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The Effects of EU Funding On Local Governments

A Case Study of Trondheim Municipality and The +CityxChange Project

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O NTNU
Kunnskap for en bedre verden

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Abstract

The European Union's funding programmes for research and innovation are becoming increasingly ambitious and consequential. The current programme is called Horizon 2020, and over a seven-year period, about 80 billion euros is distributed to those institutions that manage to succeed in the increasingly fierce competition against other applicants. In recent years, smart cities have become a way for local governments to improve their communities while pushing toward climate goals and stimulating economic growth. This is reflected in Horizon 2020 with the introduction of Lighthouse Cities. In 2018, Trondheim became such a city, and the municipality of Trondheim's largest ever EU project became reality. Suddenly, a municipality that had very little experience with working on EU projects became a living laboratory for a cutting-edge smart city project that has garnered international attention and millions of euro in EU funding.

This thesis aims to discover how +CityxChange is affecting the municipality of Trondheim both in terms of its structure and operational conventions and in terms of its policy focus and output. Through using the concepts of expertisation, projectification, triple helix, smart city drivers and europeanisation, the incentives for partaking in the project as well as recent and current developments in the municipality are examined. In order to do this, central participants in the project across all sectors have been interviewed, forming the basis of the data used in this qualitative case study.

The findings in this thesis highlight that the smart city project has brought with it and is symptomatic of considerable changes to the municipality of Trondheim. This is true both in terms of operational structure and policy output – the policy focus seems to remain relatively unchanged. Trondheim municipality is becoming an institution that is garnering more EU expertise and an orientation toward more project-oriented working methods. Furthermore, the partnership of municipality-university-industry has become significantly strengthened throughout the work with +CityxChange. Finally, the results show that through becoming a Lighthouse City, the municipality is able to work towards reaching several of their strategic goals in an innovative manner and that this was one of the main incentives for partaking in the ambitious project.

The symbiosis between the partners in the project consortium is something that receives special attention in this thesis, and this has affected the results from the analysis. The coordinating role of NTNU seems to function as a sort of buffer between the municipality and the effects of some of the concepts. The effects of expertisation and projectification are lower than initially assumed due to the municipality's unique role in the project. This is an interaction that is not adequately accounted for in surrounding literature, and that should be particularly noted.

Preface

This thesis marks the end of my master's degree in European Studies at NTNU. The thesis makes up 30 ECTS, and is written in the spring semester of 2020. After having been thoroughly introduced to The Horizon 2020 Programme through an internship with SINTEF in Brussels, which was a part of the master's programme, I have become very interested in its value to Norwegian actors. The internship also peaked my interest in smart cities and sustainable development, and the +CityxChange project therefore seemed a perfect opportunity to investigate the relationship between EU funding and the Municipality of Trondheim.

The process of researching for and writing this thesis has taught me a lot about the amount of dedication and commitment it takes to focus on one specific research project over a longer period of time, working independently on this has developed me as a person and a student. Despite this being an independent project, I would like to use the opportunity to thank my supervisor Anna Gora for helping me plan for and structure the thesis and providing constructive feedback in the process of writing. Furthermore, I would like to thank the informants for this thesis – it would not have been possible without them.

The COVID-19 situation has caused certain challenges for the execution of both the research and writing process. Furthermore, the Municipality of Trondheim were kind enough to offer me a spot in their project office to study their way of working and monitoring potential meetings, but this was not possible due to the restrictions laid out by the Norwegian government. Fortunately, all the interviews planned were completed before the pandemic, allowing for the necessary data for the analysis.

Finally, I would also like to thank my friends and family for the understanding and patience with having me occupy the living room in the process of writing this thesis as a result of not having access to the NTNU campus. The kind employees affiliated with European studies at NTNU have also been very considerate and supportive with regards to the difficult circumstances, and that is very much appreciated.

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List of Abbreviations

+CityxChange   Positive City ExChange

EC   The European Commission

eMaas   e-Mobility as a Service

EU   The European Union

H2020   Horizon 2020. The eight European Union Framework Programme for Research and Innovation

NOU   Official Norwegian report [Norges offentlige utredninger]

NTNU   Norwegian University of Science and Technology

SDG   Sustainable Development Goal

UN   United Nations

1 Introduction

The European Union Framework Programme for Research and Innovation is becoming an increasingly important tool for funding projects within many fields across European Union (EU) members and associated countries. Norway is one of the most successful associated countries in terms of both the number of receiving institutions and the amount of funding received with NTNU being one of the top beneficiaries. From the perspective of Norwegian actors, the Horizon 2020 programme acts both as an opportunity for funding for ambitious project ideas and as an opportunity for international and local cooperation. From a EU viewpoint, the programme allows the European Commission (EC) to guide the direction of research and innovation in Europe to reach climate goals while ensuring technological development and European integration.

One of the prioritised challenges of the European Union is sustainable development of urban areas. Accordingly, the Horizon 2020 programme has a section dedicated to Smart Cities & Communities. Specifically, the EU has decided to focus on so-called Smart Cities Lighthouse Projects that aim to integrate "commercial-scale solutions with a high market potential, in the field of energy, transport and ICT" (European Commission, 2020a). In the spring of 2015, The Norwegian University of Science and Technology (NTNU) delivered their first Smart Cities Lighthouse Projects funding proposal to the European Commission. A few years and two attempts later, the nearly 700-page proposal was successful, and a smart city project with 20 million euros of EU funding became reality.

The project is entitled +CityxChange and involves the Lighthouse Cities of Trondheim and Limerick as well as five Fellow Cities scattered across Europe. The consortium consists of partners from ten different countries, with NTNU coordinating the entire project. This thesis will focus solely on the effects of +CityxChange on Trondheim actors, and the main attention will be paid to the Municipality of Trondheim.

The +CityxChange project is the biggest and most complex EU project the municipality of Trondheim has ever been involved in. This is true not only in terms of the money involved, but in terms of the number of involved actors, it's geographical scale and its ambition level. The city of Trondheim serves as a living lab, and with regards to the absence of experience with similar projects and the potential for a political backlash – an actor that is taking a significant amount of risk with the decision to take part in +CityxChange. These are the main reasons why the decision was made to focus on the municipality of Trondheim as the unit of analysis. Furthermore, there is a literature gap in the effects of EU funding on the public sector, herein local governments, as demonstrated in the following quote:

> [...] [T]here is an evident need for comparative research on the drivers and consequences of public sector projectification in supranational as well as national contexts. The results of this discussion also raises many additional questions such as how the project management gospel gets spread at local level, and to some extent questions the suitability of projects as a natural way for connecting public and private interests in a field often characterised by long term goals and permanent and hierarchical structures.
>
> (Godenhjelm, Lundin & Sjöblom, 2015, p. 343)

The purpose of this thesis is to discover whether the Horizon 2020 programme – the current EU Framework Programme for Research and Innovation, affects the way in which local governments work, and if so, how. This is done through a case study that involves studying the effects of +CityxChange on both the structure and operational conventions of Trondheim municipality as well as on the content and focus of policy output. This is achieved by studying the municipality of Trondheim, but also through studying involved actors from other sectors. By doing this, a thorough understanding of the changes in cross-sectoral relationships is possible.

This case study aims to test four assumptions. These assumptions are that the following developments are observable in the municipality of Trondheim after the initiation of +CityxChange: the attainment of more EU expertise, an orientation towards project-based work, more cross-sectoral cooperation and more European integration. The conceptual approach used to understand these assumptions consists of concepts of expertisation, projectification, the triple helix model and europeanisation. The concept of smart city drivers are also presented and used in the analysis in order to understand the underlying reasons for the project – and thus for the potential further developments. The analysis examines whether the findings in the case study corresponds with the assumptions, and the results of the analysis are discussed in chapter 6.

In terms of structure, chapter 2 introduces relevant concepts for understanding how the Horizon 2020 can affect the way in which local governments and their related actors work. These concepts form the basis of the discussion and analysis in the thesis. Chapter 3 deals with the methods and methodology of the thesis, while chapter 4 consists of the case study of the +CityxChange project and its effect on Trondheim Municipality. Chapter 5 analyses the findings from the case study with the concepts presented in order to reveal how and to what extent +CityxChange has affected Trondheim municipality. The sixth chapter discusses limitations of the study and the findings from the analysis and chapter 7 concludes the thesis. Finally, chapter 8 consists of a literature list.

2 Conceptual Approach

The effects of the Horizon 2020 programme on the work of local governments can be discussed in a multitude of ways. This thesis explores to what degree the work with +CityxChange has had an effect on the structure, operation and policies of Trondheim Municipality. It aims to investigate whether the changes fit the following concepts: expertisation, projectification, smart city drivers, europeanisation and the triple helix model.

This thesis seeks to contribute to filling a literary gap highlighted by Godenhjelm, Lundin & Sjöblom (2015). In the article *Projectification in the public sector*, they argue that research in public administration has given little attention to projectification, and that the temporal dimension is "more or less absent" in the debate on governance (2015, p. 339). Furthermore, that "there is a growing interest in research on public sector projects, usually emphasising the importance of understanding the institutional context and the specific nature of public projects compared to private ones" (2015, p. 329.)

The overarching purpose of this thesis relates to the effects of the current EU Framework Programme for Research and Innovation on municipal governments and their administrations. For practical reasons, these effects can be sorted into two categories: (1) The structure and operational conventions of municipal governments and (2) the content and focus of policy output. The effects are addressed by concepts of expertisation and projectification, the triple helix model and concept of smart city drivers.

Framing this analysis will be a secondary question which addresses the greater meaning of the observations made in this thesis: What attracts municipal governments like Trondheim Municipality to engage in EU Framework Programmes for Research and Innovation? By addressing both the primary and the secondary research questions of: (1) 'How does Horizon 2020 change municipal governance?' and (2) 'what are the drivers of participation in the programme for the involved actors?' it will be possible to give insight into how municipal governments will change in the coming years if certain conditions are present.

The thesis tests whether the aforementioned concepts can be observed in Trondheim Municipality by way of the +CityxChange project. These concepts are explained in the following subchapters.

2.1 Expertisation

The Horizon 2020 (H2020) programme is the eighth European Framework Programme for Research and Innovation. Its total budget is approximately 80 billion euro (European Commission, 2013). This funding is meant to contribute to the European Union becoming a so-called Innovation Union by addressing three key areas: excellent science, industrial leadership and societal challenges. EU funding has become a very important financial resource for actors spread all over Europe with even non-member countries like Norway

being eligible for funding. This means that the competition for funding is fiercer than ever.

Almost 800 000 applications have been sent to the European Commission (EC), 230 000 of them have been deemed eligible for funding, and 27 000 of them have been approved. This means that 12% of eligible proposals are approved for EU funding through the H2020 programme. This intense struggle for funding should theoretically ensure that only the best proposals receive grants, but that would assume a perfect application process. The fact of the matter is that the idea behind a proposal can be in line with the call text, be innovative and have a high level of "excellence", in the words of the EC. This idea does, however, needs to be formulated in a specific manner in order to check the boxes that the EC uses when evaluating applications, and in order to receive funding, the evaluators need convincing. This has led to a world of strategies, networking and experts.

There seems to be a wide agreement among applicants that a certain 'EU language' is required in order to score points which in turn decide who will get funded. There is a substantial focus from the EU on the added value of a project, and people previously employed by the EU sometimes quit their jobs and are employed by applicants as experts in order to increase the likelihood of being selected for funding: "Consequently, beneficiaries of EU funds increasingly employ specialized experts for the preparation and submission of EU project applications" (Büttner et al., 2015, p. 584). "These are people who have once gained experience in EU project management […] and then they leave their job and offer services on their own […]. This has become a huge industry" (Büttner & Leopold, 2016, p. 61).

With EU legislation and funding influencing affiliated countries, specialised EU expertise is now required in many levels of government and organisations (Büttner et al., 2015, p. 583). As a result of this, "national, regional and local administrations, universities and other governmental organizations as well as private companies and non-governmental organizations, have increasingly recruited people with knowledge of EU affairs (ibid.). These EU experts do not necessarily share similar career paths or backgrounds, but they have some sort of expertise which they can offer to the actor for which they work, which could be an essential step in adjusting to securing EU funding or serving other EU related purposes such as adjusting to legislation.

In the case of Norway specifically, there is strong evidence that academic experts play an increasingly important role in policy-making. "The practice of consulting academic experts in Norwegian policymaking has grown at a steady pace over the last 40 years. The numbers speak for themselves: the share of academics has increased more than threefold, with academics outnumbering actors affiliated with interest groups, the private sector and the political sphere" (Christensen & Hesstvedt, 2018, p. 95). This article will discover whether this is also the case in the field of EU funding in Trondheim municipality.

EU funding creates fertile conditions for local and national EU experts, with a large portion of the job market for EU affairs professionals consisting of positions related to EU funding (Büttner et al., 2015, p. 584). EU funds can be crucial for both realising and fostering research and innovation project ideas, and along with this, there are certain organisational rules and procedures that require specific expertise, knowledge of EU

funding regulations and "of the particular 'EU literacy'"(ibid.). The Horizon 2020 programme and similar funding systems create employment opportunities for people with expertise related to the funding of EU projects at "European, national, regional, and even local levels" (ibid.), and consequently, actors competing for EU funding now hire EU experts in order to secure funding (ibid.).

Büttner et al. further argue that this demand for EU experts has caused an increase in specialised training and study programmes that focus on skills and competences relating to "the acquisition, application, evaluation, billing, and budgeting of EU projects" (ibid.). There has been an increase in study programmes in European studies, European affairs, European law and European management, and programmes like these have been essential in training students for the job market. This is not only the case for working in the European Union itself, but also for national, regional and local governments as well as in the private sector (ibid.). The following sub-chapter discusses the projectification process that Büttner argues is driving expertisation.

