

Alexander Bergsland Finsnes

Land Value Capture's potential in Norway

Master's thesis in Civil and Environmental Engineering
Supervisor: Alenka Temeljotov-Salaj and Svein Bjørberg
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Norwegian University of Science and Technology
Faculty of Engineering
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Abstract

The basis for this master's thesis is to look at the potential for implementing Land Value Capture strategies in Norway. In order to evaluate such a potential, two case studies have been done; first to look at a re-zoning's effect on real estate value and second to understand how private infrastructure contributions are gathered in Norway today. There next, the purpose of the thesis is to suggest a practice for improving the Norwegian system for gathering private infrastructure contributions. Initially, a larger literature review was carried out, to establish knowledge regarding Land Value Capture and how such instruments have been used in other countries. It was also considered important to obtain information regarding relevant Norwegian legislation and other countries practice for obtaining private infrastructure contributions, which was mainly done by document studies. Several professionals, mainly real estate developers and academics, have been consulted regarding the matter throughout the works, as well as basic estimations and calculations have been carried out in the thesis. The land value of the three properties assessed in the first case study, which are all subject for re-zoning and a new local plan, turned out to be highly dependent of the utilization degree. The second case study that was based on projects within Oslo municipality, showed a practice of development agreements that may be considered as highly controversial, with several issues between municipal agencies and real estate developers. The issues were mainly based on the practice of VAT-refund, definitions of necessary infrastructure measures, way of negotiation, land cession and technical requirements of self performed measures. As today's practice regarding development agreements entails a large number of issues, it is suggested to develop a new system for gathering private infrastructure contributions in Norway, even though the case study was solely based on projects in Oslo. It is suggested to possibly replace both development agreements and the infrastructure work up duty (opparbeidelsesplikten) with a re-zoning fee, that captures plan made values, where the revenues shall be spent on nearby, necessary infrastructure measures. In order to evaluate the suggested re-zoning fee, all relevant parties should be questioned whether the fee seems to be a good replacement for development agreements and the infrastructure work up duty.

Key words: Development agreement, land value capture, private infrastructure contribution, re-zoning fee, Norway

Sammendrag

Alle masteroppgaver skrevet på et ikke-skandinavisk språk ved NTNU, Norges Teknisk-Naturvitenskapelige Universitet, skal ha et sammendrag på norsk.

Utgangspunktet for denne masteroppgaven er å vurdere potensialet for å innføre Land Value Capture-instrumenter i Norge. Hensikten med slike instrumenter er å fange opp verdier som skapes innen eiendom, for eksempel planskapt verdier, som følge av endrede kommunale byggeplaner. Land Value Capture (LVC) baserer seg videre på at de oppfangede verdiene i hovedsak skal anvendes til offentlige infrastrukturtiltak, og måten slike verdier oppfanges i Norge i dag er i hovedsak ved bruk av utbyggingsavtaler. Oppgaven søker å vurdere om dagens praksis med utbyggingsavtaler er hensiktsmessig, om den bør revideres, eller endres totalt.

Den første delen av studiet er et større litteratursøk, som tar for seg teori bak LVC, samt hvordan LVC brukes i andre land. Videre har det blitt gjennomført flere dokumentstudier, som ser på relevante norske lover og systemer, som bør tas i betraktning når man skal vurdere om LVC har et potensiale i Norge. Et steg for å forstå hvordan relevante prosesser foregår i dag har vært å gjennomføre et mindre case-studie, for å vurdere hvordan markedsverdien på eiendom påvirkes av kommunale planer, altså hvordan planskapt verdier skapes og endres. Studiet har tatt utgangspunkt i Sluppen-området i Trondheim, som står ovenfor store plan- og utformingsmessige endringer. Videre har et større case-studie i Oslo blitt gjennomført, hvor man har sett på hvilke infrastrukturbidrag som kreves av private utbyggere, og hvordan eventuelle utbyggingsavtaler utformes og gjennomføres. Dette er for å forstå hvordan planskapt verdier fanges opp av det offentlige i dag. Flere profesjonelle aktører har vært konsultert angående temaet, blant annet gjennom et samarbeid med firmaet Vedal.

Det har vist seg at eiendomsverdier i stor grad påvirkes av kommunale planer, og det er spesielt utnyttelsesgraden, altså hvor stort areal man får lov til å bygge på en tomt, som er avgjørende for verdien av eiendommen. De tre tomtene som det er gjort beregninger for, viser en tilnærmet proporsjonal endring mellom utnyttelsesgrad og eiendomsverdi. Det er likevel viktig å merke seg at dette har sine begrensninger, ved at forholdet ikke vil gjelde dersom utnyttelsesgraden blir høyere enn det som etterspørres i markedet.

Videre viser case-studiet gjennomført i Oslo at dagens praksis rundt bruk av utbyggingsavtaler er kontroversiell, og at utbyggere opplever flere utfordringer med praksisen. Etter at Oslo kommune startet å utarbeide Veiledende plan for offentlig rom (VPOR) i 2008 og 2015 for henholdsvis ytre og indre by, har også bruken av utbyggingsavtaler økt, ettersom avtalene ofte er basert på bestemmelser i VPOR. Plan- og bygningslovens (PBL) paragraf 17 omtaler hvordan utbyggingsavtaler skal utformes og brukes. Et viktig punkt i denne paragrafen er at tiltakene i avtalene skal være nødvendige for at det aktuelle utbyggingsprosjektet kan gjennomføres. VPOR angår større områder, som for eksempel Ensjø eller Økern, og bestemmelser som hentes fra disse planene angår ofte tiltak som relativt sett er langt borte fra det aktuelle prosjektet, som fører til en diskusjon angående nødvendighet. Diskusjonen rundt nødvendighet angår også eksempelvis om det er nødvendig å bidra med en flerbrukshall for å utvikle et kontorbygg.

Et annet kontroversielt aspekt ved utbyggingsavtalene er Oslo kommunes praksis for håndtering av moms ved realytelser, altså infrastrukturtiltak som utbyggeren må opparbeide selv. Avtalene som har blitt utarbeidet i Oslo de senere årene, gir Oslo kommune rett til å overta justeringsretten ved overlevering av tiltakene, som vil si at Oslo kommune kan refundere momsen som utbygger har betalt. Dette resulterer i en ikke-øremerket inntekt til Oslo kommune, mens et krav i PBL §17 er at alle inntekter i en utbyggingsavtale må være øremerket infrastrukturtiltak. Inntekten kan derfor ansees som ulovlig, og ikke minst kontroversiell.

Når slike realytelser overleveres til kommunen, må også grunnen ytelsen er utført på ofte avstås til kommunen. Problemet med dette er at denne grunnens verdi ikke nevnes i utbyggingsavtalene, slik at det blir svært vanskelig å vurdere avtalens faktiske verdi. En avtale kan inneholde kontantbidrag i kroner og øre, og realytelser som kostnadsestimeres av en ekstern part, og man kan dermed regne ut en avtales total kostnad basert på disse faktorene. Ettersom verdien på grunnen som eventuelt må avstås ikke nevnes, blir det nærmest umulig å vurdere avtalens egentlige kostnad. Dette skaper urettferdighet mellom avtaler som innebærer større og mindre grunnavståelser.

En annen utfordring er at det ofte kan virke som om å Oslo kommune forhåndsfastsetter et beløp per kvadratmeter bygning som utbyggeren må betale i en utbyggingsavtale, og ikke baserer avtalens kostnad på faktisk nødvendige tiltak. Denne praksisen gjør utbyggingsavtaler mer til en utbyggingsskatt, enn en utbyggingsavtale, som er i strid med PBL §17. Det viser seg også at Oslo kommune ofte kommer med tekniske krav til utførte realytelser etter at selve arbeidet er utført, som fører til større endringskostnader.

Ettersom dagens praksis med utbyggingsavtaler viser seg å ha flere betydelige kontroversielle aspekter, anbefales det å gå bort fra denne, og se på alternative måter å innhente bidrag til nødvendig infrastruktur. Basert på inspirasjon fra LVC-instrumentene Negotiated Exactions og Development Impact Fees, samt relevante løsninger i Storbritannia, Sveits og Danmark, er det foreslått å implementere en utbyggings- eller omreguleringsavgift. Etter en vurdering av de to alternativene, anbefales det å gå videre med en omreguleringsavgift, som genereres ved at utbygger må betale et gebyr for hver nye kvadrat som bygges og tillates etter en omregulering. Det vil si at dersom en ny reguleringsplan tillater å oppføre 1 000 nye kvadratmeter på en tomt med eller uten et eksisterende bygg, og eieren velger å benytte seg av dette, ilegges eieren et gebyr per kvadratmeter for alle 1 000 kvadratmeter, men ikke det eventuelt tidligere eksisterende arealet.

Dette gebyret skal fastsettes av et kommunalt råd som består av minimum en kommunal representant, en representant fra en utbyggerforening, en nøytral part som en advokat eller megler, og en representant fra Kommunal- og Moderniseringsdepartementet, som i dette tilfellet fungerer som lovgiver. Rådet skal utarbeide et maksimumsgebyr per kvadrat for hele eller deler av kommunen, og vil også kunne behandle eventuelle klager. Videre må kommunen for hver enkelt utbyggingssak dokumentere hvilke infrastrukturiltak som er nødvendige i forbindelse med utbyggingen og beregne kostnadene for disse. Kommunen kan ikke kreve mer enn maksgebyret som er fastsatt av rådet, ei heller mer enn totalkostnaden av tiltakene som er dokumentert. Det vil være frivillig for kommuner å ta i bruk omreguleringsavgiften, ettersom det kan diskuteres at en slik avgift vil redusere utbygging i mindre kommuner. Dersom kommunen velger å innføre en slik avgift, er hensikten at den i tillegg til å erstatte utbyggingsavtaler, skal kunne erstatte opparbeidingsplikten. Det vil nødvendigvis kreve et høyere gebyr per kvadrat og mer arbeid for kommunen, men vil kunne gi en mer helhetlig infrastruktur i kommunen.

Konklusjonen er at Land Value Capture kan og bør introduseres i Norge, men med tilpasninger til norske systemer og lovgivning. Dette bør gjøres ved å avslutte dagens praksis for utbyggingsavtaler, og erstatte den med en omreguleringsavgift, basert på inspirasjon fra Land Value Capture og lignende løsninger i andre land.

Preface

This master's thesis is written during the 10th semester of the Civil engineering programme at NTNU, The Norwegian University of Technology and Science in Trondheim. The thesis is awarded with 30 ECTS and is written during the spring of 2019.

I would first and foremost like to thank my supervisors at NTNU for their presence, good academical input and short response time. The private company Vedal has also contributed greatly to the thesis, both with human resources and a large amount of experience and knowledge.

I would also like to thank all other professionals and non-professionals that have contributed with their experience, knowledge and inspiration.

Trondheim, 21st May 2019.

Alexander Bergsland Finsnes

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Word list

A word list has been made, as several Norwegian terms used in this thesis are not to be found in dictionaries.

Table 1: Word list

Norwegian	English
Jordskifte	Land consolidation
Jordskifterett	Land consolidation court
Kommuneplan	Municipal master plan
Lagmannsrett	High Court
Områdeplan	Local plan
Opparbeidelsesplikt	Infrastructure work up duty
Plan- og bygningsloven	The planning and building Act
Realytelse	Self performed measure
Refusjon	Refund
Rekkefølgebestemmelse	Development condition
Reguleringsplan	Zoning plan
Sameie	Undivided joint property
Sams tiltak	Joint Action
Urbant jordskifte	Urban land consolidation
Utbyggingsavtale	Development agreement

Introduction

1.1 Background

The topic of the thesis derives from a question regarding if and how LVC-strategies can be implemented in Norway. As a master student within the civil engineering degree at the Norwegian University of Science and Technology, it is mandatory to choose a specialization within your chosen direction before starting the fifth and last year. After choosing to specialize within Property- and Facility Management, all students within the specialization were served a selection of topics to write about in the coming master's thesis. The topic chosen, was to "Map what is done in other countries regarding public investments and zoning for housing construction around infrastructure nodes and see how this can be done in Norway through interviews with public authorities" in regards of LVC.

Further on, this was transformed into the research question "How can LVC be implemented in Norway?", which turned into a research question of the project thesis, as a pilot for this master's thesis. The first step to establish insight within the topic was to perform a literature review on LVC and thereby getting to know the state-of-the-art. The second step was to study relevant, Norwegian legislation, such as development agreements, The planning and building Act and The law of land consolidation. A more practical issue within this question was to address the controversial question of estimation and prediction of land value change as a result of improved adjacent infrastructure. As the task and topic is fairly wide and demanded a high amount of work, the scope of the pilot was narrowed down. The pilot thereby covered the initial part of the value change due to adjacent infrastructure improvements, by discussing a re-zoning's impact on real estate values.

Based on the pilot, a more comprehensive study is carried out in this thesis. In cooperation with supervisors from NTNU and Vedal, it has been decided to carry out a case study to map today's practice of private infrastructure contributions in Oslo Municipality. This will be used as a basis to answer the initial research question of how LVC can be implemented in Norway.

1.2 Topic

Most infrastructure projects today are financed solely by public authorities, or by public authorities and private investors as a cooperation. This means that the public authorities need to raise sufficient equity to execute an infrastructure project, for instance through taxes, user fees or deals with private investors.

1.2 Topic

The execution of infrastructure projects often gives positive bi-effects to neighbouring stakeholders, more specifically increased land value to adjacent properties. If the project owner, usually a public authority, could benefit from this value increment after the project was done, parts of the project funding could then be captured, and more projects could be carried out. A principle involving this idea exists today, and it is called Land Value Capture (LVC).

The concept behind LVC is that a project owner of an infrastructure project wants to be rewarded for its investments that increases the land value of an adjacent property it does not own itself. That can typically be exemplified by a public authority building a sub-way station nearby a property owned by an unaffiliated private company. The value of the property is then expected to increase, and the public authority would want a share of the increased land value.

LVC has been implemented in jurisdictions for several hundred years, and the principles behind it were mentioned already in the works by the economist Adam Smith. Special Assessments (SA), which is one of the methods classified as LVC, was used as early as 1691 in New York City for funding the construction of a drainage system and street pavements (Zhao and Larson, 2011). During the 1800's, several other American states developed systems for LVC, and by 1850, several of them had LVC policies similar to the ones in use today. As the time went on, LVC became more popular, and policies like SA had their peak around 1930, a lot because of the big demand for developing new urban infrastructure as well as the fast increasing property values. However, a financial crisis broke out at the time, meaning people and companies went bankrupt and were therefore unable to pay for the infrastructure improvements in their respective districts. The concept of Special Assessments and Special Assessment Districts will be explained later in this thesis. After the second world war was over and the economy came back to a more ordinary level, LVC policies were once again introduced and have been implemented since.

In more modern history, specifically in 1976, LVC was included in the founding document for UN-Habitat, the Vancouver Action Plan (Walters, 2013). At the document's time of publishing, several methods of LVC had been used frequently during periods over the last 100 years, especially in U.S.A. (Zhao and Larson, 2011). The document states the following:

The unearned increment resulting from the rise in land values resulting from change in use of land, from public investment or decision, or due to the general growth of the community must be subject to appropriate recapture by public bodies (the community). (United Nations, 1976)

There are several strategies and instruments that may be referred to as LVC, a lot because of the wide definitions. As a result, several countries are using LVC strategies, without actually categorizing them as such. The case studies and literature reviews will show that the strategies can interfere with each other, as well as some countries use strategies very similar to the more theoretical LVC strategies found in the

literature reviews. Different countries have different applicable laws, meaning LVC strategies will in most cases need adaption to each and every country. Another aspect is that most countries write their laws in languages different to English, meaning an expression like LVC would usually not be used in a country where English is not the official language. The judgment whether a country uses LVC strategies or not, may therefore in some cases be considered subjective.

This thesis works to establish an overview of how public authorities gather private funding for public infrastructure. In order to gather such funding, an agreement between a private organization and a public authority is needed, whether it is based on an LVC strategy or principles independent of LVC. The literature reviews will reveal that several western countries base this type of funding on development agreements. A development agreement is an agreement between a real estate developer and the prevailing municipality concerning the implementation of the approved zoning and local plans (Eiendoms- og byfornyelsesetaten, 2018). Such an agreement mainly deals with the funding of the carried motions in the mentioned plans.

1.3 Delimitation

1.3.1 Re-zoning

An assumption prior to this study, is that LVC has not yet been implemented in Norway and there exists little information on the topic within the country. Based on this assumption and the findings from the literature study that has been performed prior to this thesis, it is claimed that there exists a research gap on how LVC can be implemented in Norway. During this study, the existing literature review will be continued, in order to establish more knowledge regarding LVC seen in the perspective of the findings from the case studies.

As a step of considering how relevant LVC strategies may be for Norway, it has been decided that the effect of decisions made by public authorities on land value shall be researched. This will be carried out through a case study, which will consider the effectiveness of funding-strategies based on planning decisions.

A controversial matter within LVC-theory is the prediction and estimation of the changed real estate value as a result of adjacent infrastructure improvement. In the U.S., where several LVC-strategies are used today, most value estimations are results of professional judgment, which can be considered rather subjective. Infrastructure projects that are relevant to LVC are often comprehensive and consist of public processes and decisions during several years. Some projects are never executed as a result of public authorities not being able to decide how a project should be performed or financed. Due to the extensive public processes prior to the execution of an infrastructure project, it is interesting to see how these

1.3 Delimitation

processes affects the market value of adjacent real estate.

The first step of improving infrastructure is often to perform a re-zoning of an area, in order to make the improvement feasible. Historically, real estate value changes with changes in the prevailing zoning plans, as the different property types generally have different degrees of yield. Private housing prices are for instance usually higher than the prices of commercial real estate, meaning that a re-zoning from a commercial area to a private housing area, often increases the land value. Other regulations like height limitations, utilization degrees and mandatory green areas are also assumed to affect the land value. The cases where the re-zoning leads to increased land value, are subjects for discussion when talking about LVC, as the concept is based on capturing increased land value.

To generate an understanding of how a re-zoning is related to LVC, a part of this thesis covers theory regarding LVC strategies and examples of how LVC has been utilized in other countries, based on the mentioned literature reviews. This is done to make a basis of answering the question of how LVC can be implemented in Norway, which can be considered the starting point for this project.

1.3.2 Private infrastructure contributions

As all LVC strategies really are methods of raising private funding for public infrastructure, it is considered necessary to establish an understanding of how this is done in Norway today. This understanding will be made through a case-study, looking at agreements regarding private contributions in coherence with real estate development. Such funding is in Norway based on development agreements and development conditions, which will be described closer in the case studies. Research regarding the topic has shown that there are no or very few national guidelines related to these agreements, meaning there are several local variations around the country.

Traditionally, public infrastructure connected to real estate development projects have been based on development conditions, meaning conditions in a zoning plan which states what measures are necessary in order to use or erect a building in a certain area. The municipality may choose to fund and complete these measures themselves, but if a developer wants to erect a building before the municipality completes them, the developer will have to carry them out himself. Several Norwegian municipalities base such infrastructure development on development conditions, but other municipalities, especially the larger cities, have established a wide use of development agreements.

Both development conditions and development agreements will be covered in the case studies. Due to the complexity and lack of unified procedures of development agreements, the study of these is limited to Oslo Municipality. The choice of Oslo, instead of other cities, is because of the extensive use of such agreements in the city. According to professionals, it is one of the cities with the highest and also one of the most controversial use of development agreements. The latter is a result of few national guidelines

regarding how to use and implement development agreements.

In order to make an holistic approach in the case study, it has been limited to single real estate development projects, in contradiction to looking at larger development areas. It was beforehand decided to look at minimum one project within the following categories:

- A fully completed project
- A project where the planning is completed and the building is in progress
- A project in the planning phase where the development agreement have been set
- A project in the planning phase where the develop agreement have not yet been set

With a minimum of one project per these categories, it should be possible to see a trend of how the agreements are made and if the trend is changing. However, some of the categories have turned out to include more than project, as a measure of avoiding a biased picture regarding the practice of development agreements in Oslo Municipality.

As this thesis has been carried out in cooperation with the Oslo-based company Vedal, the choice of projects has also been limited to Vedal's current and previous development portfolio. The company has been developing real estate during the last ten years in a larger scale, meaning their selection of projects has been considered sufficient. Vedal's department of real estate development consists of approximately 15 professionals. A lot of ideas and common understandings within the Norwegian real estate business have been obtained from these persons.

Another measure to obtain understandings regarding the topic is to discuss the matter with persons representing different actors within the real estate business. This involves government officials, developers, lawyers and contractors.

1.4 Hypothesis

Based on the knowledge presented in the introduction, which is mainly obtained during the Project Thesis, a hypothesis has been formed. This master's thesis tries to confirm or disprove the hypothesis and follow up with further work and actions for improvement.

The Norwegian legislation and routines regarding private infrastructure contributions are not optimal, as they are in lack of unified guidelines. By using inspiration from theory and other countries' experience, the Norwegian system could be improved.

A case-study of today's practice as well as conversations with relevant persons, should make it feasible to confirm or disprove the hypothesis. The following three research questions have been made, as a first step to work the hypothesis out.

1.4 Hypothesis

- **RQ1:** How have the public authorities gathered private contributions for financing public infrastructure over the last years?
- **RQ2:** What existing strategies or instruments may be used to gather private contributions for funding public infrastructure?
- **RQ3:** How can the Norwegian system for gathering private infrastructure contributions be improved?

Further on, this thesis works to answer the three research questions. RQ1 is mainly answered through the case study in Chapter 5, while a the literature review presented in the thesis' theory chapter seeks to answer RQ2. To answer RQ3, all theory and results parts are applied, so that the question may be answered holistic, based on several perspectives. RQ3 is answered in the last parts of Chapter 6.

Theory

The theory chapter presents relevant theory to the research questions and topics discussed in this thesis. First, theory behind Land Value Capture is presented, followed by Norwegian legislation that can be useful when considering LVC's potential in Norway. Lastly, concrete examples from four other countries' practice for gathering private infrastructure contributions are explained. The theory chapter tries to answer research question two; "What existing strategies or instruments may be used to gather private contributions for funding public infrastructure?".

2.1 Land Value Capture

Land Value Capture involves four main steps (Walters, 2013). First of all, an increment of land value as a result of infrastructure improvements must occur. Point number two is to perform an estimation of the changed land value due to the improvements, and come up with a value that a tax or fee can be based on. Third, the tax or fee has to be implemented, and be kept for a sufficient amount of time in order to cover the budgeted costs of the project. Fourth, the efforts in collection must be sufficient to realize the increased value. Another important aspect, is that the amount captured because of increased land value cannot exceed the benefits received from the infrastructure project (Zhao et al., 2012a). Many scientists have their own definitions and assumptions that has to be in place for a value capture process to be successful. A partnership consisting of the UN Habitat together with Hendricks and Tonkin (2010) resulted in the following assumptions that has to be in order to implement a well functioning LVC:

- There has to be a well functioning political system including a leader with support from the inhabitants, a de-centralized authority and a good and functional system for property tax.
- The effectiveness of LVC is improved a lot when it is implemented in an already effective land use management.
- At least three groups need adequate training for a functional LVC system: Policy makers, administrators and land developers.
- The land valuation has to be precise, efficient and in its time.
- All tools for LVC should be considered when a jurisdiction chooses to use the concept.

