad?
- Behövs ett sådant mål, med delmål och tillhörande indikatorer? (S. Pettersson)
Q28. Om du är insatt i kommunens mål och planer, i vilken grad anser du att visionen har översatts i kommunens planer? (Planer kan då vara detaljplan, andra styrdokument, osv)?
Q29. Agenda 2030 och målen poängteras ofta vara "integrerade och odelbara, de hänger ihop och inget mål är viktigare än något annat för att uppnå hållbarhet." Är hållbarhet en fråga som hanteras med tonvikt på helheten a) i ert företag? b) inom kommunen? (Behövs verktyg för att se synergier? målkonflikter? S. Pettersson)
Q30. Anser du att det finns ett behov av ytterligare ett till ramverk så som Agenda 2030? Finns det risk att det blir mer utav ett "administrativ arbete" och resursanvändning tas från den post som skulle kunna användas till att faktiskt göra"// Anser du att det finns behov av ett till ramverk (utöver nationella miljömålen) som FNs Agenda 2030? Kan agendan tillföra någonting nytt? // Anser du att det finns ett behov av ytterligare ett ramverk som Agenda 2030? (Utöver program som redan finns, miljöprogram, näringslivs strategiskt program, jämlikt Gbg?
Q31. Kan man med hjälp av indikatorer mäta hållbarheten i a) er verksamhet? b)

inom byggsektorn och den byggda miljön?
Q32. Kan man med hjälp av indikatorer (såsom de 232 hållbarhets indikatorerna) göra byggsektorn mer hållbar?
Q33. Är indikatorer ett verktyg som kan bidra till en mer hållbar byggsektor?
Q34. Vilken roll tror du att indikatorer spelar när det gäller att ställa om byggbranschen? (G. Persson)

Ansvarsfördelning och roller

Q35. Vilken roll tycker du att arkitekter spelar när det kommer till målet att göra byggsektorn och bebyggd miljö mer hållbar? (P. Femenías)
Q36. Vilken roll spelar forskare när det kommer till att göra byggsektorn och bebyggd miljö mer hållbar?
Q37. Hur väl tycker du att "politiska mandatperioder" och kortsiktiga mål, fungerar tillsammans med långsiktiga mål och visioner så som dessa i Agenda 2030? Finns det risk att vissa frågor lyfts åt sidan i tider av lågkonjunktur osv (G. Persson) // Hur fungerar "politiska mandatperioder" och kortsiktiga mål, med långsiktiga mål och visioner som Agenda 2030 eller miljökvalitétsmålen?
Q38. Vilka personer, organisationer tycker du har en avgörande roll/ansvaret att nå hållbarhetsmålen? // Vilka intressenter tycker du spelar en avgörande roll/har ansvaret att nå a) hållbarhetsmål i staden? b) hållbarhetsmål inom byggsektorn och bebyggd miljö?
Q39. Vem har mandat att ta beslut och påverka hur den bebyggda miljön ska se ut? // Stadsbyggnadskontoret fattar i detalj- och översiktsplaner beslut gällande hur den bebyggda miljön ska se ut, men vem är det som faktiskt kan inverka på hur och vad som byggs? // Stadsbyggnadsnämnden (och KF) fattar i detalj- och översiktsplaner beslut gällande hur den bebyggda miljön ska se ut, men är det fler (aktörer) som kan inverka på hur och vad som byggs?

A.3 SDG 11 indicators and local adaptation

The table below, table 3 is taken from the report *Localisation of the 2030 Agenda and its Sustainable Development Goals in Gothenburg* written by Valencia (2019).

Table 3. UN-recommended SDG 11 indicators and local adaptation

Target	Feasible to assess baseline and track progress?	Modifications of indicator to make it relevant and feasible to city	Baseline for Gothenburg and year of modified indicator[11]	Collection frequency of modified indicator	Level at which modified indicator is available	Additional comments
11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing	Yes, but only for overcrowding, not for the full indicator (see main text above in section 5 and additional comments).	Overcrowding. SCB also suggests that homelessness and property rights to a home may be other options to investigate as part of this indicator (SCB 2019c).	19,7 % (2017) (according to Standard 2) (source: www.kolada.se) Extreme overcrowding: 6.2% (or 33,250 people lived in an extremely overcrowded household) (2015) (source: (https://tabsoft.co/2rzSmnp).	Data available from national survey conducted every 2 years (Living Conditions Survey).	City	The proportion of the population living in slum areas or informal settlements is considered in Sweden to be in practice 0%. Inadequate housing is a relevant issue but the statistics office has focused only on the aspect of overcrowding even though other issues related to inadequate housing (such as affordability and security of tenure may also be relevant for Gothenburg)
11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities	Yes. This indicator is already produced and/or reported nationally	No modification. Indicator defined as: Access to public transport stop within 500 meters of the residence with at least one departure per hour weekdays between 06:00 and 20:00.	94.9 % (2017) (https://bit.lv/2pcgcVs)	yearly	City	The national indicator makes a clear demarcation of population in urban areas, this is not clearly expressed in the metadata for the UN indicator. How to define the urban extent needs to be harmonised internationally. Disaggregation for persons with disabilities cannot be done.