2.2 Projectification

There has been an increase in the use of projects and other temporary modes of organising the public sector in recent decades (Hodgson et al., 2019, p. 1). The shift towards relying on projects in the public sector has been argued to be one of the most important and neglected administrative developments of the past decades (Hodgson et al., 2019, p. 1; Sjöblom, 2009, p. 165). This is a change that is heavily influenced by the changes seen in best practices in the private sector, which has experienced an increased focus on "maximising flexibility and innovation without sacrificing control" in the past decades (ibid.). It is argued that much of the literary attention has been on the projectification of the private sector, and that the same developments in the public sector have gone under the radar (ibid.).

Projectification can be understood in two ways: as a process and as a result (Jałocha, 2019, p. 594). In other words, projectification can be considered an activity or a result of said activity (ibid.). Put differently, "it is a change and leads to it" (ibid.). For this thesis, the process of projectification describes the changes that occur in Trondheim municipality as a result of working more project-oriented, and the result of projectification is the acceptance of the process and the actual project work. This thesis tests whether the Horizon 2020 programme pushes the public sector to rely on a more project-based structure, and the theoretical framework for this is described in the following two sub-chapters.

2.2.1 Projectification as a Policy Tool

Büttner and Leopold argue that EU funding has become "an integral part of EU policy-making during the past two to three decades" (Büttner & Leopold, 2016, p. 42). Others go further, and argue that "an increasing use of projects, or projectification processes, over the past decades has been one of the most important structural developments in the public sector in general and the EU in particular" (Godenhjelm, Lundin & Sjöblom, 2015, p. 338). Through funding, the EU has created a kind of project world, which has brought new types of expertise and professionalism into public policy-making.

The European Union makes use of projects within structural and investment funds as a way of obtaining visible impacts on a local level that the EU is unable to control in detail.

In other words, the EU does not provide funding in order to govern the "micro-details of member activities" (Hodgson et al., 2019, p. 6), but rather as a tool to guide research, innovation and policy in a certain direction. The use of project funding offers the EU administration a tool for guiding beneficiary states towards the overarching goals of the EU through methods that work on a local level (ibid.). Viewed as a process, projects could be a great power and management tool to control and direct the organization and its processes (Sahlin 1996). A practical example of this is the calls for project proposals by the many different EU funds (Büttner & Leopold, 2016). These calls are efficient ways of not only directing the attention of the organization, but also to get employees to think about and work toward the goals proposed in the calls (Fred, 2019, p. 7).

Similar phenomena can be seen in the relation between national governmental policy and local policy, where the national government may provide certain obligations or objectives that can be tackled as appropriate on a local level. This sort of projectification requires "system level governance that is flexible to the requirements of particular projects, and offers a degree of autonomy to those responsible for project management" (ibid.). This is regarded as a way of government by Hodgson et al., and is considered as a deliberate attempt to de-politicise implementation, while the logic behind the delegation actually being deeply political (ibid).

The project logic encompasses an innovative, flexible feature and a feature that supports control and hierarchical structures – two features that are almost contradictory (Fred, 2019, p. 7). A project that appeals to common values "may encourage cooperation between different groups of actors or organizations" (ibid.), and a project that expresses a vision of the future that is regarded as appealing, will likely receive great support (ibid.).

Project organisation aligns well with New Project Management (NPM) and Management by Objectives (MBO). MBO is one of the main management principles of the Norwegian government and revolves around three principles: (1) strategic management towards overarching goals, (2) delegation of authority and (3) accountability for results and achievement of objectives (DFO, 2019). Through project work, these three principles are also important. In the case of +CityxChange it provides Trondheim municipality with a delegation of authority to the group working on the project, it ensures that the persons accountable for results are clearly defined, and it serves the purpose of reaching the overarching goal of becoming a more green and smart municipality. The effects of MBO in the public sector are something that needs to be studied further (Johnsen & Larsen, 2015, p. 31), but it seems to be an approach that facilitates project work. This compatibility between MBO and project-orientation is illustrated in Fred's following description of the role of projects in the public sector:

> In a public sector context, projects have often become associated with development and innovation (Sjöblom 2009), but at the same time they are also associated with the notion of control, clarity and output. This duality makes projects even more attractive. Practices associated with a project logic can be regarded as exercises delivering both 'controllability and unpredictability,' promising a solution to clearly defined objectives, plans of how to reach them, and techniques for how to evaluate them, at the same time as they can be argued to deliver innovation and organizational change.
>
> (Fred, 2019, p. 8)

The clear framework that exists when working in a project allows public bodies like Trondheim municipality to have control of the city development while still having the potential of breaking new grounds in terms of innovation through working with their project partners, as further discussed in the next sub-chapter.

2.2.2 Projects as a Concept

Godenhjelm, Lundin & Sjöblom argue that perhaps the most interesting aspect of projectification in a theoretical sense is the "strong contextual embeddedness of project organisations" (2015, p. 329). On a conceptual level, a project is meant to entail innovation while still delivering order and control. Projects are meant to develop solutions that tackle new types of social challenges and are also meant to "trigger change in stagnant and satiated bureaucracies" (ibid.). Through projects, one can achieve a modern and non-bureaucratic form of organising the activities of the public sector while allowing for modes of action that would not otherwise be accepted (ibid.). In other words, the way in which projectification is to be understood must be different when discussing the public sector as compared to when discussing other sectors like industry or business:

> [...] the embedded and political nature of public sector projects affects their dynamics in ways that deviate from projects in an industrial or business context. This is by no means a unique point of departure in process oriented analyses of project organisations. To the contrary, many scholars have applied the same line of reasoning. Although most research on project organisations has been done in industrial environments there is a growing interest in research on public sector projects, usually emphasising the importance of understanding the institutional context and the specific nature of public projects compared to private ones.
>
> (ibid.)

This subchapter has highlighted how projects can function as a tool, and that projectification has been one of the most structural developments in the public sector and in the EU. Projects can be used as a form of governance that brings in new expertise, guides the direction development and innovation and that encourages cooperation across sectors. As discussed, projectification looks different depending on the sector in which it is happening. Smart city projects typically involve three sectors, and the next sub-chapter aims to cast light on this interaction.

2.3 Triple Helix

The partnership of university, industry and government is essential to innovation in knowledge-based societies. As societies have shifted from being industrial societies toward becoming knowledge-based, the former exclusive roles of governments and industrial actors have transformed towards including universities as an essential third actor in the partnership. Furthermore, the role of each actor has changed, and universities, firms and governments each now "take the role of the other" (Etzkowitz, 2008, p. 1). Although the distinct characteristic identity of each actor is maintained in triple helix interactions, Etzkowitz argues that:

> The university takes the role of industry by stimulating the development of new firms from research, introducing "the capitalization of knowledge" as an academic goal. Firms develop training to ever higher levels and share knowledge through joint ventures, acting a bit like universities. Governments act as public venture capitalists while continuing their regulatory activities.
>
> (2008, p. 1)

In any triple helix partnership, there is typically one actor that has the responsibility of coordination. Etzkowitz and Leydesdorff argue that the university is playing a more important societal role now than before, and that university entrepreneurialism is becoming increasingly important (Etzkowitz, 2008, p. 30; Leydesdorff & Etzkowitz, 1996, p. 282). With the development of entrepreneurial universities, Etzkowitz argues that academia is now taking a leading role in what Marx would call an emerging mode of production that is based on continuous organisational and technological innovation (2008, p. 30).

Historically, both government–industry and government–university relations have been commonplace. It is the development of the university's role that has led to the triple helix discourse, with the more recent university–industry partnership becoming usual (ibid). This evolution is symptomatic to the emerging role of innovation and knowledge capitalisation.

Contemporary university–industry relations may happen in three different ways, Etzkowitz claims. One of these sources for relations is through what he refers to as "joint formulation of research programs with conjoint basic and applied goals and multiple funding sources" (2008, p. 34). This is, I argue, is typically the structural recipe for most EU funded smart city projects, as the research projects are based on EU calls, and cross-sectoral cooperation in terms of both formulating a project plan and achieving project goals is required in order to meet the requirements of the call.

When it comes to triple helix within a smart city-framework, universities have typically been the actor that has been pushing the smart city agenda. Through experimenting with smart city pilots, universities have been able to interest both industry and local governments through potential for innovation and economic development (Dameri, Negre & Rosenthal-Sabroux, 2016, p. 2974). The presence of universities in such a concept responds to the triple helix idea, and a shift from a traditional industry-government partnership is now common in the field of smart cities (ibid.). A smart city often creates an innovation ecosystem where elements of university, industry and local government contribution play an important role in realising the concept (ibid.). The following sub-chapter describes the differing incentives for participation in smart city projects for each sector.

2.4 Smart City Drivers

A smart city can be considered the convergence of technology and the city (Yigitcanlar et al., 2018, p. 145). It is an approach to challenges that the world is facing today with regards to areas like climate change, energy consumption, traffic congestion and pollution. The multifaceted nature of smart cities means that the potential incentives for becoming a smart city can vary from one city to another. By definition, smart cities tackle challenges on a local level, and it therefore affects the citizens more directly than formal agreements like the Paris Agreement. Although smart city projects are often criticised for not paying enough attention to the citizens (Engelbert, van Zoonen & Hizalla, 2019, p. 352), it is generally a more popular approach to tackling issues like climate change than its alternatives, not only to the citizens, but also to policy makers. The three factors that makes smart cities particularly appealing to policy makers are

technological solutions, governance innovations and political opportunities (Haarstad, 2017, p. 434).

When aiming to reach ambitious climate change reduction targets, strong public support is of great importance (Bernauer & McGrath, 2016, p. 680). Climate change is, however, by no means the only driver that incentivises the drive for becoming a smart city. This is illustrated by the way in which the EU groups their Horizon 2020 programme. The section named 'societal challenges', the parent programme of the +CityxChange project, is divided into seven parts. One of these seven parts is titled 'Climate Action, Environment, Resource Efficiency and Raw Materials'. Most calls for smart city projects are found under another section, namely 'Secure, Clean and Efficient Energy'. These parts are by no means intended to limit the ambitions of the projects, and energy efficiency is undoubtedly an important step in fighting climate change, but this grouping does indicate that smart city projects are not typically aiming to exclusively combat climate change – rather, they are aiming to address societal challenges in the societies to which they belong. In certain cities, that would involve finding new solutions for recycling, some would like to encourage bicycling and some would focus on 5G networks. The +CityxChange project is funded through the 'Secure Clean and Efficient Energy', and energy is the main focus area for +CityxChange.

The drivers behind wanting to create a smart city vary depending on the actor. Although actors typically share the same vision of smart cities; creating the city for the future in order to realise economic sustainability, social inclusion and environmental preservation while improving the citizens' quality of life, the actual aims and drivers are quite different between the public sector, universities and private companies (Dameri, Negre & Rosenthal-Sabroux, 2016, p. 2977).

It has been argued that the main purpose of smart city projects should be improving the quality of life for the citizens. This is, however, not typically the de facto priority for the involved sectors, as the self-interest of the actors tends to trump the focus on the citizens.

> It emerges that different goals and visions linked together should drive the smart city towards its veritable final aim, that is, the quality of life for citizens. However, our survey shows that people not ever are at the core of the smart city efforts and key actors are more interested in pursuing their own objectives than to reach the common good.
> (Dameri, Negre & Rosenthal-Sabroux, 2016, p. 2979)

In order to prevent the actors from feathering their own nests rather than working together towards a common objective and in order to improve the quality of life for the citizens, Dameri et al. argue that a central direction which coordinates the interests of all key actors is essential (2016, p. 2980). Generally speaking, more focus should be put on strategic planning, a shared smart city definition and understanding and aligning the actor interests in the strategic phase in order to prevent smart city projects that are "heterogeneous, unfocused, little effective, regarding few people, poorly funded", characteristics that plague the smart city project world in general (Dameri, Negre & Rosenthal-Sabroux, 2016, p. 2979).

According to Doucet, the main incentive for urban entrepreneurialism for municipalities and other not-for-profit actors is wealth creation (2013, p. 2037). On the other hand, private actors tend to be more concerned with profit making (ibid.). By this, he argues that municipalities are concerned with creating wealth in a long-term perspective, while business actors typically prioritise shorter-term profitability and revenue. Both wealth creation and profitability are likely and desired outcomes of smart city projects as: "Megaprojects represent the urban spaces where entrepreneurial strategies become implemented" (Doucet, 2013, p. 2038), and through the implementation of entrepreneurial strategies in megaprojects like larger smart city projects, entrepreneurial and growth-oriented goals are both possible and prioritised (Doucet, 2013, p. 2038; Doucet et al., 2011, p. 127). The wealth creation is made possible through catalysing further investment by creating a "safe haven for further investment" (Doucet, 2013, p. 2038).

To sum up, the desired and expected outcomes make up the smart city drivers, and these tend to very depending on the sector to which the actor belongs. In order to achieve a successful project, it is essential that the interests of the involved actors are not in conflict with each other, and that a common understanding of the project's main purpose and the terms being used. The main drivers for the public sector to partake in smart city EU projects tend to be reaching the municipality goals; typically climate-related, improving the city, involving citizens and the ability to do so on a limited budget through EU funding. A central effect of EU funding is discussed in the next sub-chapter.

2.5   Europeanisation

The focus of this thesis is they way in which the H2020 programme affects the way in which local governments work, and a core concept to use in order to understand this is that of Europeanisation. Municipalities in Europe now no longer only have to align with the policies on their national level, but developments in Europe, and particularly in the European Union now affect the frame in which local governments operate. This does not only happen through laws and regulations affecting the national government and thus the local governments, but also through funding schemes like the H2020 programme. Funding through H2020 is a valuable opportunity to finance ambitious and future-oriented projects, and it can also function as a seal of approval that signals the intentions and ambitions of European municipalities.