2.1 Land Value Capture

A large amount of the western world's infrastructure has been built over the last century, and it is plausible to say that the same part of the world has a large demand for upgrading the existing infrastructure, meaning infrastructure financing is a hot topic today. Another important reason for why LVC is becoming especially interesting and relevant today, is the green change, meaning that revenues from motor fuel taxes are falling and will most probably continue to fall. This is a result from an increasing focus on using less fossil fuel and using more environmental friendly and public ways of transport (Zhao et al., 2012a). The definition of LVC seems fairly wide so far, but there exists several concrete policies involving the concept of value capture. Zhao et al. (2012a) mention eight different policies in an article covering the properties for all of them. They are described in the following sections.

2.1.1 Tax Increment Financing

One of the LVC strategies is called Tax Increment Financing, henceforth abbreviated "TIF". The method has been used for several years by local governments in the U.S., but its use for transportation finance is less common (Zhao et al., 2010). Its use in transportation finance is based on that development and execution of projects improving the infrastructure will in most cases contribute to rising property values in their adjacent areas. The rising property values then lead to increased property taxes, and the purpose of TIF is to direct this increment towards the financing of the infrastructure project. In order to do so, the difference between the previous and the new property tax must be calculated and earmarked back to the project. It is therefore necessary to use temporary funding such as bonds and loans while waiting for TIF to deliver revenue. The method is often misunderstood as an extra tax burden, but no taxes are changed in the strategy, as the only actual action is earmarking the increased tax revenue. There are two different strategies for earmarking the increased taxes: Project- and district based. TIF can in other words be used for financing a single project, or several projects in a designated district. The district based method can be hard to execute, as there are often a lot of stakeholders, opinions and goals within a district. Large single projects can often involve just as large amounts of money as a whole district, but the goals and funding of a single project are usually more set and agreed upon than for a collection of projects within a district.

The use of TIF has resulted in both positive and negative feedback, mainly differentiated by the areas where it has been applied. During the 1950s it was mainly applied as a last way out for improving slums and blighted areas, and several of the projects failed (Zhao et al., 2010). The main issue is that property values in these types of areas are not necessary affected greatly by improved adjacent infrastructure. Land value in central business districts are on the other hand a lot more affected by it, and TIF financed projects in these districts have proved themselves to be more successful. There are however a couple of

concrete drawbacks with TIF that should be mentioned: (1) TIF does not have any effect if the property value does not increase. These values are dependent on several other variables than the TIF-project, and the other variables are usually more significant; for instance the cycle of the regional or national economy. (2) The overlapping jurisdictions may fail to receive tax increments that would have happened without the transport improvement, because all revenue from the increased property tax is earmarked. In practice that means that schools, hospitals and other public services often loses access to the increased tax revenue due to the earmarking. (3) If the property values are severely increased, residents and shop owners may not be able to afford the increased property tax. (4) Larger feasibility studies and monitoring of the projects are due when implementing TIF, implying high administrative costs.

2.1.2 Special Assessments

Special Assessments (SA) involves introducing an extra fee for funding infrastructure projects in contradiction to Tax Incremental Financing. The concept is however also similar to TIF, as it involves defining a so called "Special Assessment District" (SAD) where all inhabitants are levied a fee for certain public projects that all residents' properties are expected to benefit from (Zhao and Larson, 2011). Some general principles lay the grounds for Special Assessments: (1) The property owners are levied a fee for financing specific public improvements. (2) The SAD has to be defined, and all properties covered by the district must benefit from the improvements. (3) The fee that is to be levied must correspond with the amount of benefits the property owner receives. That implies that the within the SAD, the properties' distance to the improved infrastructure may be taken into consideration and thereby differentiate the fees levied. (4) If a district has reached their limits of property tax collected, revenues from Special Assessments may exceed these, as they are not related.

2.1.3 Joint Development

There are several definitions of Joint Development (JD), but in regard of transportation improvements, Landis and Hall (1991) puts it this way: Joint development is any formal agreement or arrangement between a public transit agency and a private individual or organization that involves either private sector paying to the public sector or private sector sharing capital costs with the public sector, in mutual recognition of the enhanced real-estate development potential created by using a public transit facility. Joint development projects could be looked upon as public-private partnerships, but they also include other types of projects; for instance when public authorities participate directly in developing real estate for profitability purposes, when governments sell or lease property rights for making revenues or when private companies only contribute with revenue for adjusting the density standards or usage rights (Zhao et al., 2012b).

2.1 Land Value Capture

2.1.4 Land Value Taxes

A Land Value Tax could be defined as a tax based on the unimproved value of land. It disregards the value of buildings, personal property and other improvements of real estate (Zhao et al., 2012a). It may therefore be levied to capture the increased value of the land itself, as a result of the adjacent public improvements.

2.1.5 Transportation Utility Fees

Transportation Utility Fees (TUF) are paid by property owners based on the land use intensity. In other words; the fee is calculated from the property's use of adjacent transportation facilities and may be levied from both residents and businesses (Zhao et al., 2012a). The basis for calculating the fees may be the amount of parking spaces or gross floor area. Another aspect of TUF, is that it is levied from all occupants, meaning that also renters are charged, not only the property owners (U.S. Department of Transportation, 2018b).

2.1.6 Development Impact Fees

When a new or proposed development project pays for a portion or all of the costs of providing public services to the new development, it can be called a Development Impact Fee. In practice developers pay for enhanced external infrastructure, that is considered necessary due to the project they are executing (Zhao et al., 2012a).

2.1.7 Negotiated Exactions

In negotiated exactions, developers are offering to contribute with assets to the municipalities in order to receive approvals by them (Zhao et al., 2012a). This is usually done by a one-time payment or land transfer, but can also be based on construction activities or provision of public services. An important aspect is that negotiated exactions are usually initiated by the developer, as a step of receiving approval for his or her project (U.S. Department of Transportation, 2018a).

2.1.8 Air Rights

The strategy for Air Rights provides the right of developing property above a certain piece of land by paying a financial contribution or additional property- or income taxes. An example is when a private developer obtains the rights to develop an office building above a railway station by sharing revenues with the rail way station owner (Zhao et al., 2012a).

2.1.9 LVC's potential in other countries

Several LVC financing strategies are based on revenues that are generated after the infrastructure project is completed, meaning the need for temporary financing is often necessary. This can be done by issuing general obligation bonds or revenue bonds. The first mentioned can only be issued by an authority with the power to tax, meaning the bonds will be paid back by tax revenue. Revenue bonds can be used when the project subject to financing will generate revenues from fees, taxes or tolls. Examples are toll bridges, airports, ports or hospitals (Roumboutsos, 2015).

As mentioned earlier, several of the value capture methods demands for an estimation of an infrastructure project's impact on adjacent property values. Bujanda and Fullerton have performed a research on how property values are influenced by adjacent infrastructure projects, and divided commercial and residential properties into two different cases. Their research states that transportation infrastructure might generate a premium on properties, but it is not always positive; sometimes actually negative (Bujanda and Fullerton, 2017). By using Geographic Weighted Regression (GWR) they were able to find coefficients for several parameters that were useful to calculate the impact on property values in El Paso, U.S.A.; a city situated on the border of Mexico. They also tried estimating coefficients by using global coefficients by ordinary least squares, but the results generally had very high variances. Their research results showed for instance that high proximity to points of entry to Mexico resulted in a negative value coefficient for family properties. Short distances to freeways, arteries and interstates did not either necessarily increase the family property values, rather the opposite (Bujanda and Fullerton, 2017).

The same principles apply for infrastructure projects' impact on commercial properties, but according to the GWR calculations, negative premiums for family properties are often positive for commercial properties (Bujanda and Fullerton Jr, 2017). Distance to interstates, freeways, arteries and points of entry all turned out to have negative coefficients, meaning that commercial properties have higher value when situated in short distance of road based infrastructure. That is the opposite of family properties, that often holds a lower value when situated close to major road infrastructure.

Walters, on the other hand, estimates how large percentages Land Value Capture may capture from an area or project as a way to finance transportation improvements, based on the rate of land value increase. The paper makes a point that LVC can not only be used for cost recovery, but also as an annual tax on land (Walters, 2013).

When specifically considering joint developments, Mathur and Smith focus on a projects' revenue yield and stability. In their paper, they look into five different cases, where the most yielding case, a larger transit village results in a yield of \$700 million to \$ 1 billion over 99 years. On the other hand, the worst yielding case, a bus terminal, led to great losses due to several external failures during the

2.2 Norwegian legislation

project, that the public authorities not were contractually protected from (Mathur and Smith, 2013). Due to the fact that real estate market conditions probably have the highest impact on JD revenues, Mathur and Smith' solutions to avoiding a failed joint development project are: (1) Inflation-indexed revenues, (2) Conduction of robust background- and feasibility studies and (3) Clear policy objectives and political direction.

Metro systems and similar transit systems does in general have a different impact than road based infrastructure on both family and commercial properties according to Sharma and Newman (2018). After analyzing the financial aspects of the recently built Mumbai Metro, they found a large potential for LVC as a financing method. The project was executed without any LVC and the operational figures have turned out negative, resulting in increased fares for the metro users. By using a hedonic price model assessing the property value of approximately 66,000 apartments adjacent to the Mumbai Metro, there was discovered an uplift of 14% in property prices, resulting in a \$179 million value capture opportunity. The study underlines the prominent possibility of using LVC for urban rail to avoid a high dependence on farebox revenue. LVC could in this case be considered essential to avoid fares that its intended users cannot afford (Sharma and Newman, 2018). Proximity to transit systems like metros have in this and most other cases proved to impact adjacent properties with positive premiums in terms of property value.

Another case study regarding financing a metro system in Wuhan, China, launches another LVC strategy, Predetermined Land Reserve Mode (PLR). It is an adjustment of the joint development strategy, as Chinese legislation does not make the principles behind JD feasible (Sun et al., 2017). The study resulted in the following procedure for implementing PLR: First, a Land Reserve Center and Planning Department proposes land to be reserved adjacent to the planned metro system. Second, the rail transit company must require authorization and accept supervision from the Municipal Land Reserve Center. Third, the rail transit company is responsible for funding the land reserve work. Fourth, when the metro system is done, the parcels and lots can be returned to the Land Reserve Center and sold through bidding and auction. Finally, administration fees and costs will be kept by the authorities involved, while the rest of the revenues will be returned to the rail transit company (Sun et al., 2017). Based on findings from the same metro system in Wuhan; it was discovered that after the metro system planning was finished, housing prices rose slightly; two months before opening, housing prices rose quickly; after the opening, the prices continued to rise; 6 months after opening, the housing prices kept rising steadily Sun et al., 2017. This also proves that proximity to metro systems contribute positively to real estate value.

2.2 Norwegian legislation

The term Land Value Capture is not commonly known in Norway today, but some of the principles and instruments are in use. There are also laws and regulations that have relevance to the principles related

to it. When considering how LVC can be implemented in a jurisdiction, it is important to look at the already existing legislation to map the jurisdiction's adaptability. A word list of these laws, instances and related terms can be found in Table 1, at the very beginning of this thesis.

2.2.1 Land Consolidation

The group of decisions that are taken by the *Land consolidation court* is called *land consolidation*. These decisions concern land and properties that are difficult to use in an adequate way, due to various circumstances. The problems may for instance regard undivided joint properties, rights of use or inappropriate property borders. If the land owners are unable to resolve their issues themselves, their cases are subject for the Land consolidation court (Falkanger, 2017). The Norwegian law of land consolidation (2013) states its rationale in §1-1:

”Arrange effective and rational utilization of real estate and resources for the owners, right holders and society. This shall be done by the Land consolidation court imposing fines for inappropriate property- and usage circumstances, clearing up and determining property borders and rights, as well as trying cases of professional judgment using this and other laws.”

Laws similar to the law of land consolidation have been present in Norway since ”Magnus Lagabøtes landslov” from 1274 (Gisle, 2016). The amount of urban areas was very limited at the time, meaning the laws regarding land consolidation have primarily been written in regards of rural land. Today, the amount of urban areas have increased greatly, which has led to the need of land consolidation not only for rural land, but also urban. This type of land consolidation will be introduced in Chapter 2.2.3.

2.2.2 Land Consolidation Court

The purpose of the Land consolidation court is to resolve issues between land owners by changing property borders and re-arranging properties so they become more suitable for their use (Gisle, 2016). Private and public land owners, as well as persons with rights of use of land, are entitled to try their case in the Land consolidation court, if they are not able to solve their issues themselves. In case of an appeal against the courts decision, the cases will be tried in the Norwegian High Court, the second highest law instance in the Norwegian legal system. Some tools that may be used by the court for resolving issues are:

- Renew properties by swapping land and rights
- Split properties

2.2 Norwegian legislation

- Re-shape properties
- Change borders
- Change legal relations
- Clarify legal relations

When performing land consolidation, the court often needs to assess the value of the land consolidated, in order to produce a fair and even. According to professionals contacted, the land consolidation court is therefore one of the more competent instances for land value assessments in Norway.

2.2.3 Urban Land Consolidation

The term "urban land consolidation" can be considered imprecise as there exists no separate urban land consolidation, but it is used to specify land consolidation occurring in urban areas. As mentioned; land consolidation has its origin in regulating farm land and other rural land, but the law of land consolidation is also used for urban areas and a specification can therefore be found necessary (Reusch, 2017a). However, urban land consolidation is a tool used to split a value increment between multiple properties and property right holders within a zoned development- or transformation area. It is often used to work out zoning- or local plans, but it can only be used if the current local plans allow it. Urban land consolidation does for instance involve to:

- Develop more suitable property borders prior to land planning
- Coordinate and gather properties and right owners based of available resources prior to the zoning plan work and development starts
- Distribute development value- and cost potential when executing an approved zoning plan
- Establish cooperatives for facility management of completed real estate development

2.2.4 Joint Action

A peculiar part in the Law of land consolidation states the land consolidation court's right of judging a joint action. The law of land consolidation §2e states that when in need of common measures, for instance establish a road or put up a fence, in order to make land more usable or capable of development, the court may judge a joint action. It means that all land owners affected are obliged to participate in the financing of the measures, given that the benefits are proportionate to the investment amount for all affected land owners (Myrvold, 2012). This sub-section of the law may also be utilized in cases concerning urban land consolidation.

2.2.5 Municipal master-, local- and zoning plan

Plans for area development are given by three authority levels in Norway; government, regional and municipal. The two first mentioned levels are usually superior and are not considered relevant when studying infrastructure contributions. The plans given by the municipalities are on the other hand of relevance. On top of the municipal plan hierarchy, is the land-use part of the municipal master plan, which states the future intended use of a block or a city district. An example could be office-, residential- or mixed-use of an area. The second level is local plans. These plans contain more details and concern more limited areas, but multiple lots. They may for instance include height limitations, percentage limitations of residences or offices, as well as indications of what type of buildings the municipality would approve at certain lots. The last plan level is the zoning plan, which is the most detailed plan in the Norwegian plan hierarchy. This plan gives exact limitations for an erection on a lot and may for instance involve GIA, heights and aesthetics. An important part of a zoning plan when discussing development agreements, is the development conditions. They are described in Section 2.2.6 (Maehlum, 2018).

2.2.6 Development Condition

As mentioned, development conditions are found in zoning plans, but may also be found in the land-use part of the municipal master plan. The conditions are sequential, as they are numbered where the one condition has to be fulfilled before the other. It is also stated what conditions needs to be fulfilled before erection on a lot may begin. Thus, they are deciding relatively at what time erection of a building may start. The other function of development conditions, is that they deal with infrastructure, green areas and other facilities, meaning they assure that all of these living-necessities are in place before erection (Byggordboka, 2018).

2.2.7 Development Agreement

A type of agreements between developers and municipalities that are in charge of building matters are called *development agreements* and are established by law in The Norwegian Planning and Building act, §17. The agreement is based on provisions in municipal regulative plans, meaning the land-use part of the municipal master plans and zoning plans. The contents of the agreements may concern relations in the mentioned plans, as well as limitations of the amount of buildings, smallest and largest GIA and other appropriate regulations. The agreement may also give the municipality first options on a decided amount of units, in case of residential development. A highly discussed part of these agreements, is that they may set the real estate developer to completely or partly finance measures necessary for completion of the decisions made in the prevailing plans.

2.2 Norwegian legislation

It is important to stress that the measures must be necessary and they must be proportionate with the developments' size and cost. They must also be proportionate to the liability the real estate development causes the municipality (Norges Lover, 2009). §17-7 states that the municipalities are not allowed to make exemptions from the law, but approval from the Norwegian Ministry of Local Government and Modernization may be requested. Some other limitations of the development agreements are: They can only be approved by the municipal council, meaning they are not subject for implementation in single building matters. There are also requirements regarding public transparency of the processes (Norges Lover, 2009).

Development agreements can be looked upon as a kind of Joint Development, that we find in the Land Value Capture literature. Development agreements have historically been professionally misconducted in Norway, meaning that real estate developers have been required to finance municipal developments that have not been economically proportional or relevant to the development carried out. According to the real estate broker consulted for the case study in Section 4, a developer have for instance been asked to build a school in one part of a city, in order to obtain permission for establishing housing units in another part of the city. Development agreements concerning social infrastructure like schools, preschools and old people's homes were therefore forbidden in Norway in 2006, while agreements regarding relevant technical- and green infrastructure remained legal (Reusch, 2017b). This was ruled in the secondary law "Forskrift om forbud mot vilkår om sosial infrastruktur i utbyggingsavtaler.", FOR-2006-04-20-453.

2.2.8 Refund

According to the Planning and building Act §18-3, first paragraph; the person that wants to make, change or expand authorized public road or public pipelines for water or sewage, may require their expenses refunded by other property owners who benefit from the works. The law applies for both private and public persons and the road does not have to be in a zoning plan. There does however exist an exception for private road exits and roads that are not publicly approved. Already developed properties are not obliged to refund the expenses, but if the property ever is re-developed, the duty of refund is triggered. The local municipalities are responsible for approving the refunds as well as the future accounts of them (Nicolaisen and Brinker, 2017).

2.2.9 Expropriation

§105 in the Norwegian constitution states that if the [Norwegian] state demands a person to give up movable or immovable property for public use, he or she should be fully compensated by the Exchequer. As this is the stated in the constitution, it rules over other laws that have been released since, that for instance indirectly have claimed specific land exaction cases to have reduced right to compensation

(Falkanger and Reusch, 2018).

Even though the constitution states that the right of expropriation is for the state, the right is also frequently used by counties and municipalities, as well as private persons, naturally with limitations. Immovable property is usually the subject for expropriation, but it is also used for movables, rights of use and even labour. In general, the expropriation has to be authorized by "the King", a ministry or another public authority, even though in practice, the authorization has been subject for professional judgment in several cases.

As the person expropriated has the right of a full compensation, the question of valuation in expropriation cases has qualified for the Supreme court in several occasions. The valuation process is to be executed in regards of interests protected by law, meaning that affection value and similar is to be excluded from the judgment. There are three main principles for valuations, where the highest value should be considered applicable; (1) The market price, (2) The utilization value for the owner, especially applicable for factories and other production sites and (3) The replacement value (Falkanger and Reusch, 2018).

2.2.10 Infrastructure work up duty

The Planning and Building Act's §18 explains *opparbeidelsesplikt*, freely translated to infrastructure work up duty. It assures that sufficient road, water and sewage infrastructure is achieved at all times, as new real estate development occurs. Triggering factors for the duty could for instance be splitting of buildings, new buildings, substantial expansion of existing buildings or changed used of existing buildings. It means that if for instance a building is expanded in such a degree that a sewage pipe with larger capacity is needed, the responsible actor for the building's expansion is obligated to upgrade the appurtenant sewage infrastructure (Trondheim Kommune, 2019).

2.3 Other countries' practice

For inspirational purposes, other countries' practice for obtaining private infrastructure contributions have been included in the thesis' Theory chapter. Based on information from a report ordered by the Ministry of Local Government and Modernisation, finished in December 2018, concrete examples from Germany, Denmark, Great Britain and Switzerland have been included. The report by Gran and Vislie (2018) looks at how public infrastructure can be financed in real estate development areas.

2.3.1 Great Britain - Community Infrastructure Levy

A development fee, Community Infrastructure Levy (CIL) was introduced in Great Britain as a result of a change of The Planning Act in 2008. CIL allows municipalities to levy a development fee when existing

2.3 Other countries' practice

buildings are expanded or when new buildings are erected. The fee is calculated from a cost per new-built GIA that is set by the local government in co-operation with affected actors, while the costs that the fee is intended to cover must be documented. This allows less attractive municipalities to make themselves more attractive for real estate development, by setting a low cost per GIA. The revenue from CIL shall be used for social- or technical infrastructure that improves the development area or prepares an area for development. The Planning Act also allows the fee to be levied by land cession instead of monetary payments. The intention of the levy is partly to avoid the increased use of development agreements, that has taken somewhat overhand in Great Britain, as it has in Norway. The administrative costs for CIL have turned out to be relatively low for the local governments, while they have turned out to be higher for the real estate developers due to a complex set of rules and uncertainties connected to the combination of CIL and development agreements. The challenges may be looked upon as start-up difficulties as the levy is introduced fairly recently and amendments to the rules occur regularly. These amendments also contribute to an increased level of uncertainty for the developers. Smaller municipalities are however reluctant from implementing CIL, as they are afraid of reducing their real estate development.

2.3.2 Switzerland - Re-zoning fee

Since 2014 all Swiss cantons are obligated to levy a fee that tax profits as a result of re-zonings, meaning plan made profits. The cantons' possibility for levying such a fee has existed since 1980, but only five of 26 cantons have made use of the instrument. The basis for the fee is that all real estate that is made buildable shall be taxed and the value increment as a result of increased utilization degree shall be captured if the canton desires. The fee shall levy at least 20 % of the developer's advantages made by the re-zoning, while the cantons are free to choose a higher percentage. Revenues from the re-zoning fee is to be spent on assuring achieved plan goals, for instance from local plans and municipal plans. Such a goal could also involve paying other land owners for expropriation. The intention is to fund changes within development areas and preserve green areas and farmed land. The revenues are for instance used for funding infrastructure measures in Bern, while they may also be used for equalizing the social differences in the different areas across a city. In addition to this instrument, several private-law agreements are practiced in Switzerland.

2.3.3 Denmark - Re-zoning fee

From 1969 to 2004 an instrument for levying re-zoning fees existed in Denmark. During this period, large farm land areas were transformed and re-zoned to urban areas with new purposes, which is why the re-zoning fee was introduced. An estimation of a property's value was done prior to and after the re-zoning. The difference between the prior and new value was multiplied by 1.5 and was taxed with 40 %

up to the first 200,000 DKK and 60 % for the exceeding. As the transformation from farm land to urban areas decreased and as a simplification of the tax system was needed, the re-zoning fee was phased out in 2004. Another argument for the out-phasing, was that the taxing of the plan made values simply was postponed until the developed property was sold, as the values then would be taxed by regular profit taxation.

2.3.4 Germany - Project planning

The German strategy "Project planning" is a more holistic approach for obtaining private infrastructure contributions than the other countries' explained in this section. First, a developer must initiate a project based zoning plan in cooperation with the municipalities, which includes agreeing upon a project development plan and an infrastructure plan. The developer is thereby saying what measures it is willing to perform or contribute to, as well as it is committing to a time plan that it may design itself. This may include planning and organization of a whole or parts of a development area and erection of the appurtenant infrastructure. An interesting aspect is that the municipality is not obliged to review a developer's request for project planning, but chooses what projects to review. The project planning model increases the efficiency of regular plan processes, as it allows the development agreement, zoning plan and building application to be reviewed holistically and simultaneously. Another efficiency-increasing aspect is that the municipality does not have to spend time and resources on reviewing cases that it does not find appropriate or in its time.

