

Department of Surveying

The role of partnerships in sustainable urban residential development

Matti Kuronen



The role of partnerships in sustainable urban residential development

Matti Kuronen

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This dissertation explores partnership-based urban residential development processes which aim towards achieving greater sustainability. Urban development is a complex phenomenon and involves a multitude of participants. Also, sustainability is a complex concept. The problem field, combining the two, is a real-life challenge which the research approaches with a pragmatic view.

The primary investigation method of the study has been a multiple case study using both an action research case study approach and observatory case study approach. The study suggests that Public-Private-People Partnership, a framework developed during the research, is a social innovation that improves the viability of technical and economical solutions in urban development, and it is these solutions that contribute to greater sustainability, especially low-carbon solutions that are considered a most urgent sustainability issue within the built environment. During the research, examples of these solutions were a viable development-wide geothermal energy solution and economical scenarios which enabled low-carbon refurbishments by redevelopment.

The evidence has been gathered from two complementary residential development cases in the Helsinki region, Finland. The data includes both qualitative and quantitative data. As the carbon challenge and the operating environment in urban development are rather similar in western market economies, the findings can be generalized elsewhere.

Theoretically, the study places the urban development process between urban planning and property development theories and introduces urban development as an open social system according to systems theory. This allows research to examine not only the parties present in urban development but also the relationships between them and the sustainability aims. The research suggests that a concept of customership emerged in the research that can be useful in explaining the relationships between Public, Private, and People parties.

Besides the findings, the study presents an emerging theory for considering urban development. The theory holds that Public, Private, and People parties enter urban development processes under different rationalities in order to reach their own various targets.

Keywords Urban development, Public-Private-People Partnership, Sustainability, Customership, Residential development, Case study

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Tämän väitöskirjatutkimuksen aiheena on nykyistä kestävämpiin ratkaisuihin pyrkivä kumppanuusmuotoinen asuinaluekehitys. Aluekehitys (urban development) on kompleksinen ilmiö, ja siihen osallistuu lukuisia tahoja. Tutkimuksen aihe on myös käytännöllinen haaste, jota tutkimus lähestyy pragmaattisesti.

Pääasiallinen tutkimusmetodi on ollut monitapauksinen tapaustutkimus. Käyttäen sekä toimintatutkimuksellista tapaustutkimusta että havainnoivaa tapaustutkimusta tutkimus esittää, että tutkimuksen aikana kehitetty 4P-kumppanuusmalli (Public-Private-People Partnership) julkisen tahon, yksityisten kehittäjien ja loppukäyttäjäsukkaiden kesken on sosiaalinen innovaatio, joka mahdollistaa kaupallisesti toteutettavien teknisten ja taloudellisten kestävyttä edistävien ratkaisujen käyttämisen aluekehityshankkeissa. Erityisesti tutkimus nostaa esille matalahiiliratkaisut, jotka ovat tärkein kehityssuunta rakennetussa ympäristössä. Tutkimuksen aikana esimerkkejä tällaisista ratkaisuista olivat muun muassa kaupallisesti operoitu alueellinen kallioenergiaratkaisu sekä taloudellisesti kannattavan matalaenergiaperuskorjauksen mahdollistavat vaihtoehdot.

Tutkimusaineisto on kerätty kahdesta toisistaan täydentävästä asuinaluekehityshankkeesta Helsingin seudulta. Tutkimusaineisto sisältää sekä laadullista että määrällistä aineistoa. Koska hiilijalanjäljen pienentämistavoite ja aluekehityksen toimintaympäristö ovat samankaltaisia läntisissä markkinatalouksissa, voidaan tutkimuksen tuloksia yleistää käytettäväksi myös muualla.

Tutkimus sijoittaa aluekehityksen suunnitteluteorioiden ja kiinteistökehitysteorioiden väliin omaksi alakseen. Tutkimuksessa esitetään, että aluekehitysprosessi on systeemitteorian mukainen avoin sosiaalinen systeemi. Tämä mahdollistaa sekä systeemin osien, hankkeen osallistujien, että näiden välisen vuorovaikutuksen tutkimisen. Tutkimuksen aikana esiin nousut asiakkuuden käsite kykenee selittämään vuorovaikutuksen julkisen tahon, yksityisen kehittäjän ja loppukäyttäjäsukkaiden välillä.