Europeanisation is a term that can have many meanings. According to Sabine Saurugger, the concept of Europeanisation in its most general sense seeks to understand the EU's influence and the process of European integration on political, economic and social change within each EU member state (2014, p. 123). In a more restricted interpretation of the term, however, Europeanisation regards the transformation processes at a national level that depend on European integration (ibid.). For the purpose of this thesis, Europeanisation will be applied to the local government level in order to explain the EU's effect on how Trondheim municipality is managed. This is done through looking at Horizon 2020 funding and its effect on Trondheim municipality. Similar analyses have been performed in previous literature (i.e. Büttner et al., 2015; Guderjan, 2012; Jałocha, 2019), but with different or less specific units of analysis.

Surrounding literature has focused on how EU funding can lead to europeanisation of EU countries – whereas this thesis will examine whether this is also true in a non-member country with a unique EU relationship. The process of europeanisation in Norway is studied in an Official Norwegian Report (NOU), and the process is found to be affecting Norwegian governments on all levels and in most matters (NOU 2012: 2, p. 161). On the other hand, the report was published in 2012 – before Horizon 2020, and while EU framework programmes are discussed, their relationship with europeanisation of Norwegian governments are not mentioned.

A modified version of Robert Ladrech's definition of Europeanisation will be used in this article to explain the effects of EU funding on local governments. He sees Europeanization as "an incremental process reorienting the direction and shape of politics to the degree that EC political and economic dynamics become part of the organizational logic of national politics and policy-making" (Ladrech, 1994, p. 69). In Ladrech's understanding of the term, Europeanization is considered as a causal factor that transforms national public policies. This definition is adapted into one that applies more directly to smart city projects and local governments. In this paper, Europeanisation is understood as a process in which local governments change as a result of funding opportunities provided through the Horizon 2020 programme.

Risse et al. (2001) explain Europeanisation through a three-phase model that aims to illustrate the process of the phenomenon. They argue that: European integration → pressure → adaption (Risse et al., 2001; Saurugger, 2014, p. 126). This thesis argues that, when discussing the Horizon 2020 programme, the 'pressure' aspect is not present, at least not in a literal sense. Instead, smart city funding opportunities through the Horizon 2020 programme can be valuable opportunities for local governments, illustrated by the amount of competition that is typically involved with receiving funding. Therefore, this thesis uses a modified three-phase model, where pressure is replaced by opportunity. That is not to say that pressure is not an important aspect of Europeanisation in a general sense, but when discussing the Europeanization process on local governments through Horizon 2020 funding, pressure is hardly present. Therefore, the model instead can be presented as such: European Integration → opportunity → adaption (with adaption translating into europeanisation).

An important aspect of the concept of europeanisation in particular is the slower speed in which it tends to occur. If including all three EU proposals, the work with +CityxChange has been ongoing for about five years and the actual project has now lasted for two years with three more years to go. With the exception of "projects as a result" (Jałocha, 2019, 594), the previously discussed concepts have qualities that can be observed quickly due to their more instantaneous nature. When it comes to europeanisation, however, this is often a development that takes longer to occur (Carbone & Orbie, 2017; Trenz, 2015; Hill & Wong, 2011), though this interaction needs to be studied further when applied to local governments.

3 Methodology

This chapter deals with the choices that have been made in this research project and aims to provide insight into the background of these decisions. The purpose is to clearly illustrate the path chosen to best answer the research question, and to highlight the benefits and challenges of the methodological approach selected. The chapter tackles the decision to take a qualitative approach and the choices of performing a case study as well as explaining the rationale for the case chosen. Finally, sub-chapter 3.1 contains a discussion of the selection of sources.

This article is based on qualitative research. The purpose of this study is to discover how the Horizon 2020 Programme affects the way local governments work, and this is done by examining the case of how the +CityxChange project affects the way in which Trondheim Municipality works. The nature of this assignment is investigative (Tjora, 2012, p. 18**)**, meaning that qualitative research is best suited for this research.

A single case study is typically not suited for generalisation, but works well as a tool to gain a thorough understanding of the specific case in question (Stake, 1995, p. 197). Thus, the purpose of this study is not to make generalisations about the effects of EU funding on local governments, but rather contributing with an increased understanding of how the municipality of Trondheim has been and is being affected by +CityxChange. By attempting to – at least slightly, fill the literature gap that has motivated this thesis, the ambition is to provide a valuable contribution to surrounding literature.

This case study aims to reveal whether the attainment of more EU expertise, an orientation towards project-based work, more cross-sectoral cooperation and more European integration are developments in the municipality of Trondheim observable after the start of +CityxChange. This is done through using the conceptual framework presented in chapter two and by tracing developments in the municipality through primary and secondary sources.

3.1 Primary and Secondary Sources

The most integral secondary sources have been thoroughly reviewed in the previous chapter, and they make up the conceptual framework for this thesis. This sub-chapter discusses the sources that are instrumental for understanding the case itself.

There is little literature on +CityxChange specifically, but the Master's thesis of Elisabeth Dreyer Henjum titled 'Smart Cities – for whom?' has been a very valuable document for this research. This thesis deals specifically with the +CityxChange project, and is oriented towards citizen involvement. Despite Henjum's having a different scope, her thesis contains valuable information in the form of statements made in interviews with involved actors (Henjum, 2019). The following subchapters discuss the primary sources used in this study.

3.1.1 Official Websites

Several documents are used in order to contribute to the research in this thesis. The official web page of +CityxChange has a 'knowledge base' in which documents regarding the project are uploaded. This knowledge base includes all public deliverables, making it a valuable resource in this research project. The knowledge base is continuously updated, and I have attempted to include relevant documents as they are uploaded throughout the research work. Many of the deliverables are technical in their scope, and some deal with citizen involvement. Deliverables related to Work Packages 5, 9 and 11 are generally the most relevant documents for this thesis as they deal with Trondheim, Intra-project collaboration and clustering and Project management respectively.

Other central documents are those made available by the EU. This includes the call for proposal-text by the European Commission, which gives specific insight into what the EU requested from the proposals. This gives an understanding of the motivation for the EU to fund the project. Furthermore, the EU database of Horizon 2020 allows for an overview of statistics and figures related to the project.

3.1.2 Interviews

Through using the information made available in public deliverables, documents and newspaper articles along with interviews with several involved actors, the method of methodological triangulation will allow for an understanding of the project that is less biased than what it would be if it were to rely on one source of data alone (Salkind, 2010, p. 2). A total of five interviews have been performed with representatives from four involved actors. Both the municipality director and the project leader of Trondheim Municipality have been interviewed in order to allow for data triangulation, in other words allowing the possibility of checking for potential irregularities in the interview data (ibid.), which is of particular importance with the municipality being the main unit of analysis. This also provides the possibility of examining potential differences in how the project work and its effects are interpreted by different people within the same institution.

The information deficit based on available resources encouraged the choice of interviewing involved actors. Actors interviewed for this thesis include people involved in +CityxChange from Trondheim Municipality, NTNU and business actors in order to get multiple perspectives on the project. The reason for including all three sectors is that perspectives and experiences are expected to vary significantly depending on the function of the actor. Furthermore, when investigating how EU funding affects the way in which Trondheim Municipality works having multiple perspectives is fruitful and allows for a test of the triple helix model. Learning how other project partners perceive their work with Trondheim Municipality is just as valuable as learning how Trondheim Municipality perceives its work with the other partners.

In order to ensure flexibility and relevance according to the different respondents, I opted to perform semi-structured interviews. This form of interviewing allows for fairly similar interviews with all respondents, while still remaining flexible enough to account for the differences in roles, expertise and interests.

Table 1: List of Informants

Date	Interviewee	Employee	Position
23 January 2020	Morten Wolden	Trondheim Municipality	Kommunedirektør [Municipality director]
31 January 2020	Klaus Livik	Powel	Chief Strategist
3 February 2020	Jostein Breines	NHP Eiendom	Regional Manager, Mid-Norway
5 March 2020	Dirk Ahlers	NTNU	Project manager of +CityxChange
6 March 2020	Bjørn Ove Berthelsen	Trondheim Municipality	Project leader of +CityxChange

Building on interviews in Norwegian newspapers and information found on the +CityxChange project website, I was able to map relevant business actors and involved employees within these businesses. I also made use of snowball sampling. This allowed me not only to get a recommendation for potential respondents, but it also cast light on which partners they considered to be the most insightful with regards to the focus of this research. When contacting elite informants, this way of sampling is optimal, as it allows for a 'way in' to actors that would typically be difficult to reach out to. The interview with the head of Trondheim Municipality was the first interview conducted for this thesis, and his recommendation for further informants was not only useful in terms of uncovering central actors to reach out to, but it also lowered the bar for contacting said actors.

In terms of the respondents from the business sector, I wanted to gather data from at least two companies, one of the top receivers and one of those that received less funding. This selection allows for an understanding that covers both ends of the spectrum in terms of financing amount, and allows for the possibility to uncover whether the amount of funding could impact the effect of the project. This led me to contact Powel who received 1 million Euro (European Commission, 2020b) and NHP Eiendom, receiving slightly less than half of this (ibid.).

The interviews are semi-structured, and follow the interview guide found in Appendix A. A semi-structured interview allowed the informants to go into detail in the areas where they were most knowledgeable and enthusiastic, while still keeping a structure that was somewhat similar among all interviews. By allowing the informants to somewhat steer the interview in the direction in which they were most comfortable, I was able to get an understanding of where their expertise lies, and what role they play in the project.

3.1.3 International Strategies

Official websites and interviews are helpful primary sources that provide an understanding of how the actors themselves regard the project. In order to be able to register the effects of working with +CityxChange, however, it is necessary to examine the municipality's international strategies, as these indicate the focus and content of policy output of the municipality.

This thesis compares the municipality's international strategies from before and after +CityxChange in order to track potential developments in the international strategy of Trondheim municipality. This is done in order to test the assumptions that the municipality of Trondheim has become more EU-focused and project-oriented in recent years, as these developments would be likely to manifest themselves in such strategies.

4 Case Study of Trondheim Municipality and +CityxChange

This thesis aims to understand how the Horizon 2020 programme is able to affect the way in which local governments work. In order to contribute to this field of research, this body of research makes use of a case study of the +CityxChange project, more specifically on why Trondheim Municipality got involved with the project, how they contributed to the application process and how they are involved in the implementation process. The +CityxChange project involves seven cities scattered across Europe, with Trondheim and Limerick being the main beneficiaries of the EU grants, so-called Lighthouse Cities. For the purpose of addressing the research question, this case study will limit itself to the part of the project that involves Trondheim Municipality and the partners in Trondheim specifically, but it will also address how the project leads to communication and cooperation between borders from a Trondheim Municipality-based perspective.

4.1 Horizon 2020

Horizon 2020 is the eighth European Framework programme, and it is the biggest of its kind. The main purpose of the EU framework programmes is to drive economic growth and to create jobs through investing in the future (European Commission, n.d.-b). As stated on the official web page of the European Commission, the goal is to ensure European world-class science, to remove barriers to innovation and to make it easier for the public and private sectors to work together in providing innovation (ibid.). The goal of public and private sectors working together is something this thesis examines thoroughly – aiming to test whether this has been the case in Trondheim with +CityxChange.

4.1.1 The Structure of the Horizon 2020 Programme

Although Horizon 2020 has been restructured compared to previous framework programmes with the purpose of reducing "red tape and time so participants can focus on what is really important" (European Commission, n.d.-b), the programme has still received criticism for being too complex and difficult to manoeuver (Enger & Castellacci, 2016; Zubașcu, 2018). One aspect that makes creating a proposal challenging is the use of EU language – terms that makes even manoeuvring the list of calls for proposals challenging for someone not familiar with the world of EU funding.

The Horizon 2020 programme is divided into three pillars, (1) excellent science, (2) industrial leadership and (3) societal challenges. The third pillar has the biggest budget with approximately 30 billion euro that is meant to fund projects that address different societal challenges laid out by the European Commission (European Commission, 2014). Pillar three consists of seven different focus areas, the third of which being "building a low-carbon, climate resilient future: secure, clean and efficient energy". This focus area is divided into 10 topics, one being titled "Smart Cities and Communities". This is the topic to which the +CityxChange project belongs.

The code for this call is LC-SC3-SCC-1-2018-2019-2020. The 'LC' indicates that the call belongs to the focus area Building a low-carbon, climate resilient future. 'SC3' indicates that it belongs to the third focus area under the 'societal challenges' pillar. 'SCC' is an abbreviation of the topic "Smart Cities and Communities. '1' indicates that it is the first of two projects in the working programme for the call, and the numbers at the end of the code indicates that there are three openings for this call, closing in respectively 2018, 2019 and 2020. The +CityxChange project receives funding from the opening that closed in 2018 (European Commission, 2020b).

The way of structuring the calls for funding highlights the complexity of the H2020 programme and illustrates the reason that the application for such funding is argued to become increasingly dominated by experts on EU funding. Simply coming across a call like the one that is financing the +CityxChange project does not happen without having the necessary expertise, and navigating the calls in an early stage is important in order to be able to compete for funding (B.O. Berthelsen, personal communication, March 6, 2020).

4.1.2 The Call for Proposal

The European Commission has a specific formula for their calls for proposals. A call for proposal can be considered a recipe that outlines the sort of project the EU wishes to finance. Applications for these calls are referred to as proposals. The call texts generally follow a certain structure: they start by laying out a "specific challenge", sets out the "scope", and the "expected impact" of the projects they are willing to fund..

The specific challenge addressed in the +CityxChange call for proposal is to rapidly decrease greenhouse gas emissions and adapt to climate change. The project is meant to contribute to this by significantly pushing energy performance levels beyond the current EU building codes and to allow for deployment of Positive Energy Districts in all of Europe by 2050 (European Commission, n.d.-a, p. 170). This segment of the call text refers to three different external objectives that the EU is working to reach through projects like this, namely The Paris Agreement, the 2030 Agenda for Sustainable Development goal 11 and the SET Plan action 3.2 (ibid.). These overarching challenges illustrate the incentives for the European Union to fund smart city projects.