Method

3.1 Literature review

Large parts of the theory in this thesis have been found through a literature review executed in advance.

The literature covered in this review has mainly been found using the scientific search engines Google Scholar and Oria. Google Scholar is Google's own search engine for scientific articles. Oria is a Norwegian search engine for scientific articles covering articles in general and PHD- and Master's thesis', used by several universities in Norway.

As a start, five articles considered relevant were handed over by supervisor and professor Alenka Temeljotov-Salaj and they were all included in the literature review. After receiving a tip from Temljovtov-Salaj regarding key researchers within the field of LVC, a large part of the articles were found searching for Zhirong "Jerry" Zhao in Google Scholar and then retrieve articles written by him, from his profile in the search engine. After reviewing his articles, searches involving specific words and combinations of words in the mentioned search engines were performed in order to obtain relevant articles. The evaluation of the articles' relevance was based on the research questions stated in the introduction. If they could contribute with information that could help answer any of the questions, they were considered relevant. The selection of word combinations was first started out with "Land Value Capture", to get a glimpse of what the most general search within the topic could give. After receiving a large amount of results, the words "calculation" and "impact" were added to the search words. The words used in the search engines are presented in Table 3.1, including their relevant results. The table is organized so that (1) "Engine" represents the search engine used for the search, (2) "Search word" describes what combination is used to perform the search, (3) "Hits" tells how many results the search gave, (4) "Title + kw" says how many of the hits that were reviewed had titles and key words relevant to this review, (5) "Abstract" represents how many of the abstracts fits this review's mandate and (6) "Article" describes the amount of general article content is relevant to this review.

The second method for obtaining relevant articles, was to use "forward snowballing". Two articles were found using the technique, meaning to search for articles which have cited a selected article you have already read and stamped as a good and relevant source. The second instance of forward snowballing was actually performed on an article that was already forward snowballed. The third method used was "backward snowballing". One article was found using this technique, meaning to search the bibliography of a selected article for other relevant articles. While going through existing

Table 3.1: Search results

Engine	Search words	Hits	Title + kw	Abstract	Article
Google Scholar	Zhirong Jerry Zhao	66	7	5	5
Oria	Land Value Capture	338,858	5	1	1
Oria	Land Value Capture Calculation	72,000	4	1	1
Oria	Land Value Capture Impact	235,000	6	1	1

bibliographies, the criteria for further consideration of the articles are limited to their title and year of publishing. If the two criteria were fulfilled, the articles were looked up and considered. The reason for applying forward snowballing instead of backward snowballing first, is due to the criterion that newer articles have higher relevance than older, and forward snowballing results in newer articles than the actually "snowballed" article itself.

In addition to this, two relevant master theses were found from the Norwegian University of Life Sciences, by using the regular search engine by Google, searching for "Jordskifterett" and "Sams tiltak". These are Norwegian expressions that are translated in Table 1.

By using all of the mentioned methods, a total of 18 relevant articles were found and 14 of them have been cited in this master's thesis.

3.2 Document study

A method that has been used extensively, is the document study, which has similarities to the literature study, but is mainly based on studying documents produced for non-scientific purposes (Dalland, 2012). They will in other words not be considered as theory, but empirical sources of information. This information can be used as information for shaping a theory or hypothesis, based on possible patterns that are found. In order to obtain relevant documents, Google Search has been used, as well as snl.no (The Norwegian Encyclopedia) and Trondheim Municipality's Google-made website for the local local plan for Sluppen, "Kommunedelplan for Sluppen". Documents providing information for the case study in Oslo are mostly retrieved by using Vedal's internal server, but also from Google Search, Einnsyn and Oslo Municipality's online case insight system. Einnsyn is a joint publication service for government agencies and the City of Oslo. Several documents and reports, for instance regarding other countries practice, are results of tips from people with insight on the topic.

The documents retrieved from Google and the Google-made website have first been selected based on their titles. The second step was to read the abstract, overview and the documents intention or similar, to verify that the document could contain any useful information. Several of the documents were read through, while others were subject for specific word searches within the documents. Only documents

3.3 Obtaining property information

from public authorities or known magazines or newspapers were considered trustworthy. Search words used to obtain the documents were inter alia "refusjon", "jordskifterett", "jordskifte", "sams tiltak", "urbant jordskifte", "jordskifteloven".

Snl.no was mainly used for theory regarding Norwegian legislation. All of the articles are verified by the encyclopedia it self, as it is a closed-source encyclopedia. In order to obtain relevant information, the same search words that were used in Google were used at snl.no.

Einnsyn and Oslo Municipality's online case insight system have typically been used by searching for relevant lot identification and thereafter scrolling through the results looking for relevant information. This is described further in Section 3.5.

3.3 Obtaining property information

The first step for obtaining information regarding the properties at Sluppen, was to find the borders of the area that will be covered by the coming local plan. This was found in documents obtained from Trondheim Municipality during the document study.

Further on, 1881.no's database for real estate transactions was used to obtain relevant transactions and make overs for properties in the area. The information retrieved from the database is formatted in the following way: "Address (national grid number/property number) is sold for xxxxx NOK by Y to Z (dd.mm.yyyy)". The seller (Y) and buyer (Z) are often single purpose companies and it was thus considered necessary to find information providing what people were associated with the companies. In order to obtain such information the websites of The Brønnøysund Register Centre and Proff.no "The Business Finder" were used, as they contain public information of business and organizations data. It was also considered important to recognize the owners of the single purpose companies, in order to map the connections between properties and transactions. For measuring the area of the properties and retrieve satellite pictures, Trondheim Municipality's map service along with the Norwegian Mapping Authority's online mapservice, seeiendom.no, were used.

3.4 Land value assessment

This thesis' land value assessments are based on the yield method and is residual based. It means that the market value of real estate is based on the expected rental income minus the total cost of ownership (TCO), divided by a desired yield, as shown in Equation 3.1. In order to calculate the land value, meaning the residual; the development costs are subtracted from the real estate's market value, as shown in 3.2. These costs does for instance include building costs, financial costs, desired rate of return, uncertainty costs and financial costs. The residual is then what is left of assets in order to reach the desired rate of

return. This is considered as the projects maximum price for the lot subject for development and the method applies for commercial properties that can be rented out. The residual method is however also applicable for residential projects, but the yield calculation is then swapped with the expected sales price of the residential properties (Leikvam and Olsson, 2014).

$$\frac{\text{Rental income} - \text{TCO}}{\text{Yield}} = \text{Market value} \quad (3.1)$$

$$\text{Market value} - \text{Development costs} = \text{Residual land value} \quad (3.2)$$

When purchasing a lot, it involves buying a whole property, including potential buildings, meaning that the real estate value considered before re-zoning is the whole property value. However, in order to assess a re-zoning's impact on the real estate value, it is necessary to consider the allowed residual land value as a result of the business concept the new zoning plan allows to implement. The case study thus compares the prior property value with the the land value after the re-zoning has taken place.

The assessments in this thesis are done in co-operation with a large real estate broker in Trondheim within commercial real estate, seen in a Norwegian perspective. The assumptions in the case study's calculations have also been given by the same real estate broker.

3.5 Obtaining development agreements

The case study of private infrastructure systems in Oslo mainly concerns studying actual development agreements and appurtenant data. As mentioned, most of the data have been retrieved from Vedal's internal servers, while data available to the public is mostly retrieved from Einnsyn and Oslo Municipality's online case insight system. A significant amount of the information used is also obtained from professionals at Vedal and later confirmed by using the mentioned sources of information, as well as documents obtained by searching for relevant key words in Google Search.

For most of the projects, the development agreements, prevailing zoning plans, local plans and VPOR have been retrieved and analyzed for relevant information. The zoning and local plans have mainly been used to find potential development conditions that have been prevailing where a development agreement was made. The selection process of the cases is described in Section 5.

The development agreements in Oslo Municipality does in general include two different values; a total cost and a cash contribution cost. The estimated cost for self performed measures is thus calculated by subtracting the cash contribution cost from the total cost. The costs in the agreements are given per square meter, but the development agreements are often negotiated before the final GIA is set. It has therefore been tried to find the planned GIA at the time of negotiation and multiply it with the development agreement cost and thereby find the total agreement cost. Other information that is

3.5 Obtaining development agreements

extracted from the agreements is what measures the contributions are supposed to cover, which is relevant for discussing the measures' necessity. For the cases where development agreements exist, the whole agreement has been analyzed for potential items subject for discussion.

As a measure to structure the relevant data, a case template was made, based on inspiration from "Statistikk om infrastrukturbidrag" by Rimberg et al. (2017) and "Public Private Partnerships in Transport: Trends & Theory" by P3T3 EU COST TU1001 (2014). The template may be found in Appendices as Attachment 1. During the making of the template, several factors were considered relevant, but turned out to be unreasonably hard to find or to put in system. Some of these were therefore not included in the case study. Multiple factors were not relevant for some of the projects; for instance development agreement info for projects that did not contain any development agreements. Such items have therefore not been included for all cases. This is described further in the case study in Chapter 5.

However; the reason for the different parameters' inclusion should be explained. The first parameters as "Project title", "Address", "Location (urbanity)", "Brief project description", "Stakeholders" and "Users" are mainly included for organizing the projects and making sure the reader understands what type of project is being discussed. "Project initiated", "Erection initiated" and "Project finished" are included to be able to put the projects in a time line and thereby see how the studied practice has changed. "Budget" and "Project cost" are used to understand how comprehensive the project is and for size comparison of the infrastructure contribution.

Regarding the contribution info; The contributions are divided in three different categories, "Project internal", "Project related" and "Area related". This is to be able to differentiate how strong connection the measures have to the actual project. The "Reason for contributions" is to understand how the measures in the development agreements may be considered necessary according to the prevailing legislation. The "Cash" and "Self" cost points are present to show how large contributions the different projects are levied and to differentiate the size of cash contributions and self performed measures. The "Location within municipality" is included to try to find any difference between the contributions required in the different types of districts of the city. "Existing plans" are studied to figure out what prevailing plans are determining the required infrastructure contributions. "Remaining (%) of public funding for the actual contributions" is intended to map if there is any connection between what measures the municipality actually fund and what measures they require funding for. The categories "Year of calculating contributions" and "Year of contribution agreements" are included in addition to the other time based parameters in order to place the agreements on a time line and see potential trends. The "Cost for purchasing land related to contributions" and "Land value transferred land to municipalities" are used to argument for the non-mentioned land cession in the agreements. "Other

contribution related costs” are included in case any other noteworthy costs are discovered, that would not be included in an agreement. ”Compare P50 with final costs” is interesting because a comparison of the estimated contribution costs in the agreements and the actual costs after completion is relevant when considering an agreement’s trustworthiness.

3.6 Professional input

During the work with the thesis, several professionals have been contacted for input and suggestions, while several people have been consulted in more random situations. The two supervisors at NTNU, Alenka Temeljotov-Salaj and Svein Bjørberg have continuously been consulted by meetings face-to-face and by e-mail. They have mostly been contacted separately, but meetings with both present have also occurred. The three supervisors at Vedal have also continuously been consulted by meetings face-to-face and by e-mail, giving a lot of non-academical input, but rather information based on empirical data and experiences, giving the thesis a connection to ongoing real-life cases.

During the works, a workshop with supervisors from NTNU and Vedal was arranged, in order to get input and opinions from both an academic and a business perspective together. This has given several items that has been looked further into and used as background information, as well as points for discussion.

Lastly, appointments with a lawyer within the topic and a representative from the Ministry of Local Government and Modernisation have been made. These professionals have provided input on what has been suggested and understood during the works of this thesis and corrected possible misunderstandings.

Case study: A re-zoning's effect on real estate market value

Several of the LVC-strategies are connected with decisions made by public authorities, where public plan work is of high importance. Some of the strategies capture plan-made values, a value that for instance is created by a changed zoning plan or local plan. It is therefore considered interesting to look further into how plan-made values are created and what factors influence them. This is a step to gather arguments and knowledge to answer RQ2 and RQ3. There is also a clear connection between development agreements and re-zoning, as development agreements in Oslo only are entered after a re-zoning is performed. If the re-zoning does not create any value, the development agreement will often not be sustainable for the developer. This case study does in other words look into how real estate market prices are affected by a re-zoning.

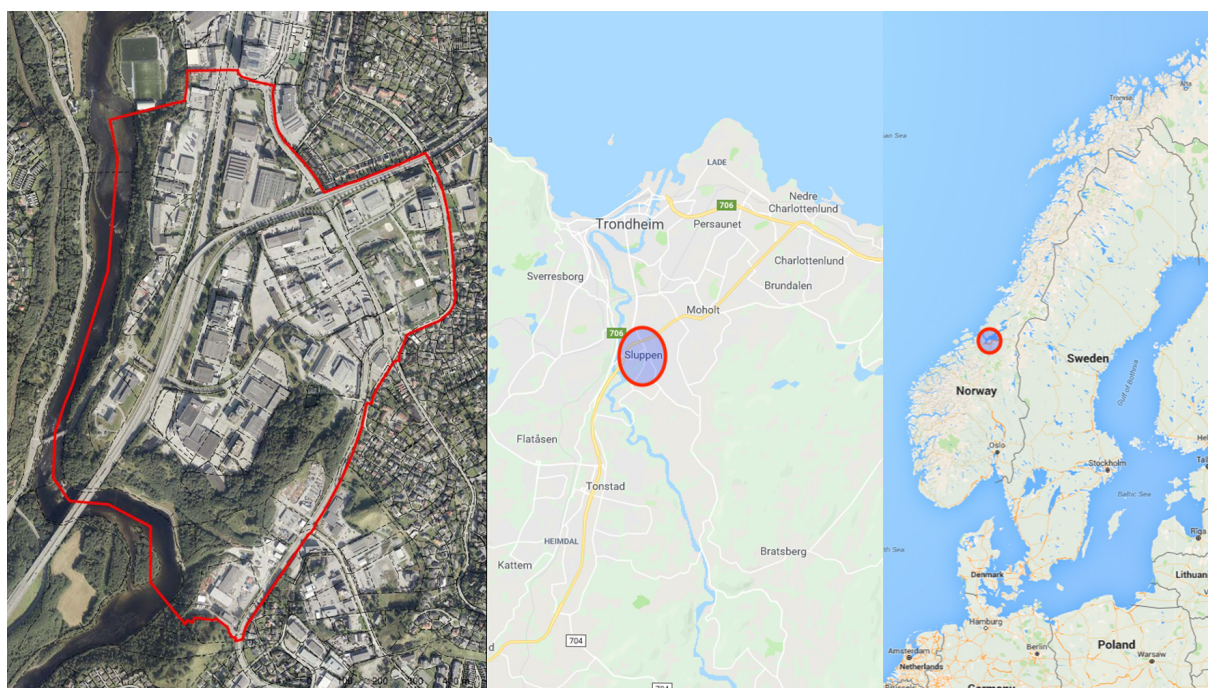


Figure 4.1: Sluppen, Norway. Maps retrieved from Trondheim Municipality and Google Maps.

The area subject for study is Sluppen, located at the southern borders of Trondheim city in Norway, shown on a map in Figure 4.1. The red line in all three maps draws the border of the area. The area is chosen because it is known that the area is facing a large transformation, meaning that the local municipalities are currently planning a re-zoning of the area and several investors have been working to

facilitate a development of the area the last years. Sluppen, together with its neighbouring areas, Valøya and Tempe have been considered to be in need of development. Today, the areas contain properties used for bus parking, car garages, unattended storehouses, offices and abandoned buildings. These properties are highly area consuming and have a low degree of area utilization. All three areas are lacking a superior structure for recreation, green areas, social meeting points and accessibility for pedestrians and cyclists.

Due to the situation described, a local plan covering all three areas together was made in 2014 by Trondheim Municipality, with the mandate of transforming the area into an extension of Trondheim city. During these works, it was decided that the areas should contain private housing, student housing, commercial properties including commerce, offices and public services, as well as recreational services (Trondheim Kommune, 2014). The development of the neighbouring areas, Tempe and Valøya, has already resulted in a large, new office building and the construction of a larger block of flats. Sluppen is however still awaiting new zoning plans, which is the reason why it is chosen as the subject for this case study. An air photo of the Sluppen-area can be seen in Figure 4.2, which situated below the red line in the picture.



Figure 4.2: Sluppen, Norway. Photo by Trondheim Municipality

4.1 Progress

Trondheim Municipality carried out a new municipal plan in 2012, where the land-use part stated that Sluppen should be developed as a central part of the city with large green and wet areas. So far, a

4.2 Local Plan Program

feasibility study of the area was performed by "Forum Sluppen" and was published in December 2017. Forum Sluppen is a cooperation between Trondheim Municipality, Trøndelag County, The Norwegian Public Roads Administration and a large real estate investor, R. Kjeldsberg AS (Forum Sluppen, 2017). The study presents four main concepts for how Sluppen can be developed from now until 2050 and it serves as inspiration for the zoning plan program that was sent out for public inquiry during the summer of 2018. In the end of October, 2018, the motion for the local plan program was carried out, meaning that the objective of the zoning works and process, as well as the level of external stake holder influence was affirmed (Bygningsrådet, 2018).

The planned progress is to establish a selection of principles for the transport communications of the area by February 2019. This is important because two of the major roads in Trondheim are intersecting Sluppen and it is also planned to improve the public transport systems greatly in the area. The proposal for the local plan will be sent for inquiry in June 2019, possibly containing two different alternatives. After the public hearing, the local plan is likely to be affirmed during November and December 2019 (Byplankontoret, 2018). It is critical that the local plan is finished by 01.01.2020, as this is the deadline for submitting suggestions for contents to the National Plan of Transportation (NTP), which works as the basis for Norway's national distribution of transportation financing.

4.2 Local Plan Program

As mentioned, the local plan program for Sluppen was affirmed by the building council of Trondheim Municipality in October 2018. As this case study is focusing on how a re-zoning impacts real estate values within the zoning area, it is relevant to consider what improvements the new zoning plan is likely to entail. So far, the zoning plan program states the following focus areas (Byplankontoret, 2018):

- New main road system
- "Omkjøringsveien" (E6) will be laid in a tunnel
- Sluppen will be established as an expansion of Trondheim city centre with appurtenant district functions
- New public transport hub
- Metro-bus
- Higher degree of area utilization (such as high risers)
- Prepare for future construction of residential areas
- Prepare for future construction of a light rail system

4.3 Current real estate situation at Sluppen

In order to perform a study of the changing real estate values at Sluppen, it is necessary to make an overview of the relevant properties within the area. The method for the mapping is described in Chapter 3. The work resulted in map with an appurtenant legend, showing who the owners of the properties are, as well as the last recorded transaction for each property. The map is to be found in Figure 4.3.

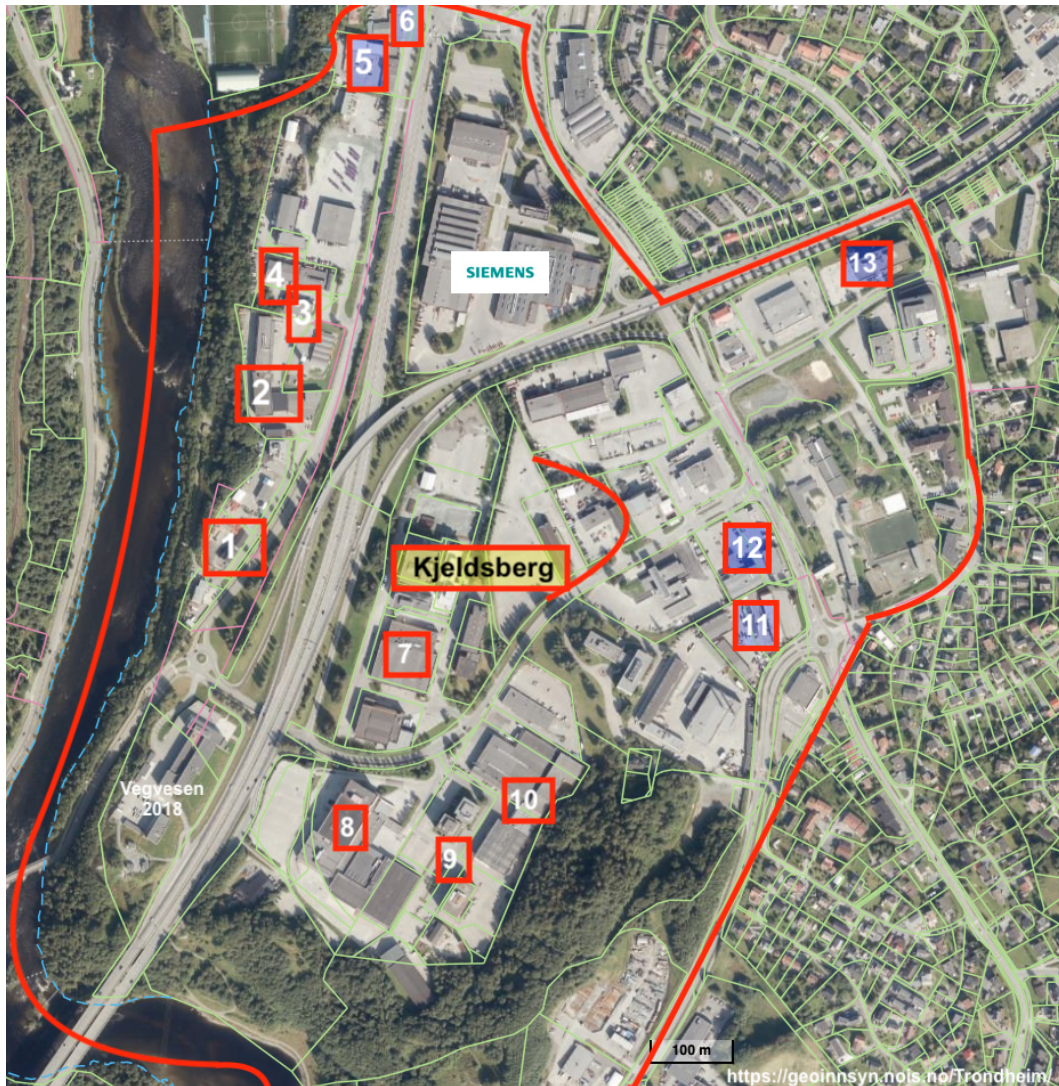


Figure 4.3: Property overview, Sluppen. Map by Trondheim Municipality

All the relevant details that are found for the properties marked in Figure 4.3 are listed in Table 4.1. In addition to the table, the Siemens property in the upper half of the map may be noted. The number (#) in the table refers to the numbers marking the properties in Fig 4.3. The address field presents the street address as well as the lot's national grid number (ngn) and property number (pn), written (ngn/pn). "Owner" represents who the owner of the property is today and "Transaction info" provides details of the latest transaction of the property, if found. The "Previous owner" column describes who the property was

4.4 Real estate value assessment

acquired from and the "Area" describes the size of the lot, as well as price per square meter if available. The reason why some of the fields are marked as "Not available (N/A)" is that they are either not found, or the address exists of several smaller lots combined into a larger one. If a large area is split into too many lots, the analysis of the property will be considered too complicated if no inside information regarding the relations between them is known.