Varsinaisten tulosten lisäksi tutkimuksen aikana nousi esiin aluekehitysteoria, jonka mukaan osallistujat liittyvät kumppanuuteen erilaisin vaikuttimin ja pyrkivät pääsemään omiin, keskenään erilaisiin, tavoitteisiinsa koskien rakennetun ympäristön kehittämistä.

Avainsanat Aluekehitys, Julkisen, yksityisen ja loppukäyttäjäsukkaan kumppanuus, Kestävä kehitys, Asiakkuus, Asuinaluekehitys, Tapaustutkimus

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”Olen ajatellut kaikki ajatukset loppuun, ja olen nyt vapaampi.”

Antti Hyry, novellista Junamatkan kuvaus (1962)

Acknowledgments

The piece of research at hand is about economical and ecological sustainability in partnership-based urban residential development. The field is a most fascinating one, and I have had the privilege to investigate it not only as a researcher but also as a practitioner and politician. I hope that the dissertation can transmit at least some of the understanding I have gathered during the last six years.

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To my beloved wife Reeta: I am most grateful to you for being such a wonderful partner. Thank you for your love and for going to the other end of the world for this pile of paper. My dearest Neela and Petja, I apologise, but this dad’s book is not very interesting to you. How about if we read something else instead?

In the Cradle of Technology/Tekniikan kehdoissa, June 2011

Matti Kuronen

List of appended papers

This dissertation is based on this compendium and on the following papers: four international peer-reviewed journal articles and three international peer-reviewed conference papers.

- I Kuronen, M. & Majamaa, W. (2006). The Problem of Future Inhabitants - Finnish Context. Proceedings of CIRM 2006 – Destinations and Locations. Manchester, UK.
- II Majamaa, W.; Kuronen, M.; Kostianen, J. & Heywood, C. (2008). A new customer-oriented participation method for communicative planning. *International Journal of Housing Markets and Analysis* , 1 (1), 68-80.
- III Majamaa, W.; Kuronen, M.; Kostianen, J. & Heywood, C. (2008). A consumer-oriented technique for planned residential developments. *International Journal of Housing Markets and Analysis*, 1 (3), 231-245.
- IV Kuronen, M.; Majamaa, W.; Junnila, S. & Niiranen, I. (2010). Public-Private-People Partnership as a way to reduce carbon dioxide emissions from residential development. *International Journal of Strategic Property Management*, 14 (3), 200-216
- V Heinonen, J.; Junnila, S. & Kuronen, M. (2010). A Life Cycle Assessment of Carbon Mitigation Possibilities in Metropolitan Areas. Proceedings of Sustainable Building '10. Helsinki, Finland.
- VI Kuronen, M.; Luoma-Halkola, J.; Junnila, S.; Heywood, C. & Majamaa, W. (2011). Viable urban redevelopments - exchanging equity for energy efficiency. *International Journal of Strategic Property Management*, accepted to be published in 15 (3) (September 2011 issue)
- VII Kuronen, M.; Heinonen, J.; Heywood, C.; Junnila, S.; Luoma-Halkola, J. & Majamaa, W. (2011). Customerships in Urban Housing Redevelopment – a Case Study on Retrofitting a Suburb. Proceedings of PRRES 2011. Gold Coast, Australia.

Author's contribution in appended papers

- I The author is responsible for writing the paper.
- II The author is responsible for the urban planning theory section and data collection of the paper and participated in the cooperative writing and commenting.
- III The author is responsible for the urban planning theory section and data collection for the paper and participated in the cooperative writing concerning the Public-Private-People Partnership.
- IV The author is responsible for initiating and writing the paper. M.Sc. Niiranen did the calculations under supervision of the author.
- V The author participated in the initiation and data collection of the paper. M.Soc.Sc. Heinonen is responsible for the writing and calculations.
- VI The author is responsible for initiating and writing the paper. M.Sc. Luoma-Halkola is responsible for data collection and participated in scenario generation.
- VII The author is responsible for initiating and writing the paper. M.Soc.Sc. Heinonen participated in writing the marketing theory section and M.Sc. Luoma-Halkola provided some data.

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1. Introduction

1.1 Preamble and background to this dissertation

Generally, the term urban development refers to an amalgamated approach to how urban environments are produced and altered and also covers the end product of that approach. Urban development always reflects the society, time and place. The term urban development has been used to mean both the process of urban development as a vehicle for delivering new or renewed urban environment and the product of that process, the new and renewed areas. Albeit challenging to both authors and readers in the field, this distinction is embedded in the Oxford English Dictionary as