In the scope section of the call text, it is made clear that integrated and innovative solutions for Positive Energy Blocks/Districts will be developed and demonstrated in the Lighthouse Cities before being replicated in Fellow Cities where they will be adapted to the local conditions. The proposals should also focus on mixed use urban districts and work towards the overall city goals, develop solutions that can be replicated or scaled up to city level, ensure that local communities and local governments are an active and integral part of the solution and promote decarbonisation and improve air quality. Furthermore, they should deliver business models for sustainable solution and practical recommendations based on the project experience on several things ranging from regulatory aspects to big data management and storage solutions (European Commission, n.d.-a, p. 171).

The expected impact of the projects are presented as bullet points:

- Meeting EU climate mitigation and adaptation goals and national and/or local energy, air quality and climate targets, as relevant;
- Increased share of i) renewable energies, ii) waste heat recovery and iii) storage solutions (including batteries) and their integration into the energy system;
- Lead the way towards wide scale roll out of Positive Energy Districts;
- Significantly improved energy efficiency, district level optimized self-consumption, reduced curtailment;
- Increased uptake of e-mobility solutions;
- Improved air quality.

The higher the replicability of the solutions across Europe, the better.

(European Commission, n.d.-a, p. 173)

This chapter has presented the context of the call for proposal as well its contents in order to allow for an understanding of the constraints in which the +CityxChange project proposal has had to abide by. The following chapter will discuss the +CityxChange project itself.

4.2   The purpose and Structure of the +CityxChange Project

4.2.1 As Presented on the Official Web Page

The official objective of the +CityxChange project is to enable "the co-creation of the future we want to live in by developing a framework and supporting tools to enable a common energy market supported by a connected community" (+CityxChange, n.d.). The enabling of a common energy market is meant to lead to "recommendations for a new policy intervention, market (de)regulation, and business models that deliver positive energy communities integrating e-Mobility as a Service (eMaas) (ibid.). The official objective is referred to as a central objective, and in order to achieve this, 15 so-called secondary objectives also have to be followed. The secondary objectives are grouped into four categories: (1) business models, (2) citizen-centred approach, (3) replication and (4) technology (ibid.). These objectives are detailed further in table D1 found in Appendix D.

This exact expression of the objectives of the project are only posted on the official website, and is, assumingly, presented in a way that allows readers to get a relatively simple overview of the project's purpose. This is a part of the municipality's strategy of citizen involvement. By presenting the project in a way that is understandable to the general population, the intent is that +CityxChange will be engaging more with citizens – a concept that is discussed further in sub-chapter 4.3.1. The way in which it formally structured, however, is equal in all Horizon 2020 projects – through work packages

4.2.2 Work Packages

In the project world, it is common to make use of so-called work packages. As stated in the European Commission's official instructions for preparing an excellent proposal for Horizon 2020 funding, a proposal has to include a work plan, where the planned project work is divided into work packages (Sutherland & Laguna, 2016, slide 23). In the case of the +CityxChange project, there are 11 work packages containing a total of 78 tasks (D. Ahlers, personal communication, March 5, 2020). These are the official work packages:

WP1: Integrated planning and design
WP2: The Common Energy Market
WP3: CommunityxChange
WP4: +Limerick
WP5: +Trondheim
WP6: +Follower cities
WP7: Monitoring & evaluation
WP8: Scaling-up, replication & exploitation
WP9: Intra-project collaboration and clustering
WP10: Dissemination and communication
WP11: Project management (parent for all other WPs)

<div align="right">(Gall & Haxhija, 2019, p. 8)</div>

These work packages contain several tasks within them, and they can be considered the framework for the entire project. On the Trondheim Municipality side, Bjørn Ove Berthelsen is responsible for the daily operations of these tasks, and on the NTNU side, Dirk Ahlers has this responsibility. The delivery of tasks are reported by NTNU and evaluated by the EU (D. Ahlers, personal communication, March 5, 2020) (B. O. Berthelsen, personal communication, March 6, 2020).

4.2.3 Open Innovation and Triple Helix

In a report under Work Package 9 submitted by NTNU in February 2019 titled "D9.1 Framework for intra-project collaboration", it is argued that the framework of +CityxChange is based on open innovation and open innovation 2.0. These are relatively new concepts, and they revolve around the notion that both internal and external ideas can be valuable, and that "inflows and outflows of knowledge" accelerates internal innovation whilst expanding markets for external use of innovation (Chesbrough, 2006, p. 8; Wyckmans et al., 2019, p. 8). The evolution of innovation models is described in table 2, with details of closed innovation, open innovation and open innovation 2.0.

Table 2: The Evolution of Innovation Models

How innovation modes have evolved		
Closed Innovation	**Open Innovation**	**Open Innovation 2.0**
Dependency	Independency	Interdependency
Subcontracting	Cross-licensing	Cross-fertilisation
Solo	Bilateral	Ecosystem
Linear	Linear, leaking	Nonlinear mash-up
Linear subcontracts	Bilateral	Triple or quadruple helix
Planning	Validation, pilots	Experimentation
Control	Management	Orchestration
Win – lose game	Win – win game	Win more – win more
Box thinking	Out of the box	No boxes!
Single entity	Single discipline	Interdisciplinary
Value chain	Value network	Value constellation

<div align="right">(Wyckmans et al., 2019, p. 10)</div>

Particularly worth noting when discussing open innovation, is that this mode of innovation is commonplace in the private sector, but not in the public sector. This is something that is highlighted in in the NTNU deliverable:

> Open Innovation is usually considered as the standard of innovation management in the private sector, hence we have yet little knowledge on how it can be applied to the public sector. However, the relational configuration of open innovation ecosystems can widely vary depending on the actors involved, their role, their impact and the degree of (in)formality of relationships among them.
>
> (Wyckmans et al., 2019, p. 9)

As highlighted by Leydesdorff & Ivanova, the model of open innovation is comparable with that of the triple helix (2016, p. 1). The main differences between open innovation and triple helix is the disciplinary background to which they belong and their policy objectives. Traditionally, the principal agent in an open innovation model is private companies, while triple helix focuses on the infrastructure of knowledge provided by university–industry–(local) government cooperation (Leydesdorff & Ivanova, 2016, p. 2).

4.3   Differing Incentives for the +CityxChange Project

This section of the thesis will use information gathered in interviews in order to understand how the +CityxChange project was initiated. What were the incentives for Trondheim Municipality, NTNU and industry partners to be a part of this ambitious smart city project? By answering this, I aim to provide a foundation for the rest of the case study. Through a chronological understanding of the way in which the project idea was developed, the rest of the case study follows thematically. Each thematic scope is divided into the perspectives of Trondheim Municipality, NTNU and industry. This is done in order to provide a foundation for the analysis. By having a conception of how different actors perceive the project and its effects, it is possible to fully understand the symbiosis within the project.

4.3.1 Trondheim Municipality

Trondheim municipality had no intention of working on an ambitious and transnational smart city project before the call for funding from the EU. When asked whether there was a desire for such a project in Trondheim Municipality before the call was published, project leader in Trondheim Municipality quickly replied "No." (B. O. Berthelsen, personal communication, March 6, 2020). On the follow-up question of whether the call motivated the idea for the project, he argued that improving the working relationship with NTNU was what really facilitated the wish for being part of the project.

> […] It has been very important for us to kind of build and consolidate, call it the relationship with NTNU. It [the relationship] has been vary option-based. Very unstructured. So we saw that it was a good idea to do it. But we have not had that approach at all. But then NTNU said that 'we have to try', because this can actually bring us further, and it can bring us closer together.
>
> (B.O. Berthelsen, personal communication, March 6, 2020).

After NTNU had reached out to Trondheim Municipality regarding the project, Trondheim Municipality started to consider what they could contribute with, and how such a project can actually be meaningful to them. They realised that this idea could be tied up to important overarching goals for the municipality, and that the municipality is able to facilitate for the project and ensure that measures are being made to make the project a reality. In order for the municipality to want to join, however, they had to consider what the added value would be for them.

> What are the important goals? What are the important plans? What are the important strategies for the city? It was not until then that it made sense, okay, let us put all of this into a big project, and then that can basically deliver on quite a few goals.
>
> (ibid.)

The director of Trondheim Municipality has a similar perspective to that of the municipality's project leader, although his focus was more on that of the pre-existing conditions that allowed for such a project to take place in Trondheim. The fact that NTNU is resourceful in terms of competence on energy and city development combined with the presence of big power suppliers like TrønderEnergi, software companies like Powel and research institutes like SINTEF Energy means that it "was not unnatural" for a project like this to take place in Trondheim (M. Wolden, personal communication, January 23, 2020) On the question of whether the idea for the project was inspired by the EU call, Wolden believed that the idea was inspired by the opportunities that EU projects provide, as the grants are substantially larger than those provided by The Research Council of Norway or Innovation Norway, and that EU funding gives "much more power in the project" (ibid.).

Another incentive for partaking in the +CityxChange project revolves around reaching the objectives set out by the municipality. The municipality of Trondheim has many goals related development and innovation, and as a public body, they have a responsibility to the citizens in Trondheim and to the Norwegian government. The representatives from the municipality felt that the +CityxChange project aligned well with the expectations of the people living in the city as well as those of Norwegian politicians.

> But why this was important, it related to several things. It did not only have to do with energy and that we have to deliver on quite a few goals that the municipality administers, right, on energy, on climate, on green jobs, growth and that kind of thing, but it has to give meaning in relation to what we otherwise work on. So we probably did a good job there, because we realised that the anchoring-job was very important, as we had to give the leader of the municipality the argumentation and the package that he could take to the politicians. He has to answer to the politicians and he has to be able to look anyone in the city in the eyes and say that 'this is completely right'.
>
> (B.O. Berthelsen, personal communication, March 6, 2020)

As pointed out by Berthelsen, Trondheim municipality has a responsibility to serve its citizens, which means that the people of Trondheim are an important consideration in any action taken by the municipality. In the particular case of the +CityxChange project, as with all H2020 smart city projects, there is an extensive focus on citizen involvement. Berthelsen states that the European Commission has been very fierce when it comes to involving citizens and that this is something that the consortium have been working hard to abide by.

Engaging the people of Trondheim has proven to be challenging in this specific project, as the purpose of smart city projects like these are not necessarily apparent to the average person.

> We have been working enormously now to… yeah, like 'Why is Trondheim municipality supposed to be doing this?' The citizens will be thinking that 'we know very little about it'. And much of it is so complicated that it is difficult to translate it, in a way, into something that makes sense to them […] You do not simply come up to most people and say that we will be making an energy-positive neighbourhood and then Fredrik at Stavset says 'WOW!' they do not do that.
>
> (B.O. Berthelsen, personal communication, March 6, 2020)

The work on involvement and engaging citizens has proved to be challenging, but with three of twelve work packages dedicated to citizen involvement and demanding follow-ups from the European Commission, it is one of the main priorities in the project. This is particularly true for the municipality, but the other actors have received criticism for not being active enough in this (Henjum, 2019, p. 119). Another related issue is that the involved actors have differing understanding of the term citizen engagement, causing the objectives that are being worked towards to be different for every actor (ibid.).

In short, the idea for the project is a result of the H2020 call and the funding that follows with it, which led to NTNU's request for using the city as a living lab. The main incentives for partaking in the project on the municipal level are making use of EU funding for developing a future-oriented city, consolidating the municipality-university relationship, reaching SDGs (Sustainable Development Goals) and serving and involving the people of Trondheim.

4.3.2 NTNU

The Norwegian University of Science and Technology had two main motivators that led to the project proposal. They wanted to work more tightly with Trondheim Municipality, and they also wanted to partake in a large-scale European project (D. Ahlers, personal communication, March 5, 2020). Through improving the relationship with the municipality, NTNU is able to cater for similar projects in the future. By being a part of an ambitious EU project like this, NTNU is able to improve their reputation as an actor of innovation and research both nationally and internationally by demonstrating their smart city capabilities (Henjum, 2019, p. 111).

With NTNU being the project leader, they had the main responsibility of the application process, and the NTNU project manager for the +CityxChange project, Dirk Ahlers, explains that work related to the proposal was ongoing before the call was officially published. The project's main driver in the early stages was project leader Annemie Wyckmans, and her presence in and knowledge of EU-related activities allowed NTNU to begin consortium building and planning ahead of the official publication of the call. Annemie and her colleagues' expertise has been crucial in the project's success:

> It is definitely helpful to have some idea of how things work there, and how the complexity works. On the working with the EU, we also have enough people here that have some experience with that. Again, specifically Annemie that has been doing this for quite a while, but yeah, knowing roughly what is being looked at-, looked for, or how to interpret like call text and how to interpret supporting documentation, that helps in writing it […].
>
> (D. Ahlers, personal communication, March 5, 2020)

4.3.3 Business Sector

The +CityxChange project proposal that received funding was the third proposal that NTNU sent to the European Commission. After having partnered up with Trondheim Municipality two times on previous calls with a similar project idea, they were not selected for funding through the Horizon 2020 programme. According to Mid-Norway's Regional Manager Jostein Breines of NHP Eiendom, it might be the restructuring and inclusion of more private actors that caused the success of the third proposal. He argues that the inclusion of more private partners in the consortium made the project proposal more disruptive, and that this was an important ingredient in the winning recipe (J. Breines, personal communication, February 3, 2020).

In terms of incentives for NHP Eiendom, Breines argues that NHP Eiendom aims to signal their values and competences by partaking in the project, and that by broadcasting their contribution to the +CityxChange project they might be more approachable for future projects with different partners (ibid.). He also stresses that it is important to them to "walk the talk", and to actually achieve something and to be able to bring these experiences into potential future projects (ibid.).

The Chief Strategist of Powel informs that they were partially included in the project plan in the second proposal, and that they were more heavily involved throughout the entire process in the final proposal (K. Livik, personal communication January 31, 2020). Powel's main incentive for partaking in the project was the added value for the company. By involving existing software and developing a prototype that they planned to develop a business plan for, they considered the added value for the company to be significant enough to join the consortium (ibid.). This year, Powel has co-created a company named Volue, which is built on the solutions that Powel have developed in the +CityxChange project (Berglihn, 2020) (B. O. Berthelsen, personal communication, March 6, 2020). In later communication with the Chief Strategist of Powel, he added that Powel's main incentive for becoming a part of the consortium was that the project is in line with company strategy, and it is intended to add commercial value for the company in a medium term perspective.