Table 4.1: Property details, Sluppen

#	Address (ngn/pn)	Owner	Transaction info	Previous owner	Area
1	Tempevegen 41 og 43	B.N. Eiendom	N/A	Lastebilcentralen	N/A
2	Tempevegen 35 (73/89)	Angel Næringsbygg v/Koteng	22 MNOK, 10.10.2000	Knut Hegvold	10,391 m2 2,117 NOK/m2
3	Tempevegen 33 (73/82)	Angel Næringsbygg v/ Koteng	4.5 MNOK, 10.10.2000	Knut Hegvold	2,527 m2 1,780 NOK/m2
4	Tempevegen 31 (73/112)	Helland A Transport AS	5 MNOK, 10.10.2002	Kreftforeningen	3,162 m2 1,589 NOK/m2
5	Tempevegen 23 (73/16)	Tempeveien 23 AS	23.8 MNOK, 24.06.2014	Arne Stokke	4,966 m2 4,792 NOK/m2
6	Tempevegen 21 (65/20)	Laguna Fabrikker AS	5 MNOK, 05.09.2016	Nidarbø AS	4,244 m2 1,179 NOK/m2
7	Kjeldsberg area	R. Kjeldsberg AS Veidekke owns 50% of Lyssgården		N/A	N/A
8	Sluppenvegen 14 (73/115)	Sluppenvegen 14 AS v/ Jan Gunnar Heglund	N/A, 07.04.2014	Posten Norge AS	17,950 m2
9	Sluppenvegen 12	KLP	N/A	N/A	N/A
10	Sluppenvegen 8 og 10	R. Kjeldsberg AS	N/A	N/A	N/A
11	Bratsbergvegen 25 (73/83)	Knut Frodal	N/A	N/A	4,618 m2
12	Sluppenvegen 2 (73/87)	G H Gården AS v/ Gunnar Heglund	18.5 MNOK, 30.04.2012	Gunnar Heglund	4,586 m2 4,034 NOK/m2
13	Klæbuveien 194 (73/101)	Klæbuveien 194 AS v/ Koteng	N/A, 27.06.2008	Gjensidige Nor	9,303 m2

4.4 Real estate value assessment

Moving on to the actual case, a selection of properties have been selected for further research of their market values. Four lots have been chosen, each with unique characteristics, as a measure for understanding how different types of real estate are affected by re-zoning processes. An overview of the chosen lots may be seen in Figure 4.4. The lots are marked with their national grid number (ngn) and property number (pn) in the syntax (ngn/pn). The background map is retrieved from the feasibility study of Sluppen, and makes an example of how "Omkjøringsveien" (E6) can be laid in a tunnel, making space for a new main road system at Sluppen.

4.4.1 Property A: Lyssgården, Sluppenvegen 19 (73/255)

This property was made over from Kjeldsberg to Sluppenvegen 19 AS at 26.05.2015. Sluppenvegen 19 AS is owned 50/50 by R. Kjeldsberg AS and Veidekke Eiendom, where the last mentioned is a contractor who is going to use the property as their head quarters in this region. They are also the contractor for

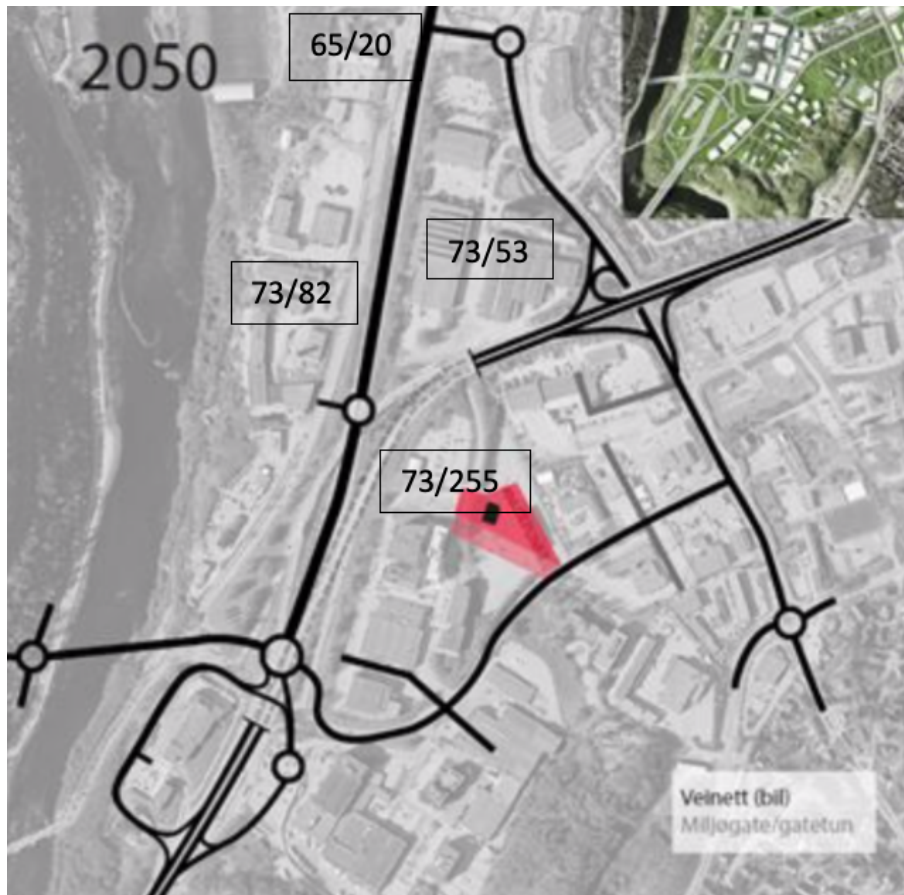


Figure 4.4: Overview of the lots subject for study. Map by Trondheim Municipality.

the building process that is currently going on. The property lies within a separate zoning plan that was developed for this lot, along with four other lots that are located on a line further south of it. The other properties are also owned by R. Kjeldsberg AS and they have all been part of a common development in the area. Before this development started, the property was empty and could have been characterized as a lot that would typically have a potential for industry development. According to the real estate broker consulted, these lots often contain warehouses or production facilities, have a utilization degree of 50 - 70 % and have a rental income of 1,500 - 2,500 NOK/ m^2 . The area of the lot is 3,433 m^2 , while the gross internal area (GIA) is planned to be 12,000 m^2 pursuant to the project plans. According to proff.no, Sluppenvegen 19 AS' value of property and real estate was set to 14.12 MNOK prior to construction start in 2016, meaning the lot's value was probably assessed to this amount prior to the new zoning plan. Divided by the size of the lot, it results in a price per m^2 of 4,113 NOK, which is fairly similar to what can be seen from the latest transactions in Table 4.1. A land value of 14.12 MNOK is therefore considered to be prevailing before the re-zoning of the property in 2011. The lot's location is shown in a sketch-up from Trondheim Municipality's feasibility study in Figure 4.5.

This exact property is interesting to analyze, because it was re-zoned as early as 2011 and can therefore make an actual example of how the land value changes with a re-zoning.

4.4 Real estate value assessment



Figure 4.5: Location of Lysgården in an animation from Trondheim Municipality's feasibility study for Sluppen.

The new zoning plan allows what is being built today, meaning a GIA of $12,000 m^2$, while the expected net rental income per m^2 is set to 1,750 NOK. The building costs are expected to be 23,000 NOK/ m^2 and the uncertainty of this cost is set to 5 %. The developers desired return of investment is set fairly high, at 15 % and the financial costs are set to 9 %. All these figures are provided by the real estate broker consulted and should be considered as round numbers, but are not far from the actual figures, as they have facilitated the broking of the property. Equation 4.1 shows that the residual land value is estimated to be 54 MNOK. This is according to the broker not far from the actual value that was settled for the transaction. The value equals a price per m^2 of 15,730 NOK.

When considering 14.12 MNOK as the property's land value before the re-zoning and 54 MNOK as the property's value after re-zoning, it represents a value increment of 382 %. As mentioned, the typical utilization degree before re-zoning could have been between 50 - 70 %, which is fairly high compared to neighbouring properties with the same characteristics. For simplification purposes, this degree is set to 60 %. According to the current zoning plan, the utilization degree is now exploited fully, meaning that it is currently approximately $12,000m^2/3,433m^2 = 350\%$ (Byplankontoret, 2011). This implies an increment of the utilization degree of $350\% - 60\% = 290\%$. The ratio between the land value and utilization degree increment is thus 1.32. A summary of the assessment's key figures are found in Table 4.2.

$$\begin{aligned}
\text{Expected revenue} & 12,000m^2 \times 1,750MNOK/m^2 = 21MNOK \\
\text{Property value} & \frac{21MNOK}{5\%} = 420MNOK \\
\text{Building costs (BC)} & 23,000NOK/m^2 \times 12,000m^2 = 278MNOK \\
\text{Uncertainty BC} & 278MNOK \times 5\% = 14MNOK \\
\text{Financial costs} & 292MNOK \times 9\% = 26MNOK \\
\text{Return of investment} & 318MNOK \times 15\% = 48MNOK \\
\text{Residual land value} & 420MNOK - 366MNOK = 54MNOK
\end{aligned} \tag{4.1}$$

Table 4.2: Summary figures, Property A

Post	Value
Property value before re-zoning	14.12 MNOK
Land value after re-zoning	54 MNOK
Value increment	382 %
Utilization degree before re-zoning	60 %
Utilization degree after re-zoning	350 %
Utilization degree increment	290 %
Ratio value/utilization increment	1.32

4.4.2 Property B: Tempevegen 21 (65/20)

The property was sold for 5 MNOK by Nidarbø AS to Laguna Fabrikker AS at the 05.09.2016. The area of the lot is $4,244 m^2$, resulting in a price per m^2 of 1,179 NOK. As it can be seen in Figure 4.6, the lot holds an old factory building that seems to be abandoned today. According to Trondheim Municipality's register, the property is currently used for transport and storage services. In addition to the old factory building, the lot also contains a residential house at the backside of the factory.

This property is of interest because it may indicate how a re-zoning process affects the real estate value of a property that will have a completely different potential before and after re-zoning. As the property is abandoned today and may be used to develop new housing or offices in a potentially attractive area after the re-zoning, there is a large probability for a value increment. The property is also of interest because of the latest transaction, that holds an unusually low property cost. It is therefore assumed that a private deal was agreed upon in addition to the public available transaction data.

This property has not been zoned since 1973 and is therefore a subject that will need re-zoning in order to be developed. The yield method is used to assess today's value. By measuring the buildings' dimensions in Trondheim Municipality's map service, the factory building's GIA is set to $1.235 m^2$ and

4.4 Real estate value assessment



Figure 4.6: Tempevegen 21 today. Photo by Google Streetview

the residential house at the back of the lot is set to 758 m^2 . This results in a utilization degree of 47 %. Even though the factory building is abandoned today, it is estimated to have a potential of yielding 500 NOK/m^2 (Revenue 1) and the residential house at the back is estimated to have a revenue of $2,000 \text{ NOK/m}^2$ (Revenue 2), as it is inhabited today. The maintenance and operations cost are set to 15 % of the revenue, as the buildings are old and the required yield is of the same reason set to 7.5 %. Based on these assumptions, Equation 4.2 assesses a present property value of 24.18 MNOK. This value is not representative of today's situation, as the factory is not rented out today, but shows the present potential value.

$$\begin{aligned}
 \text{Expected revenue (1)} & 1,235\text{m}^2 \times 500\text{NOK/m}^2 = 617,500\text{NOK} \\
 \text{Expected revenue (2)} & 758\text{m}^2 \times 2,000\text{NOK/m}^2 = 1,516,000\text{NOK} \\
 \text{Expected costs} & 2,133,500\text{NOK} \times 15\% = 320,025\text{NOK} \\
 \text{Property value} & \frac{2,133,500\text{NOK} - 320,025\text{NOK}}{7.5\%} = 24.18\text{MNOK}
 \end{aligned}
 \tag{4.2}$$

This property is assumed to be zoned for similar purposes as Property A and a utilization degree of 350 % is also for this lot considered realistic, which results in a GIA of $4,244\text{m}^2 \times 350\% = 14,854\text{m}^2$. For simplification purposes, this value assessment will be based on a commercial use of the property. The other parameters for calculating the future land value of the property will be similar to Property A.

$$\begin{aligned}
\text{Expected revenue} & 14,854m^2 \times 1,750MNOK/m^2 = 26MNOK \\
\text{Property value} & \frac{26MNOK}{5\%} = 520MNOK \\
\text{Building costs (BC)} & 23,000NOK/m^2 \times 14,854m^2 = 341MNOK \\
\text{Uncertainty BC} & 341MNOK \times 5\% = 17MNOK \\
\text{Financial costs} & 358MNOK \times 9\% = 32MNOK \\
\text{Return of investment} & 380MNOK \times 15\% = 57MNOK \\
\text{Residual land value} & 520MNOK - 447MNOK = 73MNOK
\end{aligned} \tag{4.3}$$

The residual land value is according to Equation 4.3 73 MNOK and implies a land value per m^2 of 17,200 NOK. The increment of the utilization degree is $350\% - 47\% = 303\%$, while the land value is increased by 302 %. The ratio between the land value and utilization degree increment is thus 1.00. A summary of the assessment's key figures are found in Table 4.3.

Table 4.3: Summary figures, Property B

Post	Value
Property value before re-zoning	24.18 MNOK
Land value after re-zoning	73 MNOK
Value increment	302 %
Utilization degree before re-zoning	47 %
Utilization degree after re-zoning	350 %
Utilization degree increment	303 %
Ratio value/utilization increment	1.00

4.4.3 Property C: Tempevegen 33 (73/82)

The property was sold for 4.5 MNOK by Tromi Bryggeri (owned by Knut Hegvold) to Angel Næringsbygg (owned by Ivar Koteng) at 10.10.2000. The area of the lot is $2,527 m^2$, resulting in a price per m^2 of 1,780 NOK. The lot contains an office building that can be seen in Figure 4.7 with a measured footprint of $530 m^2$. Multiplied with 2.5 floors, as the building is expected to entail a mix of offices and storage facilities, the GIA measures $1,325 m^2$ and is rented out today.

The property is interesting because approximately only half of the lot's area is utilized, meaning there is a large potential for increasing the degree of utilization. This estate can be considered typical for the area, containing an old office building and is thus interesting because it may be a measure of how the general real estate value will change after the re-zoning.

Today's utilization degree of the lot is $1,325m^2/2,527m^2 = 52\%$. According to the consulted real

4.4 Real estate value assessment



Figure 4.7: Tempevegen 33 today. Photo from www.koteng.no

estate broker, an expected present rental income is set to $750 \text{ NOK}/m^2$, as the building is fairly old and probably entails both offices and storage facilities. Because of the age, the maintenance and operations costs' are set to 15 % and the desired yield to 7.5 %. The present property value is thus assessed to 11.26 MNOK in Equation 4.4.

$$\begin{aligned} \text{Expected revenue} & 1,325m^2 \times 750\text{NOK}/m^2 = 993,750\text{NOK} \\ \text{Expected costs} & 993,750\text{NOK} \times 15\% = 149,062\text{NOK} \\ \text{Property value} & \frac{993,750\text{NOK} - 149,062\text{NOK}}{7.5\%} = 11.26\text{MNOK} \end{aligned} \quad (4.4)$$

This property is assumed to be zoned for similar purposes as Property A and B and a utilization degree of 350 % is considered realistic, which results in a GIA of $2,527m^2 \times 350\% = 8,845m^2$. For simplification purposes, this value assessment will also be based on a commercial use of the property. The other parameters for calculating the future land value of this property will be similar to Property A and B.

$$\begin{aligned}
\text{Expected revenue} & 8,845m^2 \times 1,750MNOK/m^2 = 15.5MNOK \\
\text{Property value} & \frac{15.5MNOK}{5\%} = 310MNOK \\
\text{Building costs (BC)} & 23,000NOK/m^2 \times 8,845m^2 = 203MNOK \\
\text{Uncertainty BC} & 203MNOK \times 5\% = 10MNOK \\
\text{Financial costs} & 213MNOK \times 9\% = 19MNOK \\
\text{Return of investment} & 232MNOK \times 15\% = 35MNOK \\
\text{Residual land value} & 310MNOK - 267MNOK = 43MNOK
\end{aligned} \tag{4.5}$$

The residual land value assessed in Equation 4.5 is 43 MNOK, implying a land value per m^2 of 17,016 NOK. The increment of the utilization degree is $350\% - 52\% = 298\%$, while the land value is increased by 382 %. The ratio between the land value and utilization degree increment is thus 1.28. A summary of the assessment's key figures are found in Table 4.4.

Table 4.4: Summary figures, Property C

Post	Value
Property value before re-zoning	11.26 MNOK
Land value after re-zoning	43 MNOK
Value increment	382 %
Utilization degree before re-zoning	52 %
Utilization degree after re-zoning	350 %
Utilization degree increment	298 %
Ratio value/utilization increment	1.28

4.4.4 Property D: Siemens, Bratsbergvegen 5 (73/53)

There have not been recorded any recent transactions for this property, as it has been owned by Siemens for as long as the real estate data at 1881.no goes back. The area of the property is measured to 60,856 m^2 , making it the largest privately owned lot in the area. The lot is today used for offices, production, R&D and parking and it has a unique value for Siemens, but does also have a lot potential for value increment. A satellite photo of the lot with its borders is shown in Figure 4.8.

This property is interesting because of its size and its location within Sluppen, which is Sluppen's closest lot to the city centre. Its use today is also interesting, as it is unsure how its assets may be utilized optimally after a re-zoning.

The value of this property is assumed to mainly be based on its inventories, as Siemens have invested large sums in the production and R&D facilities at the site. Due to a lack of knowledge regarding the

4.4 Real estate value assessment



Figure 4.8: The Siemens lot today. Satelite view by Trondheim Municipality

facilities’ area and revenues, the value assessment of this property is considered too complicated seen in the perspective of this thesis’ scope. The property is however included in the Case study, as it represents a unique real estate category that should be taken into consideration when assessing a re-zoning’s impact on real estate value.

Case study: Private infrastructure contributions in Oslo

This case study seeks to understand how Oslo municipality (OM), the capital of Norway, obtains and have obtained private contributions for funding public infrastructure. The intention is in other words to answer research question 1 (RQ1): "How have the public authorities gathered private contributions for financing public infrastructure over the last years?". The case study is necessary to understand today's practice in order to suggest an improved or different practice. As described in section 1.3, the case study is limited to Oslo municipality, as a larger study area would be too comprehensive. The same section also states that minimum one project has been chosen from the following categories:

- A fully completed project
- A project where the planning is completed and the building is in progress
- A project in the planning phase where the development agreement have been set
- A project in the planning phase where the develop agreement have not yet been set

By choosing projects with these specifications, it should be feasible to create an understanding of the current and former practice for obtaining private contributions. The last category is included as a project without an infrastructure contribution agreement, so that it may be suggested how such a contribution could be formed in this project. A single project would not be able to represent a holistic picture of today's practice for obtaining private contributions, which is the reason for choosing several projects. By choosing projects spread out along a longer period of time, it could be possible to see a trend of how the development agreements are developing. As this master's thesis is carried out in cooperation with the private company Vedal, all projects are selected from their current and former portfolio, in order to ease the access of information. The projects are spread out all over Oslo and no other criteria has been used for selection, except for the ones stated. That implies that the projects' proximity to relevant infrastructure developments have not been decisive in the selection process.

An overview of the chosen projects are presented on a map in Figure 5.1 and a list in Table 5.1. The initials in Table 5.1 are used as indicators in Figure 5.1. Further on, the project name, total budget, total contribution costs and the contribution costs' percentage of the project budget are found in the table.

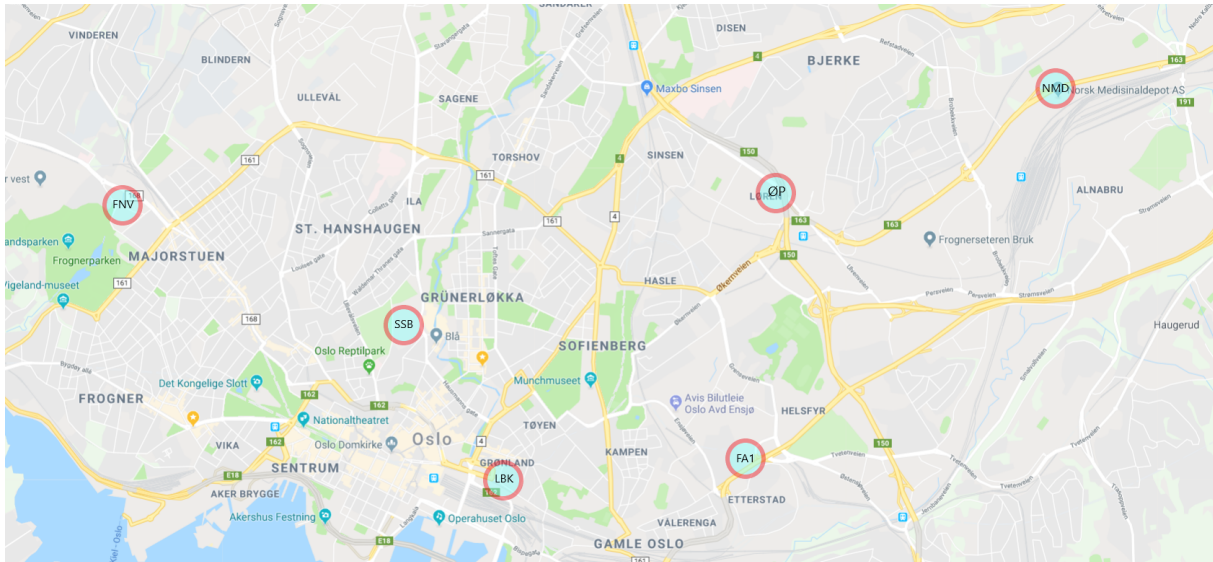


Figure 5.1: Map: Overview of projects

For simplification purposes, the term *agreement year* (AY) is introduced, which means the signing year for the cases' development agreement, and is also shown in the table. For the cases without such an agreement, a stipulated year is used instead. For NMD, where a self performed measure was based on a ruling in the zoning plan, the signing year of the zoning plan has been used, while the other projects' AY is based on erection initiation.

Table 5.1: Case overview

Initials	Project name	Project budget	Total contributions	% of budget	AY
NMD	Norsk Medisinaldepot	510,000,000	200,000	0.04	2010
SSB	Statistisk Sentralbyrå	265,000,000	0	0	2011
FNV	Fridtjof Nansens vei 16	250,000,000	0	0	2013
FA1	Fyrstikkalleen 1	1,000,000,000	47,600,000	4.8	2016
ØP	Økern Portal	1,500,000,000	73,600,000	4.9	2017
LBK	Landbrukskvartalet	N/A	N/A	N/A	-

According to a representative from the Ministry of Local Government and Modernisation, the intention of development agreements is not to allow the municipalities' to take part in the real estate developers' profit. The reason why the agreements were introduced, was to establish necessary, public infrastructure. The definition of *necessary*, is of high importance. According to the same source, that is because a necessity in development conditions are not automatically to be considered as a necessity in a development agreement. An example could be to preserve or rehabilitate a cultural monument in an area subject for development. It may be included as a development condition, but it may not be included as a necessity in a development agreement, as long as it is not a part of the infrastructure system to be used by stakeholders in the developed area. These issues were discussed openly during a conference in Oslo regarding development agreements in March, 2019.