[11] Unless noted, source of data is SCB database: http://www.statistikdatabasen.scb.se/pxweb/sv/ssd/

Target	Feasible to assess baseline and track progress?	Modifications of indicator to make it relevant and feasible to city	Baseline for Gothenburg and year of modified indicator	Collection frequency of modified indicator	Level at which modified indicator is available	Additional comments
11.3.1 Ratio of land consumption rate to population growth rate	Yes.	No modification.	The indicator has not been calculated for Gothenburg, but it might be possible to calculate from SCB population data and changes in urban area. The challenge might be the urban definition (see additional comments) National level data calculated for period 2006-2015.	Yearly	Currently at national level (but could be disaggregated to city level)	For the national level calculations, SCB notes that urban areas have been defined and delimited according to a methodology developed by UN HABITAT for global comparability. The boundaries are therefore not in accordance with the national statistics produced for land areas and population in urban areas.
11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically	No statistics are reported. The national level indicator can be assumed to be 100%.	The indicator is too broad or vague for Swedish conditions because participation is a requirement in the law and thus there might be a need to add a national complement (SCB 2019c).	N/A	N/A	N/A	The Plan and Building Act (PBL) requires participation of citizens and concerned actors in planning processes at the city level. In Gothenburg, the participation processes that are relevant for this indicator are led by City Districts and the Planning Department. City programmes and plans also have to include social and children consequence analyses. The participation requirements give those directly affected by the development of detailed land use plans (*detaljplan)* the right to comment in the process (through consultation and review) and it gives them a right to appeal the decisions made by the City.

Target	Feasible to assess baseline and track progress?	Modifications of indicator to make it relevant and feasible to city	Baseline for Gothenburg and year of modified indicator	Collection frequency of modified indicator	Level at which modified indicator is available	Additional comments
11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)	Most of the information required may be available but there is lack of clarity on the expected data. Some work required to produce data.	The indicator has not been localised to the city level.	N/A at City level	N/A	National	The responsible authority to report at the national level is the National Heritage Board (*Riksantikvarieämbetet* – RAÄ), which has overall World Heritage responsibility. In municipalities, for the culturally marked buildings, a balance between preservation, repair, rebuilding and demolition is part of the considerations the City needs to do in the detailed land use planning processes. The County Administrative Board also examines and can review the City's adoption of a detailed plan on the grounds that it may have a negative impact on cultural and environmental issues.
11.5.1 Number of deaths, missing persons and persons affected by disaster per 100,000 people	Yes, at national level. No data at City level and no authority that collects data at that level - the unit that would look at this issue would be the Security and Preparedness unit at the City Executive Office	In line with Sendai framework. Within the persons affected, countries are expected to report on the number of people who have had their livelihood disturbed or destroyed; such data are not available in Sweden.	No data found at city level (indicator data calculated by MSB and SCB for national level)	Yearly	National	The Swedish Civil Contingencies Agency (MSB) is the national point of contact for the Sendai framework. Only serious and extensive events are included in the reporting at the national level, which means a few events. Many of the years, no such events have occurred (SCB 2019c).

Target	Feasible to assess baseline and track progress?	Modifications of indicator to make it relevant and feasible to city	Baseline for Gothenburg and year of modified indicator	Collection frequency of modified indicator	Level at which modified indicator is available	Additional comments
11.5.2 Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services	Yes, at national level. No data at City level.	In line with Sendai framework.	No data found at city level (indicator data calculated by MSB for national level)	Yearly	National	The Swedish Civil Contingencies Agency (MSB) is the national point of contact for the Sendai framework. Only serious and extensive events are included in the reporting at the national level, which means there are few events to report. Many of the years, no such events have occurred.
11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities	No data reported or collected at national or city level. % of waste collected assumed to be 100%.	Complementary indicator at national level: Total treated household waste and treated waste per capita	Data found for Gothenburg: household waste per capita: 385.3 kg/person (2016 data) (calculated based on sum of amount of household waste collected for recycling; household waste for central biological treatment, (including frying and food fats); food waste that is home-composted or delivered via waste mills to wastewater; household waste for incineration with energy recovery, excluding impregnated wood; household waste for landfill; hazardous waste collected) source: (Avfall Sverige 2017, 66).	At national level data available every 2 years for complementary indicator (collected by Environmental Protection Agency)	City and national	The City of Gothenburg collects some data on solid waste, including the type and amount of solid waste produced and the quality of recycling practices by residents (https://bit.ly/2rDmOwV) Statistics Sweden produces waste statistics on behalf of the Swedish Environmental Protection Agency and has assumed responsibility for reporting nationally on the complementary indicator as long as it is produced.