Generally, the main driver for private companies to be a part of smart cities project like +CityxChange is profit. As argued by NTNU senior advisor Håvard Wibe:

> The businesses are not in this to do charity work for the citizens or cities. They are here because by partaking, they can develop a service that can they can hopefully make a lot of money off of, and that should be their focus. This is because if they cannot create a service that is good enough to make money on, it does not contribute with any added value to the project either.
>
> (Henjum, 2019, p. 59)

4.4 The Actors' Understanding of the Consortium and Network Building

The +CityxChange project consists of 32 partners from ten different countries. In Trondheim alone, NTNU, Trondheim Municipality and nine business partners are involved. This means that the demands in terms communication are high, and the potential for networking and development of business relationships within the consortium is big. This chapter will focus on the triple helix partnerships of the municipality of Trondheim, NTNU and business partners, as well as their network towards the EU.

4.4.1 Trondheim Municipality

+CityxChange was initiated by NTNU, and a 'core group', as it is referred to in interviews, consisting of employees from NTNU and Trondheim municipality used their networks to search for potential business partners to involve in the project (B.O. Berthelsen, personal communication, March 6, 2020). Through focusing on consortium building at an early stage, the core group was able to engage business partners in the process of developing the project, and Berthelsen argues that co-creation has been very important in that phase (ibid.). By engaging private partners early and involving them in the development, the core group was largely able to refrain from involving consultancy firms. This also meant that business partners had the opportunity to steer the project in a direction that suited them and to include ideas that they could make use of in the future. Furthermore, the focus on co-creation through early consortium building means that the business actors have a feeling of ownership to the project that would not have been present otherwise (ibid.)

When determining which business partners to contact in order to establish a consortium for the project, the municipality of Trondheim focused on balance, not only in terms of the composition of companies to involve, but also the people working within the companies. Having local drivers within the company has been instrumental to the project's success in having a well-working consortium. Berthelsen argues that having the head of the municipality engaged in the project has made the consortium building easier, as that has created a form of accept and anchoring that is essential for a successful project. His involvement caused the project to have a "flying start" (B.O. Berthelsen, personal communication, March 6, 2020).

According to the project leader in Trondheim municipality, the three different attempts of receiving EU funding for the +CityxChange project has improved the municipality's network, relations and knowledge, both academically and in terms of developing applications (B. O. Berthelsen, personal communication, March 6, 2020). Having relations and a network that include central people within the European Commission has been important for the project's success, and both Trondheim Municipality and NTNU have people with relations to Brussels. One of the instrumental relationships in the project development phase has been that with the National Contact Points (NCP). Norway's NCPs are employed by either The Research Council of Norway or by Innovation Norway, and their purpose is to answer questions and assist in gathering information regarding EU research and Horizon 2020 (The Research Council of Norway, n.d.).

4.4.2 NTNU

According to NTNU's project manager, the core of the consortium was NTNU and Trondheim Municipality, and they wanted to do a large-scale project together. He argues that you cannot just pick and choose business actors to involve; they have to fit the H2020 call text. Some businesses were included because someone had worked with them on previous projects, some were selected due to having a good reputation, and some because they can deliver on a specific need. The process of putting the consortium together reflects the nature of the project itself. It can be regarded as a "two-level thing" (D. Ahlers, personal communication, March 5, 2020), where you need local partners for local implementation and also crosscutting partners for communication, replication, monitoring, crosscutting industry support et cetera (ibid.).

Some of the partners are experienced in working on H2020 projects and know what they were getting themselves into when they were approached with the project idea, while others have less experience with EU funded projects, and thus required more convincing to join the consortium. Ahlers points out certain drivers that he argues are important for business partners to join such projects, and describes the challenges and limitation of consortium-building:

> In most cases, the companies are very eager to do this because they see that the energy transition is coming. They want to do something with this, and it supports them to have a better network of additional expertise to work with, to try out things, to also kind of get a subsidy because as an industry partner, you do not make money out of these projects […]. So in most cases it is a mutual thing, you might know them or they might come up to you […] so it is kind of a snowball system. It is not necessarily a central entity that selects all the partners, so people can suggest additional ones, but then it needs to be a joint decision that actually a partner goes in or not. Because also, you kind of have a limit, you might want to work with more different partners, but you need to keep the complexity of the project structure itself under control, and you also have only limited funding. So you also have to make some hard decisions of which items do you really want to do, and you can credibly do, and which ones will you not be able to do inside that, so it is also-, it is a dynamic development of developing the ideas, figuring out which partners you have for that, if they see the same needs, if it fits with their ambitions or their ongoing developments. So it is quite a detailed negotiation phase.
> (D. Ahlers, personal communication, March 5, 2020)

4.4.3 Business Sector

Regional manager for NHP Eiendom argues that the project proposal would not have been successful if it was not for the inclusion of more actors than what was involved in the first two applications. In the case of NHP Eiendom, the project has likely not led to any new potential partnerships outside the project, but it has opened channels for communication with businesses they would not normally be in contact with. For the sake of NHP Eiendom, they could have spent the time allocated to working on the +CityxChange project on more profitable endeavours, but Breines argues that this project might be valuable on a longer time scale, and that it helps to position the company and project the sort of image they wish to have to potential business partners (J. Breines, personal communication, February 3, 2020).

Klaus Livik of Powel finds that one key strength of the +CityxChange project is that a lot of the competence and administration of the project is positioned in Trondheim, and Powel is particularly happy with working with the municipality of Trondheim and NTNU, and points out that the project has taught them to become very fond of the "triangle of

university, municipality and business" (K. Livik, personal communication, January 31, 2020). He argues that this triple helix is a very future-oriented form of cooperation that is a positive consequence of the project (ibid.).

4.5   The Effects of +CityxChange

4.5.1 Trondheim Municipality

The +CityxChange project is the largest EU financed project Trondheim municipality has ever been a part of, and it is having several effects on the way in which Trondheim municipality works. It has caused the municipality to consider entering a different role, one that can facilitate cooperation between different actors in Trondheim. The project has increased the municipality's consciousness of what role they should have, and it has highlighted the importance of interaction between sectors (B.O. Berthelsen, personal communication, March 6, 2020).

> […] Is the municipality prepared for the roles that we perhaps should be taking? I am not saying that we *will* be taking them, but perhaps we should. Should we think differently in terms of what kind of role we should be taking in this new thing? We have no bottom line to defend. How can we best work and rig ourselves and sort of be a cooperation actor for different types of actors in the society to get this rolling. […] We have to look critically at our roles, and perhaps think differently with regards to them. Then we have to be willing to take them, and then we have to practice them. And that is not done overnight, so it is more of an evolutionary process as well, but we have to still work actively on it.
> (B.O. Berthelsen, personal communication, March 6, 2020)

Berthelsen proceeds by arguing that the +CityxChange project is an important arena for learning for the municipality. The municipality of Trondheim is set to reduce their emissions by 80% within 2030, using 1991 as a reference, and when the municipality has cooperated previously, their role has been setting goals and relying on other actors to actually contribute to reach these goals.

> OK, it will not happen on its own. So it is not enough that we establish goals and that someone on the other end fulfil them. We cannot expect a business actor to simply reduce their emissions by 20%. So maybe you have to go in and not just say: "get it done". Maybe you have to think that you have a responsibility that it gets done – to facilitate this. We have a lot to learn here.
> (B.O. Berthelsen, personal communication, March 6, 2020)

Trondheim municipality's wish to act more actively as a facilitator for their goal to reduce emissions is demonstrated by their intention to contact the Norwegian government with requests for exceptions from Norwegian legislation to "get things done" (ibid.). Berthelsen argues that in order to complete the green transition, it is necessary to change the regulation regime and monopoly – it has to be opened up while still maintaining a certain balance (ibid.). He argues that policy and governance are hugely important aspects to reach their goals, and that this is a realisation that has been inspired by the +CityxChange project. A prerequisite for the project to be a success is a certain deregulation of the energy market, and Trondheim municipality are working to have the business sector realise that a deregulation can benefit them (ibid.). Trondheim municipality now has politicians working on local, national and a European level in order to ensure this deregulation (ibid.).

Project leader Berthelsen stresses policy and governance as important changes in Trondheim municipality's way of working, while municipality director Morten Wolden highlights knowledge building and increased cooperation between local government, university and business sector (M. Wolden, personal communication, January 23, 2019). When asked directly, the municipality director is certain that +CityxChange is changing the way in which the municipality operates:

> Yes it is. First of all we are acquiring more competence […] and I think that goes both ways. The municipality is opening the door more to business; business is opening the door more to the municipality. So we are getting this platform for cooperation more clearly than before. So… and that also means that we […] are seeing the opportunity that we should be starting more large-scale EU projects in Trondheim.
> (M. Wolden, personal communication, January 23, 2020)

Evidently, Wolden is happy with the effect +CityxChange is having on the municipality and their cooperation with business, and has ambitions to partake in other ambitious Horizon projects. In a webinar hosted by The Mid-Norway European Office, he further emphasises the effects +CityxChange has had on the future of the municipality and argues that the municipality has learned a lot from NTNU over the years of working with +CityxChange. Consequently, the municipality is planning on partaking in more EU projects once Horizon Europe – Horizon 2020's successor – is initiated in 2021 (Wolden, 2020, 12:20).

Wolden's colleague, project leader Berthelsen shares many of the same thoughts on the effect the project is having on the municipality, but also highlights some of the challenges that have surfaced from the new way of working:

> We have *never* worked with business partners in this way before. *Never*. Where we have a common goal. Common strategies. It has been very challenging at times […]. But you see that it has a ripple effect. And we are constantly learning in terms of how business actors… you have to understand their mind-set – you have to understand business, because otherwise it will not work. And that has been a very steep learning curve. You have to understand that, OK, we are very concerned with ecological sustainability, but sustainability is not only ecological. It is also economical sustainability. Social sustainability. Right? So that has been very challenging
> (B.O Berthelsen, personal communication, March 6, 2020).

Although the new and intensified partnership with business has been a learning process, Berthelsen also argues that this way of working has caused the municipality to see that increased cooperation with the business sector has been fruitful, and alludes to a future with more such collaboration: "I think we won the lotto, really, through such a project, right? But I have been thinking […] in terms of how you can establish cooperation across public and private sector… because that is possible without having 20 million euro from the EU Commission – in my opinion".

4.5.2 NTNU

The Horizon 2020 programme also affects the way in which NTNU works (D. Ahlers, personal communication, March 5, 2020). It is important in terms of its "large networking effects" which allows NTNU to work with international partners. Working with international partners also allows for different kinds of projects than what would be possible without EU funding (ibid.). Ahlers also stresses that receiving H2020 funding can be used as a stamp of excellence for a project, meaning that attracting partners may be

easier than what it would otherwise be considering that Norway is "a bit on the outside" of the European Union (ibid.).

NTNU are also looking at the governance structure for their H2020 projects. In order for the university to be able to have a project like +CityxChange, they have to get Trondheim municipality on board with the project plan. The municipality of Trondheim acts as an enabler for the project, allowing NTNU and business actors to use the city as a living lab, but it also is an active part of the project. This is something NTNU is aware of, and that they are working actively to ensure through communication with the municipality.

> So, for the local governments, we actually are also looking at governance and governance structures for these projects. To see how do these things get supported, how do we ensure that we can run these projects, what are the barriers for that? Also, for later, how do we scale this out if this actually works? The way we intend to do it, it will only have an impact if this gets taken on forward and be used in more cases. But also, within the city is that the city is able to do projects like this, to also test out things for themselves, to use this as a living lab and to bring the university close to the city […]. And, yeah, we have been working kind of like this for quite a while here in this group, also before I joined the group already, to try to really go to have these joint projects with kind of the problem owner. Because the city has to deal with all the new challenges that are coming up, how do they do that, how can they be made more open, more collaborative, more democratic, more whatever other dimension you want.
>
> (ibid.)

NTNU plays an active role in involving Trondheim municipality in these city-driven projects, and Trondheim municipality considers projects like this to be essential to reach the goals they set. The next chapter discusses +CityxChange's effects on private partners.

4.5.3 Business Sector

With Trondheim Municipality using the +CityxChange project to reach their goals and to serve as a living lab for the project and NTNU having the main responsibility of coordination, planning and research, much of the innovation and implementation comes from the business sector. As per the triple helix model, the cooperation with university and local government has pushed the private partners to work in untraditional ways.

In the case of Powel, the +CityxChange project has meant that they are working differently from what they normally do. The company is typically project-driven, but the nature of the +CityxChange project means that the work related to this has to be isolated from the daily work in the company to ensure progress. The project has to be isolated due to the innovation being interdisciplinary, and resources from several different units in the company are required to contribute.

> When it comes to innovation projects like this, we have to kind of say that we have come more and more to the conclusion that it is a project that sort of has to be partially isolated outside of the daily operations in order to ensure progress. Because the daily operations is very busy. Additionally, the innovation is interdisciplinary. This means that we have to pool resources from different business units. Some know Internet, some know power and some know trade. So that has actually been a challenge internally at Powel.
>
> (K. Livik, personal communication, January 31, 2020)

In contrast to the effect of the project on Powel, Jostein Breines argues that the +CityxChange project has not affected the way that NHP Eiendom works.

> No, we exclusively work like this. Aside from having 100 companies that we have board meetings with because we have to, it is exclusively project-oriented meetings. So we do not have any meetings for the sake of having one. So it does not stick out *at all*. On the contrary, it is very similar to how we normally work. Gathering the right knowledge on the issues we want to resolve, and then actually going through with it.
> (J. Breines, personal communication, February 3, 2020)

5 Analysis

This chapter aims to analyse the empirical findings of the case study through a selection of concepts, presented in chapter 2. The main purpose of this paper is to answer the research question of how the Horizon 2020 programme affects the way local governments work. In order to do this, the analysis will focus on the +CityxChange project's effect on the focus and content of policy output and the structure and operational conventions of the municipality.