Further on, this case study seeks to understand the current practice regarding development agreements in OM, so that relevant suggestions for a future practice can be made. It is therefore interesting to see how OM interprets necessary infrastructure in coherence with real estate development, by looking into the development agreements. The costs of the infrastructure measures have been mapped and also compared with the projects' total costs, which could be considered interesting in terms of fairness. A comparison of the estimated costs for the development agreements versus the actual costs has also been tried to establish, but has turned out to be rather difficult, as the contractors do not necessarily charge these separately.

5.1 Summary

Private infrastructure contributions were rare in Oslo municipality (OM) before the introduction of VPOR (Guiding plan for public spaces) in 2008 and 2015 for respectively the outer and inner city. After this introduction, the use of development agreements has increased and the practice has become somewhat controversial. Before the introduction, contributions would be based on development conditions in the zoning plans, which were based on necessities for the actual real estate development and were usually at a lower cost for the developer. Along with the increased use of the development agreements, the cost of the contributions required have also seemed to increase.

The study and theory has shown that the practice for adjustment agreements regarding VAT are highly deviating across the country. OM's latest practice is not according to prevailing legislation and will be discussed later in this thesis. Land cession seems to be a hidden cost in OM's development agreements, as the value of land to be ceded in accordance with the agreements is not mentioned in the agreements. The problem is typically relevant when considering self performed measures that are ceded to the municipality after completion. Another issue is that the technical requirements regarding self performed measures have also seemed to change from the signing time of the agreement to the time of hand-over. That is mainly assumed to be because of lacking internal communication between the responsible municipal agencies and a lack of human resources within the responsible agencies.

The cases are presented on a time line in Figure 5.2, where the projects are marked with their initials, total contribution cost, agreement year and whether a development agreement (DA) was signed or not. The time line may also be found in a larger format as Attachment 2 in Appendices.

5.2 General findings

During the case study, several employees at Vedal have been consulted regarding the cases. These consultations have uncovered a lot of information that is relevant to RQ1, that does not necessarily fit

5.2 General findings

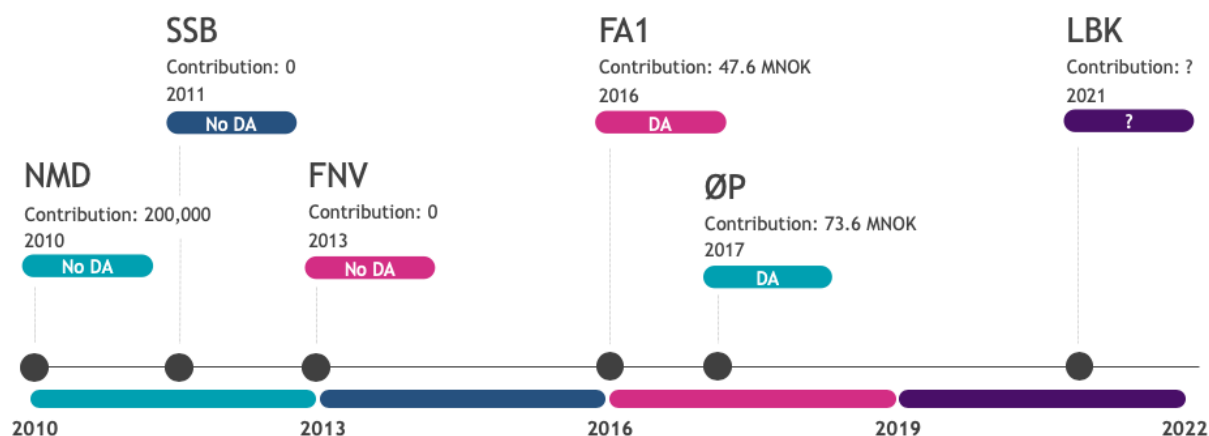


Figure 5.2: The cases shown on a time line

into one of the single projects studied. A section of general findings is therefore included in the case study. Due to privacy reasons, most of the following information is not cited, but is provided from Vedal's employees. Personal notes that are written during the case study does however contain information regarding the sources, but will not be published. The information that is cited in this chapter, is however not necessarily obtained from Vedal.

There seems to be a change regarding zoning plans and development agreements for the inner city around 2015 and the outer city around 2008. This seems to be related to the introduction of "Guiding plan for public spaces" (VPOR), freely translated from "Veiledende plan for det offentlige rom", which is described in detail in section 5.2.1. VPOR was introduced respectively in 2008 and 2015 for the outer and inner city, which is a considerable reason for the mentioned change. The reason behind the statement, is that Oslo municipality (OM) base their development agreements on prevailing zoning plans and VPOR (Eiendoms- og byfornyelsesetaten, 2018). Prior to this change, most development agreements were based on development conditions stated in the zoning plans and had direct relevance to development projects. An example of this statement would typically be a condition of establishing foot paths around a development project. After the change, measures that are not project relevant have been introduced, for instance establishment of a park or an activity arena within the district where the development takes place.

For a developer, the current practice seems to be that a development agreement in the inner and outer city respectively costs approximately 4,000 NOK and 3,000 NOK per GIA. During meetings with "Eiendoms- og byfornyelsesetaten" (EBY), the authority responsible for negotiating development agreements in OM, representatives with relevant and sufficient insight have confirmed that this statement is correct. It has also been explained that these rates are based on "what it costs to develop a city". They are in other words not necessarily sprung out of concrete measures that are necessary for the development to take place, which is a requirement in The Planning and building Act. This statement

may imply the rates in the development agreements often are made top-down instead of bottom-up, meaning that the rate is decided first and the measures are chosen to comply with the decided rate. This understanding corresponds with several developer's opinions.

The real estate news agency, "Estate Nyheter", published an article regarding this understanding. The article deals with a survey executed by Bygg 21, a Norwegian real estate organization, based on a cooperation between official and private actors. The survey contains approximately 100 answers, where the private developers' opinions are that the contributions claimed by the municipalities are disproportionate and the municipalities' expectations for the development agreements are challenging to deal with. The municipality respondents do on the other hand utter a balanced distribution of the cost burden between the private developers and the public (Estate Nyheter, 2019).

5.2.1 Guiding plan for public spaces (VPOR)

A Guiding plan for public spaces (VPOR), freely translated from "Veiledende plan for det offentlige rom", is a principal plan with the intention of regulating the development of a larger area with several land owners and zoning plans (Plan- og bygningsetaten, 2014). It is developed by OM and is politically anchored, but it is not a part of the plan hierarchy in The Planning and building Act, meaning it is not a legally binding document. The VPOR is mainly based on the land-use part of the municipal master plan "Kommuneplan for Oslo. Oslo mot 2030", which is legally binding as it is a part of the mentioned plan hierarchy. As the municipal master plans can be fairly large and comprehensive, the VPOR is more to be considered as an interpretation of the land-use part of the municipal master plan for a certain area. One of the main reasons for introducing the VPOR is to ensure a holistic development of the city's districts in terms of infrastructure.

When producing new zoning plans, the development conditions in the plans are formulated out of the VPOR, as it is the main guiding document for a district development. As the development agreements are based on the development conditions, the VPOR is one of the main guiding documents for making development agreements today. The VPOR does however not express any regulations regarding utilization degrees or land use. Its focus area is on the other hand public spaces, a building's ground floor, altitudes, design and borders between private and public spaces.

5.2.2 Value added tax (VAT)

The VAT-practice in development agreements is highly questionable and in lack of unified procedures across the country. Regarding VAT, it is important to differentiate between cash- and self performance contributions. VAT is to be charged for a transaction that is considered as a final cost in a chain of purchases, which a cash contribution is not. The reason is that the cash contribution is transferred from

5.2 General findings

a developer to the municipality and is yet to be spent on an infrastructure measure. The money have therefore not yet reached its final destination in the chain of purchases (Rimberg et al., 2017). Cash contributions are in other words not subjects for VAT.

The case is however quite different for self performed contributions, as they are considered final purchases. The Norwegian legislation regarding VAT makes an exception for dispose of real estate, meaning it is not subject for value added taxation. Real estate projects that are sold after completion, which residential projects usually are, are however not tax deductible, as the building costs are considered final and the developed areas are not used for tax deductible activities after completion. The case is on the other hand opposite for real estate projects concerning businesses or offices, as the areas often are rented out after completion. The latter is a separate case that will not be discussed in this section, as it lacks relevance to the problem addressed.

The Norwegian tax laws uses the expressions "justeringsplikt" and "justeringsavtale"; respectively freely translated to adjustment duty and adjustment agreement. When a developer finishes a self performed contribution, the works, along with the appurtenant land, are ceded to the municipalities. What is also transferred, is the adjustment duty; the right to deduct VAT. As the adjustment duty is transferred, the rightful claimant of the VAT changes from the real estate developer to municipalities, meaning the developer is not in a position to deduct VAT, what so ever. However, as the municipalities would now be the rightful claimant of the VAT, they are able to deduct it by using the Norwegian law of VAT compensation; a law especially made so that the municipalities are able to deduct paid VAT. The intention of the law is to protect the effectiveness of municipal in-house services, as they are able to deduct VAT from externally purchased services and should therefore be able to deduct VAT from all purchases. This law does however only allow the municipalities to deduct 10 % of the total cost per year, meaning it takes 10 years to deduct a complete VAT transaction (Rimberg et al., 2017).

As a result of this law, it is possible for the municipalities and the developers to make an adjustment agreement along with a development agreement, saying that the VAT will be deducted and transferred back to the developer. This agreement makes the whole contribution cheaper for the developer and the municipalities may therefore demand more efforts in a development agreement, as the total cost is highly influenced by the VAT, which is 25 % in Norway. Some municipalities practice these agreements while other do not. Oslo municipality (OM) does for instance not practice these, but according to more recent development agreements, OM demands to take over the adjustment duty, without paying anything back to the developer (Eiendoms- og byfornyelsesetaten, 2017). This is the case for Økern Portal, a project described further in section 5.8.

OM's new practice implies that they are able to benefit even more from the development agreements and thereby implicitly generate non-earmarked income, which is not the intention of these agreements,

according to The Plan and building act, §17. According to the Sandnes-case (SOMB-2015-1194), ruled by the Parliamentary Ombudsman, it is absolutely necessary to specify what measures revenues from a development agreement is going to be spent on, as well as the measures must be necessary and proportionate with the real estate development (Frøstrup and Østenå, 2017). Repaying the VAT to the developer minus financial costs as a result of the 10-year deduction period, is on the other hand in compliance with the prevailing laws. Adjustment agreements in connection with development agreements was questioned in the "Avinor-case" in the High Court in 2017, where it was judged that adjustment agreements are legal.

According to a study by Rimberg et al. (2017), there is no or little correlation between the partition of cash- and self performed contributions in development agreements in Oslo. That implies unfairness in the agreements, as an agreement consisting of 100 % self performed contributions will be 25 % more expensive for a developer, compared to an agreement consisting of 100 % cash contributions.

5.2.3 Land cession

An interesting aspect about the projects covered in this case study, is that the cost of land to be purchased in order to perform the self performed conditions is not taken into consideration. When the self performed contributions are completed, the infrastructure measures are ceded along with the appurtenant land; a value that is not taken into consideration. As development agreements are most frequently used in urban areas, the land to be purchased or ceded will often be of considerable value. This is another factor that makes the practice of development agreements less surveyable. This problem is for instance applicable for Økern Portal, described in section 5.8.

5.2.4 Development over time

According to the study's findings, OM's use of development agreements have increased over time. The concrete cases show that private contributions and development agreements were rare prior to 2016, but has increased since. This impression has been confirmed by real estate developers and government officials, while the exact year for the changed trend may be discussed, as such transitions often are long lasting. The same results also show that the cost of the development agreements have increased over time. The cases are displayed on a time line with key information in Figure 5.2.

5.2.5 Technical requirements

According to people with relevant experience and insight at Vedal, the technical requirements of self performed measures are consistently under-communicated at the time of negotiation of development agreements. The municipal agency EBY (Eiendom og byfornyelsestaten) is responsible for negotiation

5.3 Case template

and signing of the development agreements, while several other municipal agencies are responsible for providing their needs and requirements that are suitable for content in the development agreements. The issue is that the measures' technical requirements are often not communicated before the time of hand-over, meaning when the works are already completed by the developer. Such communication leads to disagreements and increased costs for both parts as the work has to be re-started and consultants needs to be paid in order to inspect and evaluate. Another case is that case handlers from EBY often are swapped several times during a development project, meaning that a lot of communication has to be repeated and an unnecessary amount of misunderstandings occur. At the time of hand-over, several of these case handlers act more as an inspector with a check list and often appear as rigid. The developers have the impression that the case handlers are often not willing to discuss concrete cases and use professional judgment, but stick to their exact technical requirements. Whether this understanding is correct or not, there seems to be an stressed atmosphere between the private developers and the municipal agencies. Another issue is that PBE (Plan og bygningsetaten), another municipal agency, is supposed to be the coordinating instance between all the involved municipal agencies with requirements to the development agreement. They are often not present in the cases, meaning the developer needs to coordinate all communication between the agencies itself, which may be considered unfortunate.

This matter is described further for a concrete example in Section 5.7.1.

5.3 Case template

As described in the Method chapter, a case template was developed prior to the case study to structure the data collection. Some parameters of the template have turned out to be unreasonably hard to find or unnecessary and are described in this section.

The "Project cost" have for instance been considered unnecessary, as it would reveal sensitive information and is not considered relevant, as development agreements are negotiated a long time before the final project cost is known. "Users" is included in "Stakeholders".

Further on, "Reason for contributions" has turned to be hard to determine and would also be based on subjective information. The "Remaining (%) of public funding for the actual contributions" parameter has turned out to be unreasonably hard or impossible to figure out with the information available during the case study. Regarding "Cost for purchasing land related contributions" and "Land value for transferred land to municipalities"; they are considered highly relevant to the case study, as described in Section 5.2.3, but unreasonably comprehensive to calculate, seen in the scope of this thesis. No cases have given results within "Other contribution related costs", and the parameter is therefore not used. Unfortunately it has not been possible to access any final costs of infrastructure contributions in the cases, meaning "Compare P50 with final costs" have been excluded, even though potential findings

would be of high interest.

It should also be noted that for cases without any contributions or development agreement, the information regarding these is thus not present.

5.4 Norsk Medisinaldepot (NMD)

McKesson, a larger wholesale and retail company within the healthcare sector, initiated the building of a storage and distribution facility at Vollebekk in Oslo, finished in 2011 (McKesson, 2019). Vollebekk is in a larger industry area at the outskirts of Oslo, consisting of several storage and distribution facilities and a cargo terminal for trains. Due to the area's industrial character, the area is considered as a low-end area. The facility may be seen from above in Figure 5.3.



Figure 5.3: Norsk Medisinaldepot (NMD) seen from above

The information regarding this project has mainly been retrieved from internal documents on Vedal's servers, and from the prevailing zoning plan, which is available to the public.

During the real estate development process, a new zoning plan was approved for the lot. It was however not yet developed a VPOR for the area and no development agreement was made, meaning the development conditions in the zoning plan were the only infrastructure costs that had to be covered by the developer. The development conditions stated that a foot- and bike bath along the south western part of the lot had to be established (Byrådsavdeling for byutvikling, 2010). It was not stated in the zoning plan, but the establishment of the foot- and bike path also implied a need of an appurtenant safety fence due to a sharp bend along the path. According to the contractor, Vedal Entreprenør, the cost for these measures were not considered substantial and no exact financial post exists for them. However, a qualified guess by an employee with a key role in the project, estimates that the costs were approximately 200,000 NOK.

5.4 Norsk Medisinaldepot (NMD)

The project's budget was set to 510 MNOK, meaning a contribution cost of 200,000 NOK makes 0.04 % of the total budgeted cost. According to The plan and building Act, these measures may absolutely be considered legal, as the costs and efforts are not considered demanding compared to the project's scope. This cost, divided by the gross internal area (GIA) of 45,000 square meters, implies a cost of 4.5 NOK per square meter.

As no development agreement was made, the costs for the contribution measures were not calculated by the municipalities on beforehand. A comparison of the expected costs in the development agreement and the actual costs is therefore not feasible.

A summary of the project information is to be found in Table 5.2.

Table 5.2: Summary NMD

General information	
Project title:	NMD
Address:	Alf Bjerckes vei 28, 0582 Oslo
Location (urbanity):	Vollebekk, industry
Phase:	Completed
Project initiated:	N/A
Erection initiated:	2009
Project finished:	2011
Budget cost (exc. vat):	510 000 000
Area:	45 000 sq. m
Brief project description:	Storage and administration facilities for Norsk Medisinaldepot (Norwegian Medicine Depot). A new zoning plan was made for this project.
Stakeholders:	Oslo Kommune, Vedal, Bane NOR Eiendom, Aspelin Ramm and Niels Torp Arkitekt, McKesson
Users:	McKesson
Contributions	
Project internal:	-
Project related:	Foot- and bike path within the zoning area
Area related:	-
Total contribution (exc. vat):	200 000 (est.)
Percentage of budget:	0.04

Table 5.2 continued from previous page

Total contribution (per m2 exc. vat):	4.5
Cash (per m2 exc. vat):	0
Self (per m2 exc. vat):	4.5
Location category:	Low end
Existing plans:	Zoning plan (2010)
Year of calculating contributions:	N/A

5.5 Statistisk Sentralbyrå (SSB)

Hovedstaden Eiendom developed new office facilities at Gamle Aker, a highly urban area that may be considered as a medium-end area. Several years ago, there area used to contain several industry facilities, due to the proximity of the river Akerselva. During the last years, the area has been transformed into a more hip area, consisting of culture arenas, bars, restaurants, housing and offices. The erection of the project started in 2011 and it was completed in 2014. An illustration of the SSB project can be seen in Figure 5.4.



Figure 5.4: SSB - Akersveien 26c

The information regarding this project is mainly based on internal documents from Vedal, while some information is found in public available documents and are cited.

The offices make a gross internal area (GIA) of 17,000 square meters. 11,500 square meters comes from renovation of an existing building, while 5,500 square meters comes from a new building. The existing zoning plan from 1998 allowed a total GIA of 18,000 square meters, meaning no re-zoning was

5.5 Statistisk Sentralbyrå (SSB)

necessary in order to carry out the project. According to the prevailing practices regarding development agreements, no development agreement was made, as no re-zoning was carried out. The existing zoning plan from 1998 did however state that the unbuilt areas of the lot has to be used for park and green areas (Plan- og bygningsetaten, 1998). After the latest development was finished in 2014, the whole lot was built and no unbuilt areas remained. According to employees at Vedal with key roles in the project, there was not paid any efforts or resources regarding this condition in the zoning plan, as no areas remained vacant. There was not paid any efforts for other infrastructure contributions either.

As the project had a total cost of approximately 265 MNOK, the relation between infrastructure costs and project budget may be considered good for the developer. As no contribution was made, it is not possible to compare the contribution costs with expected cost nor with budgeted costs.

A summary of the information regarding the project may be found in Table 5.3.

Table 5.3: Summary SSB

General information	
Project title:	SSB
Address:	Akersveien 26c, 0177 Oslo
Location (urbanity):	Gamle Aker, highly urban
Phase:	Completed
Erection initiated:	2011
Project finished:	2014
Budget building cost (exc. vat):	265 000 000
Area:	17 000 sq. m
Brief project description:	Renovation of an existing building and erection of additional areas for the relocation of SSB's offices. A new zoning plan made for the project.
Stakeholders:	Oslo kommune, Vedal, SSB, Hovedstaden Eiendom
Users:	SSB (Statistics Norway)
Contributions	
Project internal:	Establish a park connected to the neighbouring green areas, covering the un-built area of the lot.
Project related:	-
Area related:	-
Total contribution (exc. vat):	0
Percentage of budget:	0

Table 5.3 continued from previous page

Cash (per m2 exc. vat):	-
Self (per m2 exc. vat):	0
Location category:	Medium-end
Existing plans:	Zoning plan (1998)
Year of calculating contributions:	N/A

5.6 Fridtjof Nansens vei 16

The National Police Directorate (NPD) built a new office building in the backyard of an already existing office building used by the Police. It was in other words built on the same lot as the existing building. The project was started in 2008, erection started in 2013, while the project was finished in 2015. It is located in Fridtjof Nansens vei 16 at Majorstuen, which may be considered a highly urban and high-end area. A picture of the building is shown in Figure 5.5.



Figure 5.5: Fridtjof Nansens vei 16

The information regarding this project is mainly retrieved from Vedal's internal document, while some information is cited and found in public available documents.

As the building is erected on the same lot as the neighbouring building, which was built just a few years earlier, it is also based on the same zoning plan as the neighbouring building. As no new zoning plan was made for the project, no new development conditions were made, meaning there were no conditions to base a development agreement on. There was neither a prevailing VPOR for the area. Therefore, no development agreement was made, implying no infrastructure contributions were made in relation to this project. This makes a good example of that a real estate developer may avoid a development agreement by basing a project on a former zoning plan, if possible. The project also states

5.7 Fyrstikkalleen 1

an example of that real estate development did not necessarily imply a development agreement before, even though the project's budgeted cost was as much as 250 MNOK.

As the project was not imposed any infrastructure contributions, it is not possible to compare the contribution costs with the project's budget, nor the P50 estimations with actual completion costs. A summary of the project's relevant information may be found in Table 5.4.

Table 5.4: Summary of Fridtjof Nansens vei 16

General information	
Project title:	Fridtjof Nansens vei 16
Address:	Fridtjof Nansens vei 16
Location (urbanity):	Majorstua, highly urban
Phase:	Completed
Project initiated:	2008
Erection initiated:	2013
Project finished:	2015
Budget:	250 000 000
Area:	13 500 sq. m
Brief project description:	Erection of a New Office building for the Norwegian police in the backyard of an existing Office building. Built under the same zoning plan as the existing building.
Stakeholders:	Police, Oslo kommune, Vedal, SAAS, DARK
Users:	Police
Contributions	
Project internal:	-
Project related:	-
Area related:	-
Total contribution (exc. vat):	0
Percentage of budget:	0
Location category:	High-end
Existing plans:	Local plan Zoning plan for Fridtjof Nansens vei 14 (2010)

5.7 Fyrstikkalleen 1

Fyrstikk Holding AS is currently developing a larger office project at Helsefy, an area consisting of several offices and mixed businesses. The area is considered urban and medium-end in terms of pricing and status. The project consists of three inter-connected office buildings that are rented out to Norwegian municipal agencies and government services. The originally planned GIA is 36,700 square meters and the project was initiated in 2014. The erection started in 2017 and the building is planned to cease in the middle of 2020. A computer generated illustration of the project can be seen in Figure 5.6.



Figure 5.6: Computer generated picture of Fyrstikkalleen 1

Most information regarding this project is found in Vedal's internal documents, while some information is found in public available documents and are thus cited.