Target	Feasible to assess baseline and track progress?	Modifications of indicator to make it relevant and feasible to city	Baseline for Gothenburg and year of modified indicator	Collection frequency of modified indicator	Level at which modified indicator is available	Additional comments
11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	Yes, data available for both PM2.5 and PM10, but with data gaps some years.	RKA proposed local indicators include monitoring NOx (emissions of nitrogen oxides, kg/inhabitant) and PM2.5 but not PM 10. Environmental Protection Agency collects data for both PM.	- Kolada.se: NOx: 11.9 kg/inh (2014) PM2.5: 0.71 kg/inh (2014) - Env. Protection Agency: PM10: 24.5 ug/m3 (2000) (source: https://bit.ly/350Eotf) PM2.5: 11.7 ug/m3 (2007) (source: https://bit.ly/33ORRUI)	Yearly	City	In Gothenburg, the Environmental Administration owns 2 stationary stations and 3 mobile stations. The stationary measure both PM 2.5 and 10. The mobile only measures PM 10. All also measure NOx. The Air Pollution Association in the Gothenburg Region has another measurement station in Gothenburg measuring PM 2.5 and 10
11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	Yes.	SCB has proposed complementary indicator: Access to a green area within 200 meters of the home (% of population). SCB has also calculated the original indicator at the national level with the following: Land in urban areas, which is a public place as a proportion of the total land area; Green space in urban areas available to general population as a proportion of the total land area; Land in urban areas which is accessible to general population according to type of land	Percentage of population with access to a green area within 200 meters of the home: 96% (2010)	Every 5 years	City (for cities >30k inh)	Data of proposed proxy also available disaggregated by age and sex

Target	Feasible to assess baseline and track progress?	Modifications of indicator to make it relevant and feasible to city	Baseline for Gothenburg and year of modified indicator	Collection frequency of modified indicator	Level at which modified indicator is available	Additional comments
11.7.2 Proportion of persons who are victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months	Partly. No method has been established for the global indicator and thus SCB has proposed a proxy	Proxy proposed by SCB for national level: Percentage of population (16 years and older) who has been exposed to threats or violence in a public place, by sex and persons with disabilities	No data found at city level (data collected	N/A	Police regions (there are 7 police regions in Sweden)	The Swedish National Council for Crime Prevention (*Brottsförebyggande rådet – Brå)* is responsible for the official criminal statistics. Data for the original UN indicator is based on the National Security Survey (NTU) done by Brå; the proposed proxy is based on data from the Living Conditions Studies (ULF / SILC) done by SCB.
11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city	No. The indicator is regarded as fulfilled in Sweden and no data on the issue collected	Proposed alternative by SCB: proportion of adopted and / or up-to-date comprehensive plans. Gothenburg does yearly revisions of its comprehensive plan, which is coordinated with other levels (e.g. regional organisations)	N/A	Data available from Boverket (housing agency) yearly on status of comprehensive plans and related documents, but quality of answers not reliable (SCB 2017b)	National	
11.b.1 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030*	Yes, at national level	N/A	N/A	N/A	National	In Gothenburg, there is a vulnerability analysis but not a comprehensive disaster risk management plan Data will need to be collected to fulfil Sendai framework. MSB responsible for data collection.

Target	Feasible to assess baseline and track progress?	Modifications of indicator to make it relevant and feasible to city	Baseline for Gothenburg and year of modified indicator	Collection frequency of modified indicator	Level at which modified indicator is available	Additional comments
11.b.2 Number of countries with national and local disaster risk reduction strategies*	Yes, at national level	N/A	N/A	N/A	National	Sweden does not have a national disaster risk reduction strategy. Data will need to be collected to fulfil Sendai framework. MSB responsible for data collection.
11.c.1 Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials	No. No method is currently being developed to measure the indicator.	N/A	N/A	N/A	N/A	The indicator may be relevant for Sida's international work but not relevant at the city level