The areas of focus of and content of policy output contain the assumptions that the municipality of Trondheim is working more with other sectors and. will be addressed by theories on triple helix and smart city drivers. The structure and operational conventions of municipal government will be addressed by theories on projectification, expertisation and Europeanisation. Chapter four is structured in a way that allows for an understanding of the experiences and perspectives of actors from each involved sector. This has allowed for an understanding of how actors from different sectors have differing ideas and incentives for partaking in smart city projects, which is imperative for the analysis. This chapter will use the findings from the case study and analyse how +CityxChange is affecting Trondheim municipality through the aforementioned concepts.

In order to allow for such an analysis, a comparative analysis of two primary sources is required. By comparing the two latest international strategies for Trondheim municipality, it will be possible to track potential changes with regards to both the focus and content of the municipality's policy output as well as its structure and operational conventions. This is needed in order to answer the research question of how the Horizon 2020 program affects the way in which local governments work by demonstrating the changes before and after +CityxChange – the only major Horizon 2020 project the municipality has taken part in.

5.1   The Focus and Content of Policy Output

In order to answer the main research question of how EU projects affect the way in which local governments work, it is helpful to have an underlying understanding of the interests of the actors that are involved in such projects. In the case of the +CityxChange project, there are 32 partners that have interests that often are similar, but yet each of them is unique. As this research project focuses on Trondheim municipality, this subchapter addresses the interests of the involved sectors directly involved in the municipality of Trondheim, and applies the concepts of smart city drivers and triple helix.

There are three main drivers that explain Trondheim municipality's desire to undertake such an ambitious smart city project. (1) Establishing a closer relationship with NTNU and local businesses, (2) achieving the overarching goals set out by the municipality, and (3) benefiting the people of Trondheim. Furthermore, the funding opportunity provided

by The Horizon 2020 programme acts as an enabler for the project. This is true both in terms of providing an outline through the content of the call for proposals and through the actual funding. The following three subchapters analyse the results from the interviews and the findings in primary sources detailed in chapter four in order to understand the differing focus and content of policy output across the three sectors of local government, university and private actors.

5.1.1 Establishing a Closer Relationship with NTNU and Local Businesses

Both the municipality director and the project leader in Trondheim municipality argue that the project is an important opportunity for working alongside NTNU. Although Trondheim municipality and NTNU are used to working together, the municipality regarded their partnership as unstructured and option-based (B.O. Berthelsen, personal communication, March 6, 2020). This has been addressed through the partnership in the +CityxChange project, and more recently in the 'University-City 3.0' project, which are projects that demonstrate the importance of cooperation between municipality and university in Trondheim. The municipality recognised that the project would be an important tool for constructing and consolidating the relationship with NTNU, while also allowing for delivery on long-term objectives (ibid.; M. Wolden, personal communication, January 23, 2020).

In addition to achieving increased cooperation with NTNU, the municipality of Trondheim also sees the +CityxChange project as an opportunity for establishing a closer relationship with the business sector. As the municipality director put it "[In +CityxChange,] [t]he municipality opens its doors to the business sector, and the business sector opens its doors to the municipality, so this platform of cooperation is more apparent than before" (ibid.), a prospect that has caused Wolden to want to pursue future EU projects. The municipality's project leader argues that the +CityxChange project has changed businesses' perspective of how the municipality: "So just in terms of benchmarking Trondheim as a very proactive actor and that 'wow, the municipality can be like that, too?' That has surprised quite a few. We have a very good relationship with the business sector. Also beyond our industrial partners in Trondheim" (B.O. Berthelsen, personal communication, March 6, 2020).

The wish to improve relations across sectors is also important to NTNU. In particular, consolidating the bond with the municipality is essential for the university. This is not only true because the local government had to get on-board with the project in order for it to become possible, but also because working together on a project of this scale will pave the way for future cooperation where the university could use the city as a living lab. As the project manager at NTNU puts it, the +CityxChange project has the potential to pave the way for future projects, including spin-offs of +CityxChange:

> But also, within the city is that the city is able to do projects like this, to also test out things for themselves, to use this as a living lab and to bring the university closer to the city, but also to use the city as a test lab. And, yeah, we have been working kind of like this for quite a while here in this group, also before I joined the group already, to try to really go to have these joint projects with-, in the end, with kind of the problem owner. Because the city has to deal with all the new challenges that are coming up, how do they do that, how can that be made more open, more collaborative, more democratic, more whatever other dimension you want.
>
> (D. Ahlers, personal communication, March 5, 2020)

5.1.2 Achieving the Overarching Goals Set by the Municipality

All municipalities in Norway are expected to base their relevant work on the Sustainable Development Goals that have been established by the United Nations (UN) (Regjeringen, 2019). In Trondheim, this means that all common activity between Trondheim municipality and NTNU is to be built on the SDGs (Universitetskommunen, n.d.). In 2019, Trondheim municipality were given the status as a Geneva UN Charter Centre of Excellence on SDG City Transition. This goes a long way in illustrating the success of Trondheim Municipality and its focus on working towards reaching the SDGs and their partnerships with actors like NTNU and SINTEF (Trondheim Municipality, 2020).

The Sustainable Development goals represent the main objectives of Trondheim municipality with regards to research and innovation, and also play an important part in many of the Horizon 2020 calls, with 60% of calls involving sustainable development (European Commission, n.d.-b). This recent development hints toward a type of smart city driver that is not mentioned in literature on smart city drivers, namely the local government's desire to meet the expectations and trends from both the national, European and international levels.

Neither the official statement from the Norwegian government that explicitly expects municipalities to work according to the SDGs, nor the 'UN centre' were in place in the early phases of the +CityxChange project. In other words, they cannot be considered definitive drivers for this project. According to Trondheim municipality, however, they had agreed with NTNU that all research, teaching and development would build on the SDGs "long ago" when the government made their expectations clear in May 2019 (Trondheim Municipality, 2020). This is symptomatic to the mind-set and attitude of Trondheim municipality. They are determined on being future-oriented and disruptive in their policies (B.O. Berthelsen, personal communication, March 6, 2020; M. Wolden, personal communication, January 23, 2020). The municipality's future-oriented perspective with a particular focus on meeting the Sustainable Development Goals is an instrumental aspect in the municipality's eagerness to be a part of the +CityxChange project.

5.1.3 Benefiting the People of Trondheim

The main responsibility of any local government is serving the people that live within it, and the municipality of Trondheim argues that the +CityxChange project will improve the lives of the people living in the city. As noted by representatives from the municipality, however, actually engaging with and involving the citizens has proved challenging in the project. The municipality has employed a person that is working full-time on ensuring the involvement of Trondheim's citizens, but there are several aspects that have challenged the success of this.

The EU Commission is said to be fierce on citizen involvement, and actually involving people in a complex and multifaceted smart city project is no simple feat (B.O Berthelsen, personal communication, March 6, 2020). So why is this such a priority? As argued by Henjum when discussing piloting, commercialisation and economic gain in the

+CityxChange project: "this leads me to question whether the inhabitants are being involved for the best of them, or if it is for the best of the actors in the project" (Henjum, 2019, p. 120) In other words, one might question whether the people of Trondheim are being involved in the project to their own benefit or if the involvement only exists in order to meet the requirements laid out by the EU.

This sub-chapter has shown that the +CityxChange project is primarily a vehicle used by Trondheim municipality to reach their existing goals. In other words, there are no signs that the project has changed the actual policy focus of the municipality. The policy output, i.e. what the municipality is actually delivering, however, has been affected by +CityxChange through the city being transformed into a living lab and becoming a Lighthouse City through working with new partners.

5.2   The Structure and Operational Conventions of Municipal Government

5.2.1 Becoming an Increasingly Projectified Municipality

This section aims to test the theory of projectification on the municipality of Trondheim through the +CityxChange project. This is done through applying the concept of projectification on the findings from the case study in order to uncover whether the municipality has become or is becoming more projectified as a result of the +CityxChange project.

Projectification can be either the process of being a part of projects, or the result of having been part of projects. In the case of the municipality of Trondheim, the +CityxChange project is by no means the first big project the municipality has been a part of, but it is unquestionably the biggest EU funded project they have undertaken. +CityxChange has demonstrated to the municipality that Horizon 2020 smart city projects are ambitious and that the impact is significant. This has provided decision makers with a willingness to be a part of future EU funded projects, and has set new standards for innovation and wealth creation.

The municipality's project leader argues that as the municipality is in constant change, and that they are currently transitioning into a different structure and way of working. A main driver for this transformation of the municipality is the +CityxChange project. The project is serving as a catalyst for developing the structure and operational conventions of the municipality – primarily through having established new and stronger working relationships with private companies and by highlighting the importance of engaging with citizens (B. O. Berthelsen, personal communication, March 6, 2020). The network created through the project has paved the way and lowered the bar for future cooperation between the local government and private partners.

Based on these findings, it is quite apparent that the municipality of Trondheim has become and is becoming projectified. In other words, Trondheim municipality is becoming an institution that is both working more project-oriented than before, it also seems to develop into an institution that is positive towards the notion of working in such a manner. Based on personal interviews with the municipality, these are the main

aspects from +CityxChange that have led to a positive notion of working on EU projects: (1) € 1.8 million in EU funding dedicated to the municipality (European Commission, n.d.-a), (2) a fruitful and tight relationship with both university and business partners within and outside of Norway (3) developing the city of Trondheim with innovative solutions, (4) facilitating for local business growth, (5) wealth creation for the municipality and (6) working towards reaching their goals.

5.2.2 Trondheim Municipality: a Municipality of EU Experts?

The purpose of this subchapter is to test the theory of expertisation on the municipality of Trondheim. In other words, does the municipality display symptoms of a municipality that is being or becoming led by EU experts, and has this been an important formula in the recipe that became the eventual success of the project? Importantly, the framing of expertisation in this thesis has nothing to do with expertisation in a general sense of the term, but an EU-oriented understanding of the word, as discussed in chapter 2.1.

There are little signs of EU experts playing an important role within the municipality of Trondheim when working with +CityxChange. However, the municipality has recognised that there is a certain deficit of expertise related to EU projects within their institution, and have therefore made use of the expertise found in their project partners. This project is the biggest EU project the municipality has ever been a part of, and because of the advantage of working alongside NTNU, the local government has been able to make use of NTNU's proficiency, particularly in the phases that demand the most EU expertise: preparing the application and reporting to the EU. This cooperation is manifested in the +CityxChange project office, located in the 'Energy Building' belonging to TrønderEnergi – one of the industry partners.

The main coordinating actor in +CityxChange is NTNU. The university had the main responsibility for formulating the application to the European Commission, and they are responsible for reporting to the EU with the project progress. The case study reveals that NTNU is expert-driven in this project, with EU expert Annemie Wyckmans spearheading the project from their side. As argued by the NTNU project manager, having employees that have worked on other Horizon 2020 projects in the past and that have garnered expertise through applying to previous calls has been fundamental in the application process. The expertise within NTNU related to obtaining funds from the Horizon 2020 programme is something that the municipality has taken advantage of, and in certain terms, NTNU and Trondheim Municipality has been serving as one actor. As expressed by NTNU representative Håvard Wibe: "When the municipality of Trondheim and NTNU speak with one voice, it is easier to cooperate with the other actors" (Aarvåg, 2018).

5.2.3 Is Trondheim Becoming an EU-Driven Municipality?

This subchapter seeks to test the theory of Europeanisation on Trondheim municipality and +CityxChange. The Europeanisation process could be observable by comparing the structure and working methods of the municipality before and after the initiation of +CityxChange. This will allow the analysis to control for whether Trondheim municipality has been subject to Europeanisation prior to the project start or whether +CityxChange is the likely source of Europeanisation within the municipality of Trondheim, given that there are indicators of Europeanisation in the municipality's structure and working methods today.

Based on surrounding literature, this thesis is understands Europeanisation as a process in which local governments change working methods as a result of smart city funding opportunities provided through the Horizon 2020 programme. The way Europeanisation is understood in this thesis is demonstrated in this three-phase model: European integration → opportunity → adaption, as inspired by Risse et al. and Saurugger (2001; 2014, p. 126).

In order to test the assumptions related to the triple helix model and europeanisation, it has to be determined whether the structure and operational conventions of Trondheim municipality have developed into becoming more oriented towards triple helix cooperation and Europeanisation as compared to prior to the start of +CityxChange. The following subchapter provides an overview of Trondheim's international strategies before and after +CityxChange, and demonstrates that the municipality's focus on cross-sectoral cooperation and EU involvement is increasing significantly.

5.3 Trondheim Municipality's International Strategies Before and After +CityxChange

In order to be able to track the effects of +CityxChange on the municipality of Trondheim, this thesis will be comparing the international strategies of Trondheim before and after the project start. The strategies used are from 2010 and 2019, the two most recent plans formulated by the municipality. Each strategy is based on certain target areas, and although the most recent strategy builds on the first one, the changes made are quite substantial. These changes will be addressed in the following subchapter.

5.3.1 Trondheim Municipality's 2010 and 2019 International Strategies

Both strategies explicitly state that internationalisation is not an object in itself, and that relevance and quality in the municipality's international work is important (Trondheim municipality, 2010, p. 3; Trondheim municipality, 2019, p. 2). This makes understanding what the municipality regards as relevant and high in quality particularly important, and this has changed significantly from 2010 until 2019. Highlighting this, Table 3 portrays the different target areas from the strategies of 2010 and 2019.