There are multiple prevailing plans and documents concerning the lot. VPOR Ensjø (2007) is for instance the first VPOR made in Oslo municipality and concerns this very property. There is also a local plan, "Planleggingsprogram for Ensjø" (2004) that concerns this lot, which VPOR Ensjø is based on. During the development of the project, a new zoning plan was developed and signed in 2016, which led to the possibility of making a development agreement based on the development conditions in the zoning plan. In 2017, the development agreement was signed, after it had been through a negotiation process. A particular aspect about this agreement, is that development agreements usually concern the municipality's interests, but this one also concerns a government administrated piece of road. This road piece is however also a part of the development conditions in the municipal zoning plan, but its' costs does not seem to be included in the development agreement. While reading some parts of the agreement, the government administrated road seems to be included in the agreement, but while reading other parts

5.7 Fyrstikkalleen 1

it does not seem to be included, which may be highly confusing. The estimated costs does however not add up if the road is supposed to be included in the agreement costs, meaning its costs are expected to be applied separately. Oslo municipality (OM) made an agreement that involved both cash contributions and self performed contributions. A total contribution of 975 NOK per GIA was agreed upon, where 363 NOK per GIA was set to cash contributions and the rest, 612 NOK per GIA was the estimated cost of the self performed contributions.

The cash contribution counts 11.5 MNOK and is intended to co-fund the establishment of Grønvoll Park, which is located 300 m as the crow flies from the project and 650 m in walking distance (Byrådet, 2017). The contribution is considered as area related and as the distance between the development site and the park is fairly high, its relevance to the development may be discussed. However, if the cash contributions exceed the cost of the park establishment, OM may use the resources to renovate Helsfyr subway station, which may be considered beneficial for the developer.

The self performed contributions are agreed to treat a pavement along Fyrstikkalleen, a pavement and green area along Svovelstikka and a footpath in a culvert, which is the government administrated piece of land. The first two mentioned measures are foot paths along the lot that will be ceded to OM and may be considered as regular development conditions. These two measures are covered by the self performed costs in the development agreement, meaning their total cost is expected to be 19.5 MNOK. The third measure is the mentioned piece of road that will be ceded to the government agency and runs along the property borders. The piece is however fairly long, as it starts at the other side of a nearby motorway junction, runs under it in a culvert and continues to the opposite side of the lot. This may be considered a more demanding development condition and is both project and area relevant. As it may fit both categories, it is considered a project relevant measure. An attachment to the development agreement says that the P50-estimate for the measure is 16.6 MNOK, while the P85-estimate is 18.8 MNOK (Concreto AS, 2015).

Based on P50-estimates, the total expected costs of this development agreement is thereby 11.5 MNOK + 19.5 MNOK + 16.6 MNOK = 47.6 MNOK. This total cost does not appear easily when reading the development agreement and needs quite some investigation and understanding to obtain. The clarity and the transparency of the agreement is therefore subject for discussion. Another similar study by Rimberg et al. (2017), which also considers this very project, concludes with a total contribution cost of 31.2 MNOK, which may be considered a supporting point for the statement.

An estimated total contribution cost of 47.6 MNOK makes approximately 4.8 % of the total project cost of 1 BNOK.

A summary of the details regarding the project may be found in Table 5.5.

5.7.1 Technical requirements

According to central people at Vedal, during the negotiation of the development agreement, OM's technical requirements to the self performed measures have changed during the building process. At the time of negotiation, exact requirements regarding street lighting and drainage systems were not presented, but have been claimed during the completion of the project. It has for instanced been claimed that the developer must be held responsible for the existing drainage system's function, which is located outside of project area. It was also claimed that the street lighting should cover a larger area than what has been used for building purposes. Both of these claims were set three years after the agreement was made, making the process and the exact consequences of the development agreements highly unanticipated. Whether or not the developer will have to pay for the changed measures, such claims make the development agreements over-complex and expensive to administrate, while re-design as a result of changed requirements may also be costly. One of the issues is assumed to be that the communication between the different municipal agencies has been insufficient during the agreement negotiation. The municipal agency responsible for negotiation is "Eiendoms- og byfornylsesetaten" (EBY), while other agencies as "Plan- og bygningsetaten" (PBE) and "Bymiljøetaten" (BYM) have technical requirements relevant for the agreements, that are often not communicated before building and hand-over. This lack of communication leads to misunderstandings and different perspectives when discussing costs and resources.

Table 5.5: Summary Fyrstikkalleen 1

General information	
Project title:	Fyrstikkalleen 1
Address:	Fyrstikkalleen 1, 0661 Oslo
Location (urbanity):	Helsfyr, urban
Phase:	Construction
Project initiated:	2014
Erection initiated:	2017
Project finished:	2020 (est.)
Budget cost (exc. vat):	1,000,000,000
Area:	36,700 sq. m
Brief project description:	Erection of three office buildings connected at ground level. A new zoning plan was made for this project.

Table 5.5 continued from previous page

Stakeholders:	Oslo Kommune, Vedal, Ugland, NAV, Fyrstikk Holding AS
Users:	NAV and other public authorities

Contributions

Project internal:	-
Project related:	Pavement along Fyrstikkalleen Pavement and green area along Svovelstikka Footpath in a culvert
Area related:	Grønvoll park
Total contribution (exc. vat):	47,600,000
Percentage of budget:	4.8
Total contribution (per m ² exc. vat):	975 + 452
Cash (per m ² exc. vat):	363
Self (per m ² exc. vat):	612 + 452
Location category:	Medium-end
Existing plans:	Planleggingsprogram for Ensjø (2004) VPOR Ensjø (2007) Zoning plan (2016)
Year of calculating contributions:	2010
Year of contribution agreement:	2016
Other contribution related costs:	-

5.8 Økern Portal

Oslo Pensjonsforsikring (OPF) are currently developing and erecting Økern Portal, a project consisting of a larger office building and a hotel. It is located at Økern, an area in a larger transformation from an industry characterized area to a more urban area; containing offices and residences. The area may be characterized as a regular medium-end area in terms of status and real estate prices. The project is aiming for a more modern approach in terms of city development, meaning the intention is to make public spaces for the local community and not just the direct users of the building. Public spaces, such as parks and social meeting places available to everyone, will be established on the roof of the office building, as well as on ground level, next to the buildings (Økern Portal, 2019). These measures will hopefully lay the

grounds for a lively atmosphere around the buildings throughout the day and week, in contradiction to typical office buildings that only are active during office hours. The project was initiated in 2011, while the construction started in 2017 and the opening is expected to take place in 2021. A computer generated overview may be seen in Figure 5.7.



Figure 5.7: Computer generated overview of Økern Portal

A large part of the information regarding the project is retrieved from internal Vedal documents, while publicly available documents like VPOR and zoning- and local plans are cited and used.

The lot is located in an area covered by existing local plans and "VPOR Løren og Økern"; implying there are several public infrastructure measures that are in need of funding. In accordance with current practice, a development agreement was negotiated between OPF and Oslo municipality (OM). OM first presented an agreement consisting of a cash contribution and self performed contribution, that were all anchored in the prevailing plans. The cash contribution was however negotiated to a lower amount per GIA than originally presented, after going through the factors used for calculating the contribution. It was agreed that the developer needed to establish a public square and cede it with the appurtenant land to the municipalities, establish a park on the developed premises, and build a project related public road. The developer also needed to contribute with cash in order to establish an activity park including an indoor mixed-use facility hall, a footpath from Lørenveien to the internal park and a road from Dag Hammarskjøldsvei to Lørenfareet (Eiendoms- og byfornyelsesetaten, 2017).

As the project initially consisted of both renovation and new building, the total contribution was split into a cost of 1,049 NOK per square meter for renovated GIA and 1,311 NOK per square meter for new built GIA. The settled amount of cash contribution was set to 565 NOK per square meter, leaving an average self performed contribution cost of 705 NOK. The self performed contributions are based on P50-estimations performed by a third-party hired by the public authorities. Multiplied with the GIA, these rates results in a cash contribution of 32,770,000 NOK and a self performed contribution estimated

5.8 Økern Portal

to 40,890,000 NOK. Combined, the costs sum up to 73,660,000 NOK. The combined rate of cash contribution and self performed contributions is 1,270 NOK per GIA.

The project's total budget was approximately 1.5 BNOK at the time of the development agreement negotiation, meaning the total infrastructure contribution makes approximately 4.9 % of the total budget. The contribution of 4.9 % of the total budgeted cost may be considered as fairly high and could be subject for discussion in terms of legality. As the self performed measures are not yet performed, it is not possible to compare the P50-estimates with the final costs.

5.8.1 Adjustment agreement

The agreements' item 7.6 states that the adjustment rights shall be transferred to OM, without mentioning the developers' right of reimbursement in case of a VAT refund. This implies that OM demands an adjustment agreement without giving the developer any compensation, which is considered normal according to other municipalities' practice described in literature. The item may be considered illegal, as the revenue generated from the VAT refund is non-earmarked, as explained in Section 5.2.2.

5.8.2 Land cession

As mentioned in Section 5.8, a self performed measure in the development agreement concerns the building of a public square. The square is located on the lot where the project takes place and is owned by the developers' project organization. The item states that square must be established according to the prevailing zoning- and building plans and afterwards be ceded to OM. A matter that is not mentioned in the agreement, is the cost of the appurtenant land. This cost is neither included in the cost estimate made by the third party consulted by OM. According to professionals and other agreements that have been looked into, this is in coherence with the current practice in OM. The same problem applies for the public road that is mentioned in the agreement, meaning the road has to be built on the developers' lot and afterwards ceded to the municipalities.

A summary of the information regarding Økern Portal may be found in Table 5.6.

Table 5.6: Summary Økern Portal

General information	
Project title:	Økern Portal
Address:	Lørenfaret 1-3, 0580 Oslo
Location (urbanity):	Økern, urban
Phase:	Planning and construction
Project initiated:	2011
Erection initiated:	2017

Table 5.6 continued from previous page

Project finished:	2021 (est.)
Budget cost:	1,500,000,000
Area:	58 000 sq. m
Brief project description:	A larger project containing offices and a hotel in an area with a high degree of real estate development. The area mainly consists of offices, retail and storage facilities. Areas at ground level and the roof will be dedicated to public use, with the intention of developing useful public spaces. A new zoning plan was made for this project.
Stakeholders:	Oslo Pensjonsforsikring, DARK Arkitekter, Oslo kommune, Vedal
Users:	Office, culture, restaurant and hotel
	Contributions
Project internal:	Park on the property
Project related:	Footpath from Lørenveien to internal park Road from Dag Hammaskjøldsvei and Lørenfaret Public road (S3)
Area related:	Public square Activity park with mixed-use indoor facility
Total contribution (exc. vat):	73 660 000
Percentage of budget:	4.9
Total contribution (per m2 exc. vat):	1270
Cash (per m2 exc. vat):	565
Self (per m2 exc. vat):	705
Location category:	Medium-end
Existing plans:	Kommuneplan VPOR Løren og Økern (2016) Zoning plan (2016)
Year of calculating contributions:	2015
Year of contribution agreement:	2017
Compare P50 with final costs:	N/A

5.9 Landbrukskvartalet (LBK)

The project Landbrukskvartalet (LBK) may be freely translated to the "Agricultural block". Today, it is a block located in Oslo's city centre, right next to the central station with a GIA of 31,420 m^2 . It mainly consists of offices that are used by agricultural organizations, which is the root of the block's name. As it is located next to the central station, the area is highly urban and is considered as high-status, mainly because of the central location which implies high real estate prices. The project is run by Norges Bondelag, Vedal and Aspelin Ramm with others. The area is subject for a larger development, as the neighbouring bus terminal and train station are in need of enhancements and expansion. The intention of the project is to develop a lively block, that is to be used for living, working, recreation and playing. It is supposed to be accessible and used by all inhabitants of the city, meaning a public space with wide ranging cultural offers. As the block's origin is agricultural, the intention is to use inspiration from agriculture and thereby focus on local produced food and activities that are food related (Landbrukskvartalet, 2019). Illustrations of the current plans for LBK can be seen in Figure 5.8 and Figure 5.9.



Figure 5.8: Computer generated overview of a square in Landbrukskvartalet

As LBK is located in an area subject for large infrastructure improvements, there are several measures that would be subject for private contributions, whether they should be based on a development agreement, or another instrument for contribution. The motivation for including this project in the case study is to be able to use relevant theory, experience and practices from professionals and other countries to suggest a model for private infrastructure contributions. As the project is still in the design phase and have not yet reached the stage of development agreement negotiations, it is considered suitable for such a suggestion, along with the large need of infrastructure improvement in the area.

After going through several municipal reports, documents and plans, a list of potential measures

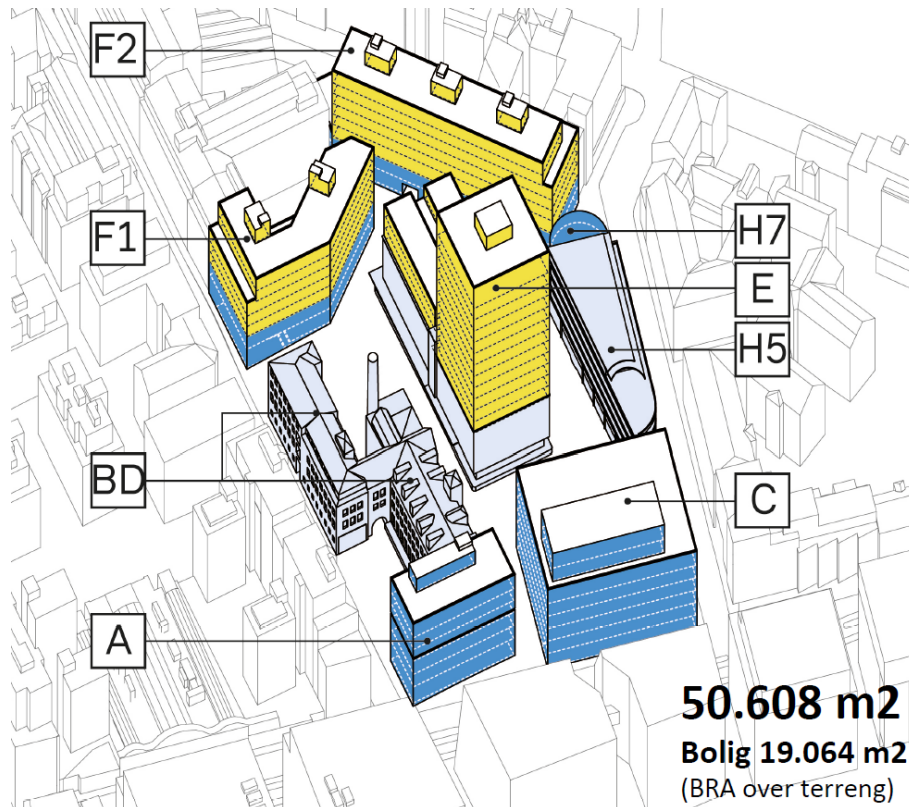


Figure 5.9: Computer generated overview of Landbrukskvartalet

subject for private infrastructure contributions has been established. Some of the measures are not very likely to be entailed in a contribution agreement, as they have been recommended to not be carried out by the Norwegian railway authorities. These have therefore been written in *italic* and are not discussed further.

- *Bus station with a continuous or partly connected square above the current railway.*
- Bike paths and general bike-infrastructure. For instance a bike path along Nylandsbrua and indoor parking for 1,000 bikes.
- *Modernization of the station building*
- Reopen Akerselva
- Pedestrian connections, for instance along Nylandsbrua
- Transform Biskop Gunnerus gate and Schweigaardsgate to streets of urban character

As the ongoing Green Revolution is of high priority, bike and pedestrian paths are likely to be included in an agreement regarding infrastructure contributions. These two measures, in combination with the transformation of Biskop Gunnerus gate and Schweigaardsgate to a more urban character, would most probably involve a foot- or cycle path along the two mentioned streets, or a across the

5.9 Landbrukskvartalet (LBK)

railway station. A bridge across the railway station would most probably turn out to be very costly, meaning it could be subject for a cash contribution. A part of the street transformation and a bike- and footpath along it could however be subject for a self performed measure. The reopening of Akerselva could be subject for both cash contributions and self performed measures, depending on the amount of river to be opened and cost estimates. The distance between LBK and the river is however fairly high, meaning it could be considered unfair and unnecessary to claim large contributions for this measure. The reopening of the river is therefore considered subject for a cash contribution. It is important to notice that these considerations are done with development agreements in mind. A completely different approach to achieve these measures may also be carried out.

A summary of the information regarding Landbrukskvartalet may be found in Table 5.7.

Table 5.7: Summary Landbrukskvartalet

General information	
Project title:	Landbrukskvartalet
Address:	Schweigaards gate 34 A-F, 0191 Oslo
Location (urbanity):	City center, highly urban
Phase:	Design
Project initiated:	2015
Erection initiation:	2021 (est.)
Project finished:	-
Budget cost:	1,500,000,000 (est.)
Area:	50 600 sq. m (est.)
Brief project description:	A larger project containing offices and a hotel in an area with a high degree of real estate development. The area mainly consists of offices, retail and storage facilities. Areas at ground level and the roof will be dedicated to public use, with the intention of developing useful public spaces. A new zoning plan is under development for this project.
Stakeholders:	Norges Bondelag, Aspelin Ramm, Transborder Studio, White Studios, Oslo kommune, Vedal
Users:	Offices, residents, culture and restaurants
Location category:	High-end
Existing plans:	Local plan

Discussion

6.1 Case study: A re-zoning's effect on real estate market value

The findings in Table 4.1 have some transactions that are worth looking further into. Property 2 and 3 are sold to the same organization, at the same time, while the cost per m^2 is fairly similar. Property 4 does however have a significantly lower cost per m^2 , given that the transaction occurred two years later, which is hard to explain, as real estate values usually increase with time. Further on, Property 5 and 12 were sold 12 - 14 years after the previous mentioned properties for a significantly higher price per m^2 , which correlates well with the yearly Real Estate Price Index published by Statistics Norway. The odd one out, is Property 6. It was sold in 2016, meaning 16 years after Property 2 and 3, for approximately half the price per m^2 . Thus, it is assumed that the transaction cost available to the public involves some unknown private deal.

In addition to the information that may be found in Table 4.1, there are two major lots or collection of lots at Sluppen. One of them is marked with Property 7, as the "Kjeldsberg area" and is owned by R. Kjeldsberg AS. The company is one of the larger real estate owners in the Trondheim area and according to the research that has been done as a part of this thesis, they count as the largest land owner at Sluppen. Most of their lots at Sluppen are already developed and several of their buildings have been constructed over the last five years. However, when it comes to the largest land owner measured per m^2 , they have a competitor at the opposite side of "Omkjøringsveien" (E6), namely Siemens. The company have been at this location in Trondheim for several years, where they hold offices, production and research facilities, storage space as well as parking lots.

As stated in Chapter 4.4, the largest assets of the Siemens property are expected to be inventories. The property value is therefore tricky to assess, when assuming the company is remaining at the location after a new local plan is released. It is however easier to assess a land value if it is assumed that the existing buildings are demolished and new buildings are erected. Given that Siemens over last years have invested large sums in their facilities as Sluppen, they are not expected to re-locate during the coming years. A new local plan for the area may however increase the land value in such a degree that it will be highly profitable to sell the current lot and re-locate somewhere else. In the best case, the new location will be at the outskirts of the city, while the worst case is if the company decides to move out of the country. This should be taken into consideration when working out local plans, as they do not always entail solely positive consequences, as jobs and tax revenue may be moved out of the country.

6.2 Re-zonings' impact on real estate value

A weakness within the calculations that have been done in the case study, is that the values are not discounted. That means the time is not taken into consideration when estimating expected returns. Time-dependent real estate indexes have neither been taken into consideration, meaning that when assessing the figures presented in this thesis, the transaction dates should be kept in mind for comparison purposes.

Prior to this study, it was assumed that land value would increase as a result of rumours and preparation of advantageous local plans, but this is not necessarily supported by the findings in Table 4.1. An explanation could be that the financial cost of acquiring land and keeping it for an unknown amount of time, until a new development and zoning plan are prevailing, may be very high and involve a large financial risk.

The main factor for changed land value in the case study is the properties' utilization degree. There are necessarily several other factors affecting the real estate and land value, such as the surroundings given by a local plan, but these are considered too uncertain to take into consideration. Improved infrastructure may for instance increase the land value significantly, but if parts of the improvement costs are levied of the property owner, the improvement may not be profitable.

6.2 Re-zonings' impact on real estate value

Chapter 2 presents multiple strategies or principles that can be used for capturing land and real estate in situations where the value is changed as a result of a public authority's decision and actions. This will be discussed to get a better understanding of the knowledge needed to answer RQ3, "How can the Norwegian system for gathering private infrastructure contributions be improved?".

A significant factor of a zoning plan's effect on real estate prices is the allowed degree of utilization, which the case study from Sluppen supports. Seen in the perspective of LVC, one could argue for that a land owner should pay compensation to the municipalities when the utilization degree is increased, as the land value will increase. The Norwegian legislation acts as a barrier to this public revenue opportunity, as §17 in the Planning and Building Act limits the amount a public authority can receive as compensation for a changed zoning plan. As mentioned, the law was intended to protect real estate developers from the municipality's misuse of power, by demanding disproportionate measures from the developers for their plans to be accepted. This problem is discussed by Hauge and Holth (2018), in an article regarding a high riser at Fornebu in Bærum, that a developer wants to erect. There are currently no buildings of the planned height in the area, meaning that if the high riser will be accepted by the municipalities, it implies a great change of the lot's zoning plan. The municipality's alternatives for receiving benefits by doing this change are very limited and the most fair decision would probably be to disallow the proposal of the high riser. The authors of the article does however address a change in the laws, as the way the legislation is today, it does not allow large benefits to be compensated

for a re-zoning. In order to investigate this assumption further, a highly relevant question is: "If the utilization degree is increased with 100 %, will the land value increase proportionally?".

The case study that has been performed does only treat three unique land value assessments, meaning it is dangerous to draw patterns based on the findings. On the other hand, the three assessments does give fairly similar ratio's of the relation between the properties' value and utilization increment, which are juxtaposed in Table 6.1. This ratio is in fact very close to 1, meaning that the value increment of the three properties is almost proportionate with the utilization degree increment.

Table 6.1: Summary of figures, all properties.

Post	Property A	Property B	Property C
Property value before re-zoning	14.12 MNOK	24.18 MNOK	11.26 MNOK
Land value after re-zoning	54 MNOK	73 MNOK	43 MNOK
Value increment	382 %	302 %	382 %
Utilization degree before re-zoning	60 %	47 %	52 %
Utilization degree after re-zoning	350 %	350 %	350 %
Utilization degree increment	290 %	303 %	298 %
Ratio value/utilization increment	1.32	1.00	1.28

An aspect to be pointed out, is that the three properties have quite different characteristics and are selected for assessment of that very reason. Property A did not contain any buildings prior to the ongoing development, meaning there was no existing property value to be assessed, except for the land value. Property B and C both contain existing buildings today, that are considered revenue generating. Property B entails a residential building in addition to the commercial area, which usually results in a higher yield than commercial buildings and is considered to affect the ratio of the value/utilization increment. Property C does on the other hand contain a commercial building consisting of offices and storage facilities, generating revenues comparable with the expected future, rental revenues.

One matter that should be taken into consideration when assessing the proportionality between land value and utilization degree, is that it cannot be constant. According to the real estate broker consulted in the case study, the average renter of a commercial property demands 350 m^2 in small cities like Trondheim, but in Oslo the average demand is 2,000 m^2 . This substantiates the claim that above a given utilization degree, the value increment will fall, as the market cannot deliver enough renters to fill the buildings capacity. As an example, if a sky scraper was allowed in a zoning plan situated in Trondheim, the land value would probably not increase proportionally with the utilization degree increment.

6.3 Implementation of LVC in Norway

The Norwegian political system could be categorized as socialistic, meaning benefits should be shared among all inhabitants, while the financing of the Norwegian public services are mainly based on user-

6.3 Implementation of LVC in Norway

related fees and tax revenues. This should lay the grounds for a possible political implementation of LVC in Norway, as it does not demand a radical change in the people's mindset regarding public financing. As in most other countries, taxation is an important topic, meaning more fair and balanced taxation based on LVC could be welcome. When it comes to Hendricks and Tonkin's criterion for successful implementation of LVC, the groundwork is already in place. It is common knowledge that the Norwegian political system is well functioning, the leader has solid support from the people, the authorities are decentralized as well as the property tax system functions well. However, the Norwegian property tax is heavily discussed and removal of the property tax has become a popular topic for politicians. The land use management in the country functions well, at least within each separate county. The practices of land use management within the different counties is however often quite different. Another aspect is that the way LVC strategies have been implemented in other countries, may not be applicable for Norwegian circumstances, given the population and size of the country's cities.

However, an interesting point of view is to see how LVC strategies correlates with relevant existing, Norwegian legislation. Several strategies have been provided in Chapter 2.1, along with an extract of relevant Norwegian legislation. Most of the strategies could be considered plausible for implementation in Norway, as they are all based on principles of sharing benefits among people, which is exactly what the rationale of the Norwegian land consolidation court is, in a smaller scale.

The Norwegian land consolidation court is working to share benefits equally between the affected land owners, when one of them is improving adjacent facilities. From this perspective, the Norwegian land consolidation and all principles related to it, may be interpreted as a weak or vague Land Value Capture system, as it shares benefits equally, but only between persons that actually own affected land. The Land Value Capture policies are taking the case one step further; as they are sharing the benefits received by land and real estate owners with the public. It is therefore interesting to see what potential LVC-strategies have for implementation in Norway, seen in comparison with the Norwegian legislation that has been presented in Chapter 2.2:

- **Tax Increment Financing** is a solution that potentially could be implemented in Norway. A challenge could be the lack of areas that can be classified as central business districts, which are the areas where TIF has proved its greatest potential. Oslo have a couple of qualified areas, such as Aker Brygge, Tjuvholmen, Barcode and Bjørvika, but the other cities lack these. The Norwegian economy can on the other hand be considered strong with a large purchasing power, opening for the possibility of implementing TIF in more regular high-priced districts. As with every other financing strategy, people has to be informed and prepared to adapt to it, so that implementation can be politically plausible. A positive feature of the strategy, is that it does not involve the introduction of a new tax or fee, it simply redirects the tax revenues. The implementation is also

expected to demand for legislative changes, which are considered to be rather large by Zhao. It would in other words require a law to allow for differentiation of a single property tax, in terms of who receives what parts of the tax revenues. Another issue could possibly be if the property tax will be abolished, due to populist politics. In such a case, TIF would have little chance of being implemented, as it would implicate re-implementation of a property tax. A weak spot related to TIF, is that it could be discussed that the tax revenue increment could have occurred without the tax increment financed project, due to market variations and other external factors. The tax increments would in such a case have been spent for other causes. When seen in comparison with the Norwegian legislation, there are not a lot of aspects related to land consolidation that could substantiate the implementation of TIF in Norway.

- **Special Assessments** would be possible to implement in Norway, but would most probably demand a lot of work regarding people's attitude regarding the matter, as even property tax is a hot and disliked topic these days. The strategy involves introduction of a fee additional to the existing taxes and fees, which usually is quite unpopular. However, if people or companies would see the potential benefits received large enough, a special assessment could be possible to implement. It is not known that such system exists in the country today, and the relevant legislation would therefore need adaption. The Norwegian tradition is more based on voluntary work in order to improve an area in need of transformation and as SA implies forcing inhabitants to contribute to an improvement financially, it could be hard to obtain acceptance for the measure from the people. The Norwegian legislation presented in this thesis is not considered to be relevant for the plausibility of implementing SA.
- **Joint Development** already exists in certain forms in Norway, but there is still a potential for expanding the amount of joint development. The use of joint development for financing infrastructure is not common in the country, even though public private partnerships (PPPs) have increased in use over the last years. These partnerships does however mostly involve private companies to operate and maintain roads after they have built them themselves and thereby share a part of the building costs, as they greatly affect the future maintenance cost. There are also several examples of counties and municipalities taking shares in real estate development projects and thereby benefiting from the yield. The public authority's role in such a partnership is often as a land owner, as large parts of the Norwegian vacant land is owned by the public. The potential for increased used of join development in Norway is considered large, for instance through receiving continuous revenues for adjusting usage rights or density standards, or by selling or leasing property rights.

6.3 Implementation of LVC in Norway

- **Land Value Taxes** could have a potential in Norway for instance by replacing the current real estate tax. The principle of levying the unimproved value of land is powerful when intending to balance the benefits given by adjacent public work and regulations, as the land owner's resources in terms of development possibilities are not applicable to the tax. It can however be considered unfair, as a farmers field zoned as a residential area could be subject for the same amount of land value tax as an adjacent property containing a residential high riser, which could force the owner of the farmers field to sell the property or develop it. This concrete example does however also implicate that there is larger chance for a property to fulfill its intended use in a zoning plan, when land value taxes are levied. The strategy of Land Value Taxes would demand a change in the Norwegian tax legislation, but is nevertheless considered plausible.
- **Transportation Utility Fees** involves implementing a new fee, which can be hard to get acceptance for politically, if it does not imply abandoning another fee or tax. A positive feature in terms of fairness, is that it is levied from all property users and not only owners. However, for the fee to be fair, all of the payers needs to utilize the transportation facilities that are financed by TUF and should intuitively somehow result in a fare reduction. The fee does have some accordance with the Norwegian principles of Joint Actions, as it forces all beneficiaries of the transportation system to contribute financially to the development.
- **Development Impact Fees** can be considered a straight-forward and fair value capture strategy, as it demands a developer to pay for technical infrastructure that is needed for its project to succeed. Other tax payers could tend to think it is unfair that they are financing technical infrastructure for a developer that is predicting a high yield from its project, while this strategy solves that issue. It has a lot of similarities with development agreements, that are described in 2.2.7, as Development Impact Fees involves paying for technical infrastructure that could be included in a development agreement.
- **Negotiated Exactions** is a strategy that is relatively easy to implement, as it is initiated by the developer in order to obtain approvals by the municipalities, in contradiction to Development Impact Fees that are levied. That indirectly means that the developer is willing to share profit with the public as a step towards realizing a building project. The principle behind it should easily get acceptance among most people, as it can be considered a gift from their perspective, in terms of that they do not have to give anything back. Negotiated Exactions seem very similar to development agreements, that are described in Chapter 2.2.7 under Norwegian Legislation. A negative side is that these types of deals may touch the topic of power misuse. If the developer is interested enough in carrying out a project, the municipalities may demand unreasonably high

benefits in return. As mentioned in Chapter 2.2.7, this has been a case in the Norwegian history several times. A positive side of the strategy is that it balances the benefits in a community, as the developer has to pay or give up land, which benefits the public, in order to receive approvals for their special needs.

- **Air Rights** would have a potential for success in Norway, as it does not demand for a large accommodation of the existing legislation. It could possibly be related to urban land consolidation, even though it does not involve change of land, but differentiating rights of land use based on the different levels of altitude within the property. For a development above ground to be profitable, the price level in the area considered has to be sufficiently high, which could be a challenge in Norway, as the sufficient price level may often only be found around central business districts. As mentioned in the discussion paragraph regarding TIF, the central business districts in Oslo may be suitable for such a strategy. The central train station of Oslo may be especially suitable, as there is the station is situated under open air, meaning there are possibilities for a construction above the rail tracks.

As stated for each strategy, several of these have a potential for implementation in Norway and some are already utilized to a limited extent. Special Assesments would might have the least potential, as it does not seem to comply with any existing tax or fee collection. The other strategies will probably be feasible to implement in Norway and could thereby improve the fairness of public value capture based on land and real estate. As stated for several of the LVC strategies, some of them have common features with the Norwegian development agreements. This could support the need of developing these agreements further in legislative terms, which is also substantiated by the article of Hauge and Holth (2018). LVC strategies with connections to development agreements may with that be considered as more plausible for implementation, as they are based on an already existing principle in the Norwegian legislation. It is hard to say whether one of the described strategies, a combination of them or the development of a new, accommodated strategy would be optimal. This question will however be discussed further in the following sections.

Regarding LVC's potential in other countries, the temporary financing methods of general obligation bonds and revenue bonds seems plausible in Norway too. Further on, Geographic Weighted Regression (GWR) appears as a rational method for further studies regarding transportation improvements' impact on real estate prices, but is considered too comprehensive for this project thesis. The findings from GWR; that the coefficients for transportation infrastructure's impact on private and commercial properties often are opposite, should however be taken into consideration. It makes sense intuitively, as most people would not want a large motorway next to their home, whereas they would find it convenient to have their office or grocery store next to a motorway, because of the accessibility

6.4 Case study: Private infrastructure contributions in Oslo

benefits. Mathur and Smith's findings of how a joint development can lead to great success or even great losses is an important aspect, that should be noted and included if introducing similar strategies in Norway. As they write, a solid contractual basis for the partnership will often avoid losses and maintain the intentions of the JD. Fornebubanen, a new part of Oslo's metro system, is currently being designed and should take notice of the findings from LVCs potential in the Mumbai metro, that was not exploited accordingly. Further on, the Predetermined Land Reserve Mode that was developed for Wuhan in China, stands as an example of how a new LVC strategy may be developed and accommodated to a country's existing legislation. All of these works may be used for inspiration and guiding when implementing LVC in Norway.

All LVC strategies are based on that beneficiaries of infrastructure improvements should contribute with assets; either with immovable or movable property. A question concerning the opposite case is: What happens to the casualties when reducing adjacent infrastructure? An example is for instance if a land owner should be compensated by a public authority if an adjacent metro station is shut down or moved to a different location? It is especially relevant if this very land owner co-financed the metro station in the first place. An argument against the matter is that if the land owner contributed with assets to the metro station development, he or she will most probably have received large benefits during the stations' operations and should therefore not expect further compensation. This question will however not be discussed further in this thesis.

6.4 Case study: Private infrastructure contributions in Oslo

Chapter 5 seeks to understand the current practice for obtaining private infrastructure contributions in Oslo municipality (OM). This is done by analyzing five cases that are past their agreement year (AY) and one project prior to its AY. The selection criteria lays the grounds for an objective case study, but the limited amount of cases within each category makes it hard to draw finite conclusions based on the study. In order to be certain about facts concerning today's practice of development agreements in OM, a lot more cases would have to be analyzed. The findings based on the case study have however been confirmed by real estate developers, lawyers and government officials, meaning a discussion based on the case study is still considered meaningful.

An item that turned out to be hard to analyze was the actual cost of self performed measures that were required in the development agreements. Even though several of the project accounts was accessible to the author, the measures were not necessarily accounted separately from other contract posts, meaning it was hard to separate the costs. The actual contribution costs versus the costs in the agreements is therefore not a subject for discussion in this thesis. This matter would have been of high interest, as the intention of development agreements is that the cost of them should be proportionate with the real estate

development costs. Thus, it is not possible to verify such a proportionality.

Another issue related to the case study is that after the works for this thesis was initiated, several similar studies have been initiated. That means that the research gap of the matter is not as large as when the study was initiated in August, 2018. The study does however deviate from other works that have been published, as it is seen in the perspective of LVC's potential for implementation in Norway and not a general study of Norwegian development agreements.

Most oral sources used in the case study are either real estate developers or people working in cooperation with real estate developers. That may bias the findings and colour the impression made regarding today's practice of development agreements. It could be interesting to gather more opinions from municipal representatives, even though some quotes from these have been re-told by real estate developers.

6.5 Private infrastructure contributions

As stated in the case study regarding private infrastructure contributions, the practice of obtaining such contributions is deviating around the country. The case study has only taken place in Oslo municipality (OM), which means the discussion will also only concern results from this municipality.

6.5.1 Current practice

The state of the Norwegian real estate market in Norway has changed greatly over the last 50 years. After the oil was discovered in the North Sea, the Norwegian economy have developed greatly and so have the real estate market. Most cities are now well developed and the margins within the real estate market have remained high for several years. According to professionals, the former impression was that municipalities were happy that local real estate development occurred, while the development is more in need of regulation now, as there are a lot more developers and actors wanting to build. This also allows a changed trend in requirements regarding private infrastructure contributions, as the local governments are now in the position to require measures from developers for their building permits and not just tailor for their needs.

Another aspect about the current development agreements is that the city development has changed and become more complex since the introduction of the instrument. The intention of the development agreements, to fund necessary infrastructure measures in order for a real estate development to be feasible, would among most people be welcome. The last years' practice of the agreements have however showed that the agreements are under-regulated, allowing distinct local variances to flourish. As the use of these has increased along with the need of funding for city development, the practice is in need of regulation and unified, national guidelines.

6.5 Private infrastructure contributions

VAT

As described in the case study, Oslo municipality's practice regarding VAT may be considered highly controversial. A significant advantage with adjustment agreements is that the VAT may be refunded for self performed measures, meaning the cost of the measures will be reduced, thus more comprehensive measures may be performed for the same cost as a less comprehensive measure. As the municipal agencies are negotiating development agreements on behalf of the inhabitants' own good, it may be discussed if OM's practice for development agreements is for the people's own good, as the revenues from their VAT-refund is not ear-marked a concrete measure. The practice may anyhow be considered illegal as rulings in the High Court state that all revenues from a development agreement must be ear-marked concrete infrastructure measures. It could also seem unfair above the real estate developers that are in low-levered positions when negotiating the development agreements.

Negotiation

As the use of development agreements have increased the last decade in Oslo, the cost of the infrastructure contributions required by the municipality have also increased. An explanation behind the phenomena could be that the negotiating agency, EBY (Eiendoms- og byfornyelsesetaten), have realized their large power position and leverage in negotiations for development agreements. If a developer has completed all municipal plans, including a zoning plan, one of the last steps before a building permit may be handed out, is often to negotiate and sign a development agreement. That implies that large resources have been spent on design and planning, and the erection is expected to be initiated within a short period of time. EBY's position is in other words fairly strong in a negotiation situation, as it is one of the last official decisions and costs to be negotiated. A real estate developer will in such a situation be short on time and a delay of the erection initiation could be critical. It is therefore important for the developer to get done with the development agreement and it may therefore often be easy to negotiate with, seen from EBY's perspective. This leads to that developers often are willing to accept a higher development agreement cost than what they may consider necessary and reasonable. Today's practice does in general show signs of development agreements that are made by feeling one's way, and testing the developer's willingness to pay.

This has resulted in a trend where EBY may set a price of the development agreement before calculating the cost of necessities related to the actual real estate development. Assuming that this practice occurs, it may be considered illegal and in conflict with the Planning and Building Act's §17. The trend of increased development agreements costs could be a result of the municipal agencies realizing their strong position and pushing the developers' limits further and further.

Recent negotiation cases, that are disclosed because of sensitive information, have been examples

where EBY has pushed the limit too far. The amount required in the development agreement for the actual project wiped out the profits, meaning the project turned out to be economically unworkable. After this was communicated to the municipal agency by the developers, the development agreement cost was substantially lowered, allowing the project to be carried out again. In such a case, the measure for obtaining private infrastructure contributions turns out to be perverse, as it stops real estate and city development.

This very issue is one of the larger problems with OM's practice regarding development agreements. First of all; the agreements are not intended as a way for the municipalities to take a share of a real estate developer's profit. It is neither there for the municipalities to figure out how large the developer's profits are. It is there to fund *necessary* infrastructure measures. When the practice makes projects come to a halt because the profitability is wiped out, the practice has gone too far. However, it could be discussed if a development fee or similar should be introduced, as it has in other countries. As real estate developers often accomplish high profits, it would harmonize with socialistic and Land Value Capture (LVC) ideology to capture some of the profits. If such an introduction should take place, it would anyway have to be regulated by law and will be further discussed in Section 6.5.2.

Technical requirements

There seems to be little doubt that technical requirements are under-communicated from a development agreement is signed until the hand-over over of self performed measures. It is hard to determine exactly where the weakest link in the communication chain is, but a coordinating instance could improve the situation. As informed by professionals at Vedal, PBE (Plan og bygningsetaten) is supposed to be a coordinator between the different municipal agencies, but does not function as such. Whether their coordinating role is misunderstood or not, it is clear that there is a need for such a role.

A line of action for shaping a development agreement, could be that EBY (Eiendoms og byfornyelsesetaten) and the developer agree what measures are to be included in an agreement based on a cost estimation by a third party. Afterwards, PBE take over the responsibility for coordinating the different municipal agencies' technical requirements of the measures agreed upon. If the requirements could be included in the agreement before the time of signing, the issue with changed requirements would might disappear. However, requesting technical requirements from several municipal agencies after the time of agreeing upon a development agreement could be very time consuming in a situation where time is a lacking resource. It would probably be easier if such requirements were available to the developer already when EBY suggests what measures to be included in the agreement.

Another reason for the issues could also be that relevant people in the municipal agencies are lacking authorization for negotiation. This thought is anchored in the hierarchy of the bureaucracy, meaning that

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people with sufficient technical insight in the municipal agencies are not necessarily authorized to take part in negotiations of development agreements, nor require contents in them. Maybe the whole structure of how the municipal agencies submit their technical requirements in the development agreements could be subject for a re-organization.

Bymiljøetaten (BYM) is in many cases the owner to be of the self performed measures in development agreements, and has in several cases been the actor who communicates technical requirements at a late stage of the building process. As no stakeholder would gain from a delayed delivery of such measures, a possible explanation is that BYM is overworked. A solution could be to give some of their tasks to another municipal agency or increase their budget, in order to hire more consultants.

It may also be discussed whether the contractor or developer should take more responsibility for obtaining the technical requirements for the measures. Both parties should be pro-active in terms of mapping any unknown requirements.

Land cession

Development agreements often require the land where self performed measures are made to be ceded by the developer to the municipality. The current practice, where the value of the land to be ceded remains unmentioned in the agreement may be considered unfair. Development agreements are usually most comprehensive in the highest populated areas of a city, while the market value of land also usually very high in these areas. Therefore, the value of land that has to be purchased in order to complete the self performed measures should be included in the calculations, as well as the value of land to be ceded after completion. As the data for the development agreements used in this thesis' case study mainly is based on the actual development agreements, the land value for the land to be ceded has not been calculated or discussed. This would be interesting to look further into.

The main reason for the unfairness in the practice regarding land cession, is the potentially large hidden costs that may be hard to reveal. Land cessions are generally common in modern politics, but the cost of such in development agreements must be communicated and not remain a hidden cost. The problem is that when the development agreements are negotiated, the total sum is of high importance during the negotiation. With a potentially large hidden cost like the land cession, it is impossible to perform an objective comparison and assessment of the agreement's cost. All significant factors of an agreement should be available to all stakeholders when negotiating, in order to maintain a fair procedure.

Percentage of total costs

Table 5.1 shows the different cases' total contributions and the contribution costs' percentage of the total project budget for each case. Only two of the cases assessed are subjects where development agreements have been made. These two cases' contribution costs make 4.8 % and 4.9 % of the cases' total project cost and their development agreements were signed in respectively 2016 and 2017. As there are only two cases to base an assumption on, it is hard to conclude with a pattern. However, this finding may indicate that OM finds approximately 5 % of project's total costs to be an appropriate cost of a development agreement. The finding may also be completely random or it may be a result of other connected apprehensions.

Improvement potential

This section of the discussion and the appurtenant part of the results, is supposed to answer RQ1; "How have the public authorities gathered private contributions for financing public infrastructure over the last years?". The discussion could be rounded off with a need for change in the current practice. There are too many controversial aspects of today's practice that needs to be improved or changed, meaning an unhealthy relation between developers and municipal agencies is thriving. The findings contribute to approve the thesis' hypothesis, as there is a clear improvement potential. It may be discussed whether the current system should be improved or swapped for another. An argument for swapping, is that there are too many issues with today's practice, meaning a completely new system could make a more fair practice, but also wipe out former struggles between developers and municipal authorities. Thus, the further discussion makes a basis of abandoning today's practice with development agreements and looks for new ways of gathering private infrastructure contributions.

6.5.2 Future practice

The third research question is "How can the Norwegian system for gathering private infrastructure contributions be improved?". This part of the discussion is aiming to answer that question. According to the United Nations, 68 % of the world's population is expected to live in urban areas by 2050 (United Nations, 2018). Thus, cities need to be developed in an appropriate manner, which demands for sustainable and solid funding mechanisms. Being proactive on this matter means that increased funding complexity may be avoided.

First of all, it is important to address the issue of today's local variations in the use of development agreements. When suggesting a new model for gathering private infrastructure contributions, strict, holistic, national guidelines should be paid attention, in order to avoid significant local variations. It could however be of interest to allow for some minor, local variations, if special reasons would make

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such advantageous. The point is anyway that a unified, national system for private contributions would make a predictable and more fair system for the developers to use and understand.

Another important aspect is to establish loyalty to the system. In order to achieve that, it must be a system than seems fair and predictable to all parties, so that good will from all relevant actors exists from the beginning. As Norway is a socialistic state, contributions to the public are not disliked by the recipients nor the contributors. Several developers contacted have indicated that if a fee related to real estate development, which is fair and equal for everyone, as well as predictable, it would be welcome. Today's practice undermines modern taxation practice and way of thinking, thus it is not welcome nor popular.

It may also be discussed what type of areas that are in the most need of private infrastructure contributions. Existing, well developed areas might not be in the same need of contributions as larger areas under development. A future practice should be able to differentiate the contributions needed and thereby be considered a more fair practice. The picture is however not black and white, as changing infrastructure in well developed areas may be just as expensive as in areas that are under development. That is because re-building infrastructure may require just as much labour and money as building new, but as well-developed areas are more likely to already entail necessary infrastructure, they are also likely to be in less need of contributions. A differentiation of the contribution cost level should however be available to the municipalities.

Another relevant question is whether private infrastructure contributions should be a part of the general tax revenues, or if the revenue should be ear-marked infrastructure. The wording and terminology used in this thesis lays the grounds for an ear-marked practice, much because of the expression "private infrastructure contributions". However, it should be discussed whether one alternative is better than the other. As all development projects somehow are subjects for profit taxation, they are already contributing to general tax revenues. Furthermore, the contribution burden is released by real estate development, meaning it could be considered fair that the private contribution should be used for infrastructure measures. As the contribution today is justified by saying it is needed because of a development's need for new infrastructure, it could also be discussed that the contributions should be spent on necessary, relevant or near-by measures. The definition of these terms have proved to be hard to agree on, meaning this will not be discussed further.

This does however not necessarily suit Land Value Capture's intentions, as the intention of these instruments is to capture increased land value. It may be interpreted as local governments taking part in real estate developers profits, which is not the intention of today's practice of development agreements. On the other hand, it could also be considered fair to capture increased land value, especially plan made values. A reason for that is that plan made values are usually only available to the owners of the land

within the changed plan, as it is not publicly available. It may therefore be considered fair to capture some of the value made from plans or real estate development. The argument stating that plan made values are not made available to the public, talks for introducing an instrument based on capturing plan made values, which some of the LVC strategies also are based on.