Table 3: The International Strategies of Trondheim Municipality

Trondheim's 2010 International Strategy Target Areas	Trondheim's 2019 International Strategy Target Areas
International contact and cooperation	Global partnership and solidarity
Developing international knowledge and expertise internally in the municipality	Development through participation in EU projects and international project cooperation
Highlighting international activity	Strengthening the interaction between research & development (R&D), business sector and public sector
Developing the role as a host	Sister city cooperation
	The international community in Trondheim

(Trondheim municipality, 2010; Trondheim municipality, 2019)

An aspect that is particularly noteworthy when comparing the 2010 and 2019 target areas is that the most recent strategy directly addresses both EU projects and increased local government – university – business sector interaction, where the 2010 version makes no mention of this. This responds well to the triple helix theory inspiring the thesis by highlighting changes in the municipality's focus and content of policy output through the triple helix target. Furthermore, it alludes to changes in and its structure and operational conventions through the strategy on participation in EU projects.

Additionally, the 2019 international strategy addresses Trondheim's effort on becoming a smart city, and characterises the attention to becoming a smart city as a one of the main strategic actions of the municipality director. This priority is clearly diverging from the strategy of 2010, with the 2010 strategy not mentioning smart cities at all. The following translated passage from the 2019 strategy emphasises some of the official perspectives on why smart city has become important to the municipality.

> When smart city is being highlighted in International strategy, this is due to the fact that international cooperation with smart city is considered one of the tools to reach the UN's Sustainable Development Goals faster than what would otherwise be possible. Through cooperation on smart city, Trondheim will both be able to learn from other cities that are far ahead on the area while allowing for highlighting the focus areas that are important in Trondheim. In particular, this is about ethics when using technology to make sustainable decisions and promoting increased citizen involvement. The work with smart city has also gotten additional power after Trondheim was titled Lighthouse City on smart city through the Horizon 2020 project +CityxChange in 2018.
>
> (Trondheim kommune, 2019, p. 7)

The final sentence stresses that +CityxChange has been important in strengthening the municipality's work toward becoming a smart city, and that being given the title of a Lighthouse City validates the municipality's success in its smart city work. This demonstrated how H2020 funding and the specific type of EU language can serve as a stamp of excellence for municipalities in their work on becoming a smart city.

The development that has happened between the municipality's 2010 and 2019 international strategies is notable, and the latest international strategy highlights how the focus has shifted towards cooperation between sectors, project work, EU funding and a focus on smart city. This corresponds with the concepts presented in this thesis, as well as with the findings from the case study and the results of the analysis. The next chapter will use these results as a basis for a discussion around how the municipality of Trondheim has changed, both in terms of its focus and content of policy output and in its structure and operational conventions.

6 Discussion

This chapter discusses the results from the analysis, and raises several significant points that should be included in a discussion of the effects of +CityxChange on the municipality of Trondheim. Subchapter 6.1 is based on the triple helix theory, and discusses the increased levels of cross-sectoral cooperation in Trondheim, whereas subchapter 6.2 discusses the prospect of Trondheim being a more European and project-driven municipality than before.

It is imperative to recognise that this thesis is not a causal case study. Although the findings in this thesis are consistent with its inherent causal assumption, it does not prove causation. In other words, whether +CityxChange is causing the municipality to change, or if +CityxChange exists due to a changing municipality is something that remains to be proven. The findings in this thesis do provide a chronological overview of the changes in the municipality, and the correlation is subject to discussion.

Furthermore, there are limitations regarding the observation of medium- and long-term observations in this thesis due to +CityxChange being an ongoing project. This means that the study is very successful in observing the project's short-term effects and the creation of patterns that are likely to evolve and increase over time, but it is unable to discuss the final results of the developments. This means that the discussion relies on making certain assumptions about the most likely developments based on certain changes that are already observable.

6.1   A Municipality of Cooperation: Local Government – University – Business Relations in the Age of the Smart City

Along with city development, perhaps Trondheim municipality's main interest in +CityxChange is the cooperation with university and business. In order for a smart city project to be successful it needs innovation, which is typically brought on-board by a university, technology – normally contributed with by the private sector and – inherently – a city to serve as a site for the solutions. The latter is only possible with a local government that is involved in the project. Only with the municipality of Trondheim's ambition to become a smart city and their eagerness to work more closely with other sectors, a project like +CityxChange can be successful.

The interests of each involved sector is bound to differ, and even within each sector it is possible to see differences in interest. With this precondition, it is essential that there are no conflicts of interest, but that the project can serve as a benefit to all members of the consortium. As highlighted in the analysis through interviews with the municipality's project leader, the municipality had to learn how to work tightly with the private sector with a common strategy and a common goal even though interests differ. This newfound form of cooperation is something that has inspired for advanced cooperation, not only in future EU projects, but also in projects without funding from the EU.

+CityxChange is a project that suits the municipality very well as it is aligned with the overarching goals that are already present. These overarching goals stem from the national government, the UN SDGs, the EU green deal, the university-municipality project and the international strategy of the municipality. Achieving these objectives necessarily requires certain structural and operational changes within the municipality, and this thesis has shown that +CityxChange has served as a kind of enforcer for these changes to occur.

To a certain degree, the strong degree of cooperation across sectors in the project can be explained by the challenges experienced in the application process. The first and second applications proved unsuccessful, and only after increasing the focus on private partner involvement, the project became successful in receiving EU funding. The project has caused the municipality to rethink their role and function, and there are clear indicators that the municipality of Trondheim are becoming more of an enabler for NTNU and local business. As Berthelsen argues:

> Should we think differently in terms of what kind of role we should be taking in this new thing? We have no bottom line to defend. How can we best work and rig ourselves and sort of be a cooperation actor for different types of actors in the society to get this rolling. […] We have to look critically at our roles, and perhaps think differently with regards to them.
> (B.O Berthelsen, personal communication, March 6, 2020).

This mind-set is further demonstrated in the municipality's international strategy under the topic "Strengthening the interaction between research & development (R&D), business sector and public sector" (Trondheim kommune, 2019, p. 2). It is worth noting that there is nothing inherently international within this point in the strategy, but the reality is that international smart city projects like +CityxChange are an ideal breeding ground for achieving such a strengthened triple helix interaction, as illustrated by the official +CityxChange strategy of open innovation.

Based on the analysis and discussion, the structure and operational conventions of Trondheim municipality has changed with +CityxChange. The smart city project fits well in the general development of the municipality, and has caused central actors within the local government to rethink their role. The project's success is depending on a level of municipality–university–industry cooperation that is groundbreaking in Trondheim, and the relations that are being built across sectors through this project is likely to affect the future structure and operational conventions of both municipality, university and business in the coming years.

6.2 Trondheim: An Increasingly EU and Project Driven Municipality

The European Union is more comprehensive than ever before, and the union also affects non-member countries like Norway. Traditionally, literature has been focusing on how formal agreements and associations like Schengen or the European Economic Area affects aspects like Norwegian sovereignty or economy. However, europeanisation is not typically understood something that is possible to enforce, but rather as something that happens as a result of participation in EU-related activities. In the case of Trondheim and +CityxChange, the municipality has undoubtedly become increasingly europeanised through establishing a network of smart cities with other European countries. This is

particularly true with fellow Lighthouse city Limerick, but I argue that europeanisation is also having affects on the structure, operation and policy of Trondheim municipality.

From the perspective of rational choice theory, one may argue that the municipality of Trondheim makes use of funding from the Horizon 2020 programme in order to fund projects that benefit the city of Trondheim, local business and the local university. As the analysis has shown, this is undoubtedly true – but it is only a part of the truth. The rationale for working with +CityxChange varies across actors, with the main dividing lines being drawn between sectors as highlighted in the subchapters on smart city drivers.

Rational choice theory is quite fitting to the private actors in the project, where the main incentive for partaking in +CityxChange is profit, as supported by Doucet (2013). It is worth noting, however, that NHP Eiendom seem to be more concerned with long-term profit than Doucet's theory would assume. The analysis shows project coordinator NTNU to be the most Europeanised and expertised partner in the Norwegian consortium, and NTNU is thus the Norwegian partner with the most experience in EU funding. The university's role in the project is supported by Etzkowitz' triple helix theory claims – that modern entrepreneurial universities are taking a leading role in many projects. The project is designed with NTNU having a coordinating role, which involved being the main EU contact point for application and work package delivery. As a result of this, it appears that the municipality and, in particular the business partners, are not as affected by projectification and europeanisation as they might have been if the consortium structure was different.

With regards to the municipality, however, +CityxChange is an EU project that already has been highly prioritised by the municipality for several years, with more years remaining. Furthermore, the positive energy districts will likely remain in the city for decades and leave a real imprint in what EU funding can achieve – both for the citizens of Trondheim and for the municipality. Two of the most involved actors at the municipality have stated that they have been inspired to partake in more EU project after having seen the positive outcomes of +CityxChange, and the municipality of Trondheim is now working tightly with involved cities all over Europe.

These findings highlight that the Municipality of Trondheim have become and is becoming more europeanised, and that the process of projectification is quite apparent despite NTNU working as a sort of buffer between the municipality and the EU. The buffer function of the university in its coordinating role seems to have resulted in a municipality that is not in need of expertisation, as the university has several EU experts that are familiar with the application and reporting process. This is a finding that requires more research in order to get a clearer view of the intricacies of this interaction. On the other hand, as explicitly stated by the municipality director, the work with +CityxChange has increased the municipality's familiarity and knowledge of what EU project work entails.

7 Conclusion

The purpose of this study was to discover how the municipality of Trondheim has been and is being affected by their work with the +CityxChange project. Through testing the well-established concepts of expertisation, projectification, triple helix and europeanisation with the information from primary and secondary sources, the analysis has shown that the EU has affected the municipality of Trondheim in several ways. It has also demonstrated that some of the interactions that are observable in +CityxChange need to be researched further.

Building on the concepts described in chapter 2, the assumptions that guided the analysis were that the following developments are traceable in the municipality of Trondheim after the initiation of +CityxChange: the attainment of more EU expertise, an orientation towards project-based work, more cross-sectoral cooperation and more europeanisation.

Prior to +CityxChange, the municipality of Trondheim had very little experience with EU funded projects. Consequently, the municipality did not have as much EU expertise as other institutions like NTNU. The university had the coordinating role in the project, which meant that they had the main responsibility when it came to project planning and proposal writing. They are also responsible for reporting the project progress directly to the European Union. It seems this has caused the municipality of Trondheim to be somewhat shielded from the europeanisation process one may typically expect from a core partner in such a large and long-lasting EU project. That being said, the municipality director has explicitly expressed that the municipality is now more comfortable and knowledgeable of what working on EU projects entails, so the effects of europeanisation on the municipality are not negligible. This is an affect that may be easier to evaluate in some years.

When it comes to projectification, municipality is rethinking their way of working as a result of +CityxChange and are expressing a willingness to partake in more projects. It does, however, seem that this is a process that is better studied after a longer period of time. All the structural implications of the project are likely not yet observable, and a repetition study after the next European framework programme might be beneficial in order to examine whether the municipality's re-thinking of its role and more positive attitudes towards EU projects have actually resulted in more project work.

The most definitive change to the municipality of Trondheim thus far is the strengthened relationship with private partners and NTNU. It is clear that the project work has broken new ground in this respect, and even though Trondheim has long been unique in its tight cooperation with NTNU, this relationship seems to have been further solidified. Additionally, the municipality is seeing the value of including different kinds of private partners, and the success of the third call for proposal can likely be attributed to the inclusion of even more businesses to the consortium. The municipality's focus on cross-sectoral cooperation is also demonstrated by the newest international strategy

Finally, the municipality has also become more europeanised over the past few years. This is observable not only in Wolden and Berthelsen's enthusiasm towards working on future EU projects, but also in the international strategies of the municipality. Through working with the partner city of Limerick and fellow cities scattered across Europe, Trondheim is now more europeanised than it was before the project started. The municipality now seems to look to the EU for future projects, and the city of Trondheim has been introduced to EU-driven innovation with the introduction of Positive Energy Districts. On the other hand, this process may have been more observable had it not been for the coordinating role of NTNU that prevents the municipality from needing to directly interact with the European Commission.

The general focus of policy output in the municipality of Trondheim is aligned with the overarching global, European and national trends. This means that the focus of policy output remains unchanged after two years of +CityxChange. Reaching climate goals and doing so in a way that is beneficial to the general population, business and university is something that is attainable through large-scale smart city projects like +CityxChange. In line with the concept of smart city drivers and in an opportune manner, the municipality of Trondheim is able to reach their own goals while receiving EU funding. Simultaneously, the EU is able to guide the development of European cities through said funding.

As alluded to in

7.1 Future Research

Due to the constraints related to this study, I have had to limit the scope of the research. Throughout the research process, several aspects that could be studied further have been discovered. This sub-chapter addresses the aspects that have triggered my interest for further research.

Due to the fact that the +CityxChange project is still ongoing, it would be reasonable to assume that many, if not all, the concepts make up the foundations of the development tracking in the municipality are more evident and easier to trace in the future. Concepts like expertisation and projectification rely on acquirement of knowledge, employment of EU experts and long-term work method observations, which are processes that would not necessarily be observable whilst the project is still ongoing. +CityxChange marks the first large scale EU project of the municipality, and these developments are likely to intensify over time. Such a study should include a detailed look of how NTNU's coordinating role affects the degree of europeanisation and projectification of the municipality.

Another idea for future research is the inclusion of more quantitative research. Concepts like europeanisation could be observable through registering the amount of times terms like "EU" and "Horizon 2020" are mentioned in official documents, and would provide what could be argued to be more tangible evidence of europeanisation within the municipality. Measuring the amount of ongoing projects in the municipality over time would also be useful when discussing projectification. A quantitative approach with a more internal focus would also give more weight to the analysis. A potential way of doing this is through including surveys asking employees within the municipality whether they

experience the concepts discussed in this thesis to be affecting the municipality more or less than before.

Different informants could also cast new light to the effects of +CityxChange. Possible candidates would be employees at the Mid-Norway Brussels office, the NTNU Brussels office and The Research Council of Norway Brussels Office. This could shed some more light on the intricacies of concepts like europeanisation and expertisation.