Oslo municipality's practice today may be interpreted as a strategy for taking a share in real estate developers profits, as it often is based on a decided rate per developed GIA. As it has been stated in the case study, several cases with EBY, OM's negotiating agency for development agreements, start out with an agreement cost per GIA, which usually takes in the total GIA of a building. In other words, existing areas of buildings that are expanded may also be included for calculating the costs of an agreement. There is however an exception from this practice, when there is not made a new zoning plan for the development, but a former zoning plan is used for obtaining a building permit. No development agreements are used then, as the agreements are connected to the zoning plans. Inspiration for capturing plan made and property values could be gathered from OM's current development agreement practice, as it may be highly predictable for the developers if the rates per GIA for a certain area is set by the municipality and remains untouched for a longer period of time.

It could also be discussed whether a private contribution should be based on a projects building or total cost, as it may be an indicator of how wide-ranging the project is. As the case study shows, the two projects where development agreements have been made, the agreement costs makes approximately 5 % of the cases' total costs. It may be considered a good system, as it is a flat rate, making it very predictable and equal for all projects. However, it may also be considered very unfair, due to it's rigidity and lack of adjustments for unique projects. It would for instance require a project with a large geological intervention, which is usually very costly, to contribute with a larger sum than a similar project built on solid grounds. The fee could naturally be based on actual building costs instead of total project costs, but the same argumentation would be applicable for such an arrangement too.

6.5.3 Suggested practice

As the title of this thesis is "LVC's potential in Norway", it is natural to start suggesting a model for private infrastructure contributions by assessing the LVC strategies discussed in Section 6.3. Tax increment Financing and Special Assessments are instruments that requires large amendments of several laws, as they are fairly complex in design. Joint Development is a very wage instrument, that includes several types of cooperation between public authorities and private actors, that are already partly in use in Norway today. Land Value Taxes could be possible to introduce, but it would overlap with the current property tax and would therefore not be a good alternative to today's practice of development agreements. Transportation Utility Fees does only concern transport infrastructure and

6.5 Private infrastructure contributions

may therefore be considered too narrow for replacing development agreements, but could be used in cooperation with other instruments. Air Rights is a feasible instrument, but does only apply for highly urban areas, or central business districts, meaning it would not be feasible for the whole country, nor all of Oslo municipality.

Two instruments that are considered to be more interesting to look further into, are Development Impact Fees (DIF) and Negotiated Exactions (NE). Section 6.3 states that both these instruments are somehow similar to development agreements, which could be positive, as they would therefore probably not require too large amendments of the relevant systems. It may of course also be considered negative if they are too similar to the development agreements, as that would imply continuation of several of today's challenges.

NE can from the start be considered too similar to development agreements, as there are no natural limitations or regulations of what such an exaction could be. Such limitations would most probably be subject for interpretations of definitions, as today's practice is, or the limitations would have to be in absolute numbers or percentage, making the system rigid. DIF is almost completely covered by the Norwegian *opparbeidelsesplikt*, freely translated to infrastructure work up duty (IWUD), as described in Section 2.2.10. This duty requires all real estate development to upgrade or build out all necessary road, water and sewage infrastructure in order for the new real estate to function. IWUD is however not a fee; it is duty that requires self performed measures.

Based on inspiration from both DIF and NE it is possible to suggest some models for private infrastructure contributions. As LVC instruments are made in other countries than Norway, it is natural to think all of the instruments would need some adjustments and tailoring to fit Norwegian requirements and legislation. By combining ideas from both DIF and NE, this is exactly what the intention is of the suggestion is.

Two models are therefore suggested: A development fee, similar to Great Britain's Community Infrastructure Levy and a re-zoning fee, similar to what we find in Switzerland and used to find in Denmark. An advantage with both models is that they both avoid today's issues regarding VAT and adjustment agreements, as they are both based on fees and no self performed measures. The two models are fairly similar and the main difference is what part of the development area they appoint to be levied. A summary and comparison of the two models may be found in Table 6.2.

Both models are intended to fund the same infrastructure measures, but the basis for calculating the contribution is different. It could therefore be discussed for both models whether there should be a limitation of what share the contributions may take in funding a measure. A suggestion could be that infrastructure contributions should stand for maximum 50 % of a measures funding, so that the municipality also has to raise funds to carry out a measure. By doing so, the municipality has to commit

Table 6.2: Summary of the suggested development fee and re-zoning fee.

Feature	Development fee	Re-zoning fee
What is levied?	Total developed area, including existing renovated area. Excluding existing area that is not renovated.	Only additional area according to the new zoning-plan.
Pros	Levies all real estate development.	Levies plan made values that are unavailable to everyone except for the land owner. Increased renovation of older buildings. Less demolishing.
Cons	May decrease the real estate development and renovation. Could lead to older building masses. More demolishing and re-building.	Less area to be levied for the municipalities.
Common features	Upper limit fee per m^2 is set by a council. The council may also treat complaints. May replace both development agreements and infrastructure work up duty. Voluntary implementation in the municipalities.	

to the measure with monetary values, meaning it is less of a chance that the municipality will misuse their power for gathering contributions. The question whether a contribution measure is necessary or not will probably in such a case be less relevant, as the municipality is less likely to require an un-necessary measure if they are obligated to contribute financially themselves.

Another measure to avoid the discussion of *necessary*, could be to disallow the use of VPOR when deciding what measures are necessary or not. The problem is that VPOR usually covers large areas, meaning that measures mentioned in a VPOR would often be located far away from the actual project that is subject for a development or re-zoning fee. Distance is an important factor when discussing if a measure is necessary for the development project to be carried out or not. It could be discussed that a measure should have direct contact with the project in order for it to be considered necessary.

Development fee

The development fee is intended to be a fee calculated per GIA, covering 100 % of a projects GIA. That would imply also non-added GIA in a renovation case. An example could be renovation and expansion of an existing office building with a GIA of 5,000 m^2 , and an expansion of 2,000 m^2 , resulting in a new total GIA of 7,000 m^2 . Only 4,000 of the original 5,000 m^2 is supposed to be renovated, meaning a total 6,000 m^2 would be developed in this case. The development fee would therefore be based on 6,000 m^2 and not the total GIA of 7,000 m^2 . Some negative features of such a model is that it would levy renovation of existing buildings, possibly leading to less renovation and older building masses. The most extreme case could be that the fee would lead to an increased trend of complete demolition and re-building of buildings. It would in other words highly increase the renovation cost. It is hard to find any argumentation for that it is fair to levy renovation, as it does not necessarily lead to increased load

6.5 Private infrastructure contributions

on existing infrastructure. A model similar to OM’s current practice for development agreements could be charging a fee for all 7,000 m^2 , but it remains hard to find any legitimate argumentation for such a practice. The figures for the examples are clearly set out in Table 6.3.

Table 6.3: Overview of Suggested practice example

Example figures for Suggested practice	
Existing GIA	5,000 m^2
Renovation	4,000 m^2
Expansion	2,000 m^2
New total GIA	7,000 m^2
Basis for development fee	6,000 m^2
Basis for re-zoning fee	2,000 m^2

The maximum rate of the development fee would be decided by a council, as for the re-zoning fee, which is described in the following section. The revenues from the fee would have to be used for nearby, necessary infrastructure measures, that are to be decided by the responsible municipal agency. The agency would have to present a cost estimate for these measures, calculated by a third-party, where the total amount of these costs would be the finite maximum total cost of the development fee. That means that if the maximum rate per GIA multiplied by the GIA would exceed the total cost of the necessary infrastructure measures, no more than the cost of the infrastructure measures could be charged. Similar to the re-zoning fee, the same council that sets the rate per GIA, would also be able to handle any potential complaints from developers of municipal agencies. The only difference between the development fee and the re-zoning fee is really what area the fee is calculated from. More detailed information regarding the two fees follows in the next section.

Re-zoning fee

A re-zoning fee would on the other hand only levy the additional GIA, meaning 2,000 m^2 in the previous example, set out in Table 6.3. The intention of such a fee would be to tax plan made values, for instance through increased utilization degree. This value is as mentioned only available to the owner of the re-zoned lot, meaning it could be considered fair to require the developer to pay a fee for the received benefit, that may be considered exclusive. The owner should however only be levied a fee if it takes advantage of the increased utilization degree, by expanding the building as in the mentioned example. The fee is in other words only triggered if the allowed expansion is developed. The revenues made from the re-zoning fee should be ear-marked nearby, necessary infrastructure measures.

As different municipalities have different levels of infrastructure costs, the rate of a re-zoning fee would have to be decided locally. Most municipalities would also have different infrastructure costs in different areas, meaning there should also be a possibility to differentiate the rate locally within the

borders of a municipality. In order to obtain a fair rate, it should be decided by several actors in cooperation as a council, for instance by the municipality, real estate developers, a neutral third-party and a representative from the Ministry of Local Government and Modernisation. In OM's case, a municipal representative could be a person from EBY, a developer representative could be a person from *Norsk Eiendom* (a Norwegian real estate developer trade organization), a neutral third-party could be a lawyer or a mediator, while a representative from the ministry could be a government official, or a person from *Bygg21* (a cooperative organization between the government and real estate developers). It could however be hard to force all 422 Norwegian municipalities to establish such a council, as it could be considered demanding in terms of resources. Another issue could be the complex decisions of deciding borders between the different fee-zones, as the need for infrastructure measures may vary very locally within different areas. The last issue is already existing today, as municipalities must select what areas are eligible for development agreements. As it is hard to draw borders between areas that are to allow or disallow such agreements, most municipalities simply allow development agreements in all areas.

The rate should be an upper limit for what the municipality may require as a re-zoning fee per additional GIA, while lower rates may also be allowed. In order to levy the fee, the municipality would have to document what expenses and measures the revenues should be used to cover. If the rate multiplied by the additional GIA exceeds the expenses documented, the rate must be lowered equivalently. The cost estimates for the measures that is to be covered by the re-zoning fee should be done by an external third-party, in order to achieve a fair estimate. The re-zoning fee may in other words not be higher than the rate set by the council, nor the cost estimate for the necessary measures.

An issue with today's development agreements is that the developer is not able to submit complaints regarding it's contents, which could be solved with a re-zoning fee. The same council that sets the fee's rate could also evaluate potential complaints regarding the documented expenses that is to be covered by the fee's revenues. In addition to evaluating the rate of the fee, they would also be able to evaluate whether the municipal agencies' documented infrastructure measures are necessary or not.

The re-zoning fee may in some situations overlap with the infrastructure work up duty (IWUD), as the municipalities may include measures already covered by this duty. In order to avoid such an overlap, it is suggested that the re-zoning fee could replace both the development agreement and the IWUD. The IWUD should however be prevailing for all real estate development where the re-zoning fee is not triggered. IWUD generally concerns absolutely necessary infrastructure, for instance an access road. Such a road is usually needed at the time of erection initiation, meaning it could be considered an immediate measure. A developer could probably not expect a municipal agency to react instantly on a building permit with establishing such a road within an appropriate period amount of time. The developer

6.6 Suggested model for Landbrukskvartalet (LBK)

would therefore probably want to establish the road itself, which could lead to the use of refund systems as described in Section 2.2.8.

As explained for the British Community Infrastructure Levy, some less-developed municipalities may not be interested in using the re-zoning fee, as it could reduce the private real estate development in an area with a high demand for such development. It is therefore suggested to make the use of a re-zoning fee voluntary for the municipalities. That correlates well with the suggestion of keeping the IWUD for cases where the re-zoning fee is not triggered, whether it remains non-triggered because of principal regulations or the municipality's own will.

The third research question is answered by that the Norwegian system for gathering private infrastructure contributions could be improved by implementing a development fee or re-zoning fee. It is recommended to implement a re-zoning fee and thereby replace both the development agreement and the infrastructure work up duty. The latter replacement is as mentioned dependent on that the re-zoning fee is triggered.

6.6 Suggested model for Landbrukskvartalet (LBK)

The last item of the case study, Landbrukskvartalet (LBK) is found in Section 5.9. As mentioned, it is included so that a suggestion for gathering private infrastructure contributions may be exemplified. A computer generated picture from what could be the top of Landbrukskvartalet can be seen in Figure 6.1.



Figure 6.1: Computer generated picture from the top of Landbrukskvartalet

For Landbrukskvartalet, in similarity with all other coming development projects in the area, it is recommended to take use of the re-zoning fee. This fee is intended to replace both a development agreement and the infrastructure work up duty, respectively described in the Planning and Building Act's

§17 and §18. Firstly, a council existing of representatives from Oslo municipality (OM), a real estate developer trade association, a neutral third-party and a government official, has to set a maximum rate for the fee in the city center area in Oslo. Afterwards, EBY or another municipal agency will have to figure out what nearby infrastructure measures that could be covered by the re-zoning fee, in addition to any potential necessary road, water or sewage infrastructure upgrades. As explained in the case study, a suggestion for such measures is:

- Bike paths and general bike-infrastructure. For instance a bike path along Nylandsbrua and indoor parking for 1,000 bikes.
- Reopen Akerselva
- Pedestrian connections, for instance along Nylandsbrua
- Transform Biskop Gunnerus gate and Schweigaardsgate to streets of urban character

An estimation of these measures will not be calculated, as it is considered outside of this thesis' scope. Today, LBK's GIA is $31,420 \text{ m}^2$, while the latest plan proposition suggests a new GIA of $50,600 \text{ m}^2$. That results in an expansion of $19,180 \text{ m}^2$. According to figures suggested by OM in recent development agreements for similar locations, a rate of 4,000 NOK per m^2 could be realistic. This rate does however solely function as a hypothetical example. With such a rate, a re-zoning fee for LBK could be of 76,720,000 NOK, as found in Equation 6.1.

$$4,000 \text{ NOK}/\text{m}^2 \times 19,180 \text{ m}^2 = 76,720,000 \text{ NOK} \quad (6.1)$$

This re-zoning fee would be the maximum cost, that may not be exceeded independent of the cost of the measures to be covered by the fee. As the four suggested measures are expected to be fairly costly, it is considered possible for OM to document a need for using the maximum rate. Such an infrastructure contribution would make 5,1 % of the project's expected total cost, meaning it corresponds quite well with the findings from the other cases of development agreements in Chapter 5.

Conclusion

After conducting the case study "A re-zoning's effect on real estate market value" at Sluppen in Trondheim, knowledge contributing to answering RQ2 was established. The findings show that the most significant factor in a zoning plan's effect on real estate market value is the allowed utilization degree. A local plan, that is about to be carried out for Sluppen, is also expected to have an effect on the market value of real estate, as it changes the prospective of what the future surrounding area will appear as. Improved infrastructure, such as transportation systems or an improved reputation of the area is also expected to increase the real estate value, but there are too many uncertainties connected to such improvements, meaning they are not taken in regard. In the worst case, a property owner could be forced to contribute to such improvements financially, meaning they could actually imply a financial loss.

Sluppen, the area that is covered in the first case study, is located at the outskirts of Trondheim city and is subject for a major transformation over the coming 30 years. The first step coming up, is to establish a new local plan and follow up with appurtenant zoning plans. Three properties have been selected within this area for assessment in regards of their changed land value as a result of a changed zoning plans. One of the lots have already been re-zoned and acts as a true example of what the value change might be, while the others have not been subjects for re-zoning the last 30 - 40 years. As only three properties were assessed, it is not possible to conclude with a dependence between land value and utilization degree increment. However, all three properties turned out to have an almost proportionate relation between land value and utilization degree increment, with ratio's between the two parameters of 1.32, 1.00 and 1.28. It is also discussed that if this ratio may be prevailing for other properties, it will however most probably not be constant, as small cities do not have a market demanding large utilization degrees like central business districts in metropolises. The ratio is therefore expected to decrease after a certain utilization degree is reached.

Most theory presented in this thesis builds up under the second research question, namely what existing strategies or instruments may be used to gather private contributions for funding public infrastructure. Most of these are based on Land Value Capture-strategies. The fact that the principles behind LVC have been utilized for more than 300 years and were part taking in the founding document of UN Habitat in 1976, states that LVC has proved its right of life. Existing Norwegian legislation, as development agreements, urban land consolidation and joint actions seem to have some common features with LVC strategies. Especially Development Impact Fees, Negotiated Exactions and Joint

Developments seem to have similarities with Norwegian development agreements, as they are based on agreements or partnerships between public authorities and a private company. On the other hand, Air Rights seems to have some connection with urban land consolidation, as it entails rearranging property rights, divided in different altitude levels. Lastly, Transportation Utility Fees are based on that all beneficiaries adjacent to a transportation improvement should be levied a fee, can be compared with the Norwegian joint actions, which also forces beneficiaries of property improvements to contribute financially.

The mentioned strategies seems plausible for implementation in Norway and may be introduced without large legislative changes, as implementation of the LVC strategies Tax Increment Financing or Special Assessments might implicate. The major obstacle for implementation may however be §17-3 in the Norwegian Planning and Building Act, as it prevents municipalities from making agreements with private developers that are not necessary and cost proportionate with their local plans. Such deals may be necessary when making large deviations from existing zoning and local plans and thereby increasing a property's land value substantially. An example may be when allowing to erect a sky scraper or high riser in an area mainly containing lower buildings. It will therefore probably be necessary to change §17 in order to change the current practice of gather private infrastructure contributions.

The second case study, "Private infrastructure contributions in Oslo", analyses several cases of real estate development in Oslo to look for any private infrastructure contributions. Over the last years, the use of development agreements have increased in order to gather such contributions. Ten years ago, it was not very common to use development agreements, but absolutely necessary infrastructure was covered by developers through development conditions in zoning plans and *opparbeidelsesplikt*, freely translated to infrastructure work up duty. However, the use of development agreements have increased in Oslo since then and so have the costs of the infrastructure contributions. The intention of these agreements is to cover *necessary* infrastructure expenses, as a result of a real estate development. The study shows that the two last analyzed cases have been required to contribute with approximately 5 % of the projects' total cost. The percentage is not stated in the agreements, but is calculated during the case study.

There are found several issues with Oslo municipality's (OM) practice regarding development agreements, where many of them may be considered controversial. One of them is an issue regarding refund of VAT from self performed measures, which has been practiced in several municipalities across the country. This has not been performed regularly in Oslo, but they have now started to include a section in the agreements where the developer agrees to transfer *justeringsretten*, freely translated to the adjustment rights, to the municipalities after the self performed measures are done. This allows OM to reimburse the VAT that the developer has paid, but OM's intention is to keep the reimbursement themselves, without paying it back to the developer. Whether the fairness of the intentions are good or

not, may be discussed, but all revenues from development agreements must be ear-marked concrete infrastructure measures, according to a former High Court ruling. Revenues from such a VAT-reimbursement would not be ear-marked and the practice is thus considered illegal.

OM's practice for negotiation is also described by real estate developers as controversial. It seems to be based on the residual method, by testing how much the developer can afford to pay in an agreement, meaning to push the limit until the developer says stop. That means it may be discussed whether OM does not base their agreements on actual necessary infrastructure, but looks at the agreements as an opportunity to generate revenue.

The technical requirements of self performed measures are often under-communicated, meaning that they are not communicated until the time of hand-over. Thus, the developer builds what is agreed upon at the signing time of the contract, without sufficient technical requirements. The discrepancy is typically first realized when the different responsible municipal agencies are inspecting the infrastructure such as roads, parks, sewage and water systems. It is usually a lot more expensive to change such requirements at the time of hand-over than during the design phase, which should be solved by using a coordinator between the municipal agencies. Apparently such a role exists, but is not practiced.

Another issue with today's development agreements, is connected to self performed measures that are ceded to the municipality after completion, along with the appurtenant land. The cost of this land is not mentioned in the development agreements, but such a cost may be fairly high in highly urban areas. This may result in unpredictable cost estimates, as well as agreement costs that are significantly higher than what is agreed upon. The main issue is that the hidden cost of the land value makes it hard to assess the actual cost of the development agreement, and the cost is not taken into consideration when evaluating the agreement cost by the negotiating municipal agency.

Due to all the issues with today's development agreements, it is suggested to replace the development agreements with a re-zoning fee. This fee is optional for the municipalities to use, in case it may be considered to decrease real estate development in less-populated areas. When used, it is however intended to replace both development agreements and infrastructure work up duty. It is important to stress that the infrastructure work up duty will still be prevailing for the cases where the re-zoning fee is not applied. The fee is intended to cover expenses the municipalities may have for establishing near-by, necessary infrastructure; a little similar to the intention of today's development agreements. It is based on inspiration from two LVC-instruments; Negotiated Exactions and Development Impact Fees, as well as similar strategies implemented in Great Britain, Switzerland and Denmark.

The fee is based on levying plan made values, such as increased utilization degree of a lot. That means if a lot's utilization degree is re-zoned from 5,000 m^2 to 7,000 m^2 , the fee shall be levied for

2,000 m^2 when the increased utilization degree is utilized. A council should be appointed in order to set a maximum rate to be charged per m^2 for a whole municipality or a certain area within the municipality, in order to differentiate the infrastructure development costs. There after, the responsible municipal agency must document what measures the fee is intended to cover and a cost estimate of these measures must be made by a third-party. If the total cost of these exceed the maximum rate multiplied by the amount of m^2 to be levied, the latter rate will be determining. If the total cost of the measures are less than the maximum rate; it is the total cost of the measures that is determining. The re-zoning fee may in other words not be higher than the rate set by the council, nor the cost estimate for the necessary measures. The council should consist of at least one representative from the municipality, a real estate developer trade association, a neutral third party and a government official. The same council may also treat any potential complaints regarding costs or definitions of necessities.

As a conclusion, the thesis' hypothesis is confirmed. The Norwegian legislation and routines for private infrastructure contributions are not optimal and are in need for improvement. This improvement is done by replacing development agreements and the infrastructure work up duty with a re-zoning fee.

This thesis entails several matters that could be studied further. The current discussion and findings of the thesis could be coloured by real estate developers' needs and opinions, as most information has been obtained from them. It could therefore be interesting to continue the work of the thesis, but focus more on the municipalities' needs and opinions. An aspect that should be studied further, is the hidden cost of the land cession related to today's development agreements. The hidden cost should be estimated for multiple cases, to see if they actually are significant or not. Regarding the re-zoning fee, it could be discussed whether it also should be applied when re-zoning from business development to private residences, as it would most probably require additional or other types of infrastructure. It would also be applicable the other way around.

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Appendices

Attachment 1 - Case template

Attachment 2 - Time line for private contributions in Oslo

Case template

Project title:

Address:

Location (urbanity):

Project initiated:

Erection initiated:

Project finished:

Budget:

Project cost:

Brief project description:

Stakeholders (private/public project owner/initiator):

Users

Contribution

Project internal:

Project related:

Area related:

Reason for contributions:

Cash (per m² exc. vat):

Self (per m² exc. vat):

Location within municipality (categorization? High-end vs. low-end?):

Existing plans (VPOR, områdeplan, regplan etc.):

Remaining (%) of public funding for the actual contributions:

Year of calculating contributions:

Year of contribution agreement:

Cost for purchasing land related to contributions:

Land value for transferred land to municipalities:

Other contribution related costs:

Compare P50 with final costs:

Attachment 2 - Case time line