Finally, and although the relationship is presumably reciprocal, a study on the causation between participating in EU funded projects and some of the concepts discussed in this thesis would be welcome additions to this field of research. Is participation in EU projects driving europeanisation and projectification or is it the other way around?

8 Literature

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Appendices

This section contains appendix A-D.

Appendix A: Interview Guide
This section presents the interview guides used when conducting the interviews. Four interviews were conducted using the Norwegian version and one was conducted using the English version.

Norwegian Version

Innledende spørsmål
1. Hva heter du?
2. Med dine egne ord, hvordan vil du definere +CityxChange-prosjektet?
3. Hva slags rolle spiller du i +CityxChange-prosjektet?

Søknadsprosessen
4. Hvordan ble sammensetningen av byer i +CityxChange-prosjektet bestemt?
    a. Hvorfor akkurat Limerick som lighthouse-partnet og Alba Iulia, Pisek, Sestao, Smolyan og Voru som følgerbyer?
5. Hvordan ble prosjektideen unnfanget?
    a. Var det et ønske om et smartby-prosjekt tilstede før EUs utlysning?
    b. Var det EUs utlysning som motiverte ideen til prosjektet?
    c. Hadde Trondheim et ønske om å bli en smartby før utlysningen?
6. Hvilken aktør var det som brakte ideen om +CityxChange på banen?
    a. NTNU, Trondheim Kommune eller industri?
7. Slik du ser det, ble innholdet i søknaden og prosjektets premisser først og fremst definert av EUs utlysning?
8. Hvem hadde hovedansvar for selve søknadsprosessen?
    a. NTNU eller Trondheim Kommune?
9. Ble det, så vidt du vet, benyttet eksterne konsulenter i forbindelse med søknadsprosessen?
    a. I utformingen av søknadstekst?
    b. Som rådgiver?

Arbeid med prosjektet
10. Har dere vært involverte i andre lignende EU-støttede prosjekter?
    a. Hadde dere i så fall noen erfaringer derfra som har vært nyttig å ta med seg?
11. Har konsortiet i prosjektet ledet til en ny form for samarbeid?
    a. Mellom sektorer i Trondheimsområdet?
    b. Mellom land?
12. I hvilken grad samarbeidet partnerne i prosjektet?
    a. Hvordan er samspillet mellom Trondheim og Limerick i forhold til samspillet til følgerbyene?
13. På hvilken måte har NTNU og Trondheim Kommune jobbet sammen med prosjektet?
    a. Hva er dynamikken mellom NTNU Og Trondheim Kommune?
    b. Er det én av aktørene som har hovedansvar når det kommer til gjennomføring av prosjektet?
    c. Har dere møter med de andre involverte aktørene?
        i. Hvilke, hvor ofte og hvor regelmessig?
        ii. Hva foregår i disse møtene?

   iii. Hvem koordinerer møtene?

 14. Hvordan opplever du fremdriften i prosjektet så langt?
  a. Har dere en fremdriftsplan?
   i. Ligger dere an som planlagt, foran eller etter planen?
 15. Slik du ser det, påvirker EUs finaniseringsverktøy, Horizon 2020, måten dere jobber på?
 16. Hvordan opplever du arbeidet med +Cityxchange-prosjektet så langt?

Avsluttende spørsmål
 17. Hva tenker du om å jobbe prosjektbasert?
 18. Har du noe informasjon eller noen betraktninger du føler behov for å komme med?
  a. Hva?
 19. Kjenner du til noen andre potensielle informanter jeg burde kontakte i forbindelse med intervjuprosessen?

Tusen takk for intervjuet.

English Version

Introductory questions
1. What is your name?
2. Using your own words, how would you define the +CityxChange project?
3. What is your role in the +CityxChange project?

The application process
4. How was the composition of cities in the +CityxChange decided upon?
   a. Why Limerick as the other Lighthouse City and Alba Iulia, Pisek, Sestao, Smolyan og Voru as follower cities?
5. How was the project idea conceived?
   a. Was there a wish for a smart city project before the EU call?
   b. Did the call motivate the idea for the project?
   c. Did Trondheim have a wish to become a smart city before the call?
6. Which actor came up with the idea of the +CitxChange project?
   a. NTNU, Trondheim Municipality or industry?
7. In your view, was the content of the application and the premises of the project first and foremost defined by the EU call?
8. Who had the main responsibility for the application process?
   a. NTNU or Trondheim Municipality?
9. As far as you know, were external consultants used in relation to the application process?
   a. In the design of the application text?
   b. As advisors?

Work with the project
10. Have you been involved in similar EU funded projects?
    a. If so, did you have any experiences from those that have been useful now?
11. Has the project consortium led to new types of cooperation?
    a. Between sectors in the Trondheim area?
    b. Between countries?
12. To what degree do the project partnes cooperate?
    a. How is the collaboration between Trondheim and Limerick compared to the follower cities?
13. In what way have NTNU and Trondheim Municipality worked together with the project?
    a. What is the dynamic between NTNU and Trondheim Municipality?
    b. Er det én av aktørene som har hovedansvar når det kommer til gjennomføring av prosjektet? Does one of the actors have the main responsibility with regards to the implementation of the project?
    c. Do you have meetings with the other involved actors?
       i. What kind, how often and how regularly?
       ii. What goes on in these meetings?
       iii. Who coordinated the meetings?

14. What is your impression of the progress in the project thus far?
    a. Do you have a progress plan?
       i. Are you on, behind or in front of schedule?

15. In your view, does the EU framework programme Horizon 2020 affect the way in which you work?
16. How do you find the work with the +CityxChange project thus far?

Concluding questions
17. What is your opinion on working project based?
18. Do you have any thoughts or considerations you feel the need to express?
    a. What?
19. Do you know of any other potential informants I should contact for the interviewing process?

Thank you very much for the interview.

Appendix B: Interviews

Interview Guide
In the process of devising the interview guide, the first decision I had to make was whether to perform the interviews in English or Norwegian. Knowing that the thesis would be in English, it would be beneficial to the coherence and logic of the text to have an English interview guide and perform the interviews in English. This would allow me to quote the informants in a language that corresponds with the rest of the thesis. I did, however, decide to perform the interviews with Norwegian informants in their native language, as this would maximise the likelihood of a free-flowing conversation in which the informants felt comfortable. Getting complete and precise answers from the informants weighed more heavily than streamlining the design of the thesis. When quoting informants, I will be doing so in English with the inclusion of the original quote in Norwegian. This ensures a coherent text and removes the risk of misrepresenting what is said.

The nature and scale of the +CityxChange project means that the involved actors are quite different from each other. With this in mind, it was important to account for the wide variety of the informants when creating the interview guide. The guide had to be structured enough to make the interviews comparable, yet flexible enough to adjust for the sector to which the informant belongs, their position and their role in the project.

Conducting the Interviews
All informants were contacted by e-mail, and received a sheet with privacy-related from NSD along with a project plan for the thesis. The interviews were conducted at the place of work of the informants, and everyone was presented with a paper version of the NSD sheet, which was signed before the interview began.

Appendix C: Research Ethics

Research ethics are essential to be aware of when conducting research. When conducting qualitative research that makes use of interviews, research ethics can become particularly important to pay attention to (Tjora, 2012, p. 41). The relationship between researcher and informant is asymmetrical, and although informants have been made aware of the conditions of their participation, the researcher might feel obliged to present their findings in a certain way due to the potential impression of being in debt to the informant (Tjora, 2012, p. 40). The potential for this to affect the research process is important to be aware of in order to minimise the potential impact of this.

In Norway, the sort of research performed in this thesis has to be registered and approved by Norsk Samfunnsvitenskapelig Datatjeneste (NSD). NSD have been provided with a project plan and information regarding the interviewing process, and have approved this. All interviews are conducted with a recorder that belongs to NTNU. Upon completion of an interview, the files are transferred to my personal computer and the audio is deleted from the recorder. When this thesis has been delivered and evaluated, the audio recordings and transcriptions will be deleted. All informants have signed a document approved by the NSD, which informs them of their role and the conditions of the interview. This document provides the informants with the option to explicitly permit the use of their place of work, name and job description. All respondents have allowed this. Please note that the informants will receive this thesis before delivery in order to approve it for delivery. This is done in order to prevent misinterpretations of their statements. Respondents are given the opportunity to withdraw at any point, and it is made explicit that this will not have any form of negative consequences for them.

Transparency and Replicability
For a body of research to be considered replicable, it must be transparent (Aguinis & Solarino, 2019, p. 1292). Transparency can be defined as "the degree of detail and disclosure about the specific steps, decisions, and judgment calls made during a scientific study" (Aguinis, Ramani & Alabduljader, 2018, p. 83)

Qualitative research has some serious challenges with regards to how it is presented due to a lack of transparency and replicability (Aguinis & Solarino, 2019). This paper attempts to address this issue by addressing the concerns of researchers like Aguinis and Solarino through using their behaviourally-anchored rating scales (BARS) to measure transparency in qualitative research. Their BARS rate different qualitative studies on 12 different indicators on a scale of 'criterion not mentioned' (1) to 'criterion is met' (4) (Aguinis & Solarino, 2019, p. 1299). By directly addressing these indicators in the following section, the intent is to be as transparent as possible. The twelve indicators are described and addressed on the following page.

1. **Kind of qualitative method**
   Case study
2. **Research setting**
   All informants were given the option to decide where the interview was to be conducted, and all interviews were held in the place of work of the informants.
3. **Position of researcher along the insider-outsider continuum**
   My position as a researcher varied depending on the informant. As a student at NTNU and a citizen in Trondheim municipality, I could be regarded as more of an insider when interviewing respondents from these employees than in other interviews.
4. **Sampling procedures**
   The sampling procedures are both purposive and theoretically grounded. By interviewing respondents from all involved sectors and one business partner with a large grant and one with a smaller grant, the intention is to have covered several types of actors. This was necessary for the triple helix analysis in particular. The particular informants chosen from each institution is based on their perceived relevance in the project.
5. **Relative importance of the participants/cases**
   Making sure that the informants covered all sectors was crucial, and particularly having information from the project leader and project manager. The business partners are important, but a replication would be feasible (and encouraged) with the inclusion of different private partners.
6. **Documenting interactions with participants**
   All interviews were documented equally: through recording the interviews as audio and transcribing them as soon as possible afterwards. The transcriptions and audio filed will be deleted after the completion of this thesis for privacy-related reasons. This may have affected the actors' willingness of participation
7. **Saturation point**
   The saturation point (i.e. the point where there is no new insight to be gathered) was not met through the amount of interviews that was conducted. Including more informants would likely be beneficial if practically feasible. The saturation point in terms of the information gathered from each interviews was satisfactory. This is in large due to the semi-structured form of the interviews, which allowed the informants to add more information where they saw fit.
8. **Unexpected opportunities, challenges, and other events**
   The COVID-19 pandemic meant that no further face-to-face interviews were possible after the restrictions were enforced. No further interviews than the ones conducted were planned. It did mean that I was unable to conduct observational research at the project office, which was agreed upon just before the enforcement of the restrictions.
9. **Management of power imbalance**
   There were no perceived issues with power imbalance in any direction affecting the research.
10. **Data coding and first-order codes**
    The coding process follows case study procedure as suggested by Stake (1995) and further in Creswell (2007). The first-order codes have been coded descriptively.
11. **Data analysis and second- or higher-order codes**
    The data analysis and second-order codes is done through what Creswell refers to as "analysis of themes" (2007, p. 244) or what Stake calls "development of issues" (1995, p. 123). Creswell describes the process as such: "Following description, the researcher analyzes the data for specific

themes, aggregating information into large clusters of ideas and providing details that support the themes." (2007, p. 244).

12. Data disclosure

In line with the agreement signed by the informants in the consent sheet, no disclosure of data (e.g. audio files or transcriptions) is possible as addressed in point 6.

By consciously addressing these areas here, the ambition is to achieve a thesis that is highly transparent and thus, within reason, replicable and falsifiable. Whether replicability within qualitative research is actually possible is up for debate – the main intent is to provide transparency.

Appendix D: Tables

Table D1: +CityxChange Objectives

Business models	Citizen-centred approach	Replication	Technology
Stimulate innovation and development of new products and services, stimulating company and job creation	Enable citizen participation and ownership of solutions for the transformation toward a positive energy city	Deliver integrated planning and design, common energy market & community exchange solutions leading to wider rollout of Positive Energy Districts that can be replicated and gradually scaled up to city level and Guidelines that create and trigger integrated approach to sustainable urban development, citizen/private company/NGO integrated processes, and a way ahead that ensures inclusion	Integrate local distributed renewable energy sources and energy storage
Establish Investment pipelines, build novel business models with the Follower Cities, and create interconnected markets enabling local energy trading within the Distributed Positive Energy Blocks (DPEB)	Develop a Bold City Vision for 2050 and guidelines that create and trigger integrated approach to sustainable urban development, citizen/private company/NGO integrated processes, and a way ahead that ensures inclusion	Deploy innovative replicable solutions that reduce overall energy consumption, increase share of renewables, enable full-scale integration of the complete energy system – electricity, thermal/cooling, and in the future renewable liquid fuels such as biogas and hydrogen	Connect buildings and building systems to energy communities and markets, to energy and district heating systems and integrate smart metering
Enable a fair deal to all consumers through a local flexibility market and innovative financing and risk distribution models	Co-create Distributed Positive Energy Blocks (DPEB) through citizen participation	Stimulate investment and replication across 20 additional EU cities with decentralised platforms, blended finance, and risk shaving	Optimise energy system operation and mobility solutions by offering eMaas
Foster a new energy market design coupled with consumer-driven innovation developed in close working cooperation with national regulators, Distribution System Operators (DSOs), property developers, and local energy communities	Create a citizen participation playbook and platform		Encourage open innovation and digital platforms for community and stakeholder engagement supported by open data and prototyping

(+CityxChange, n.d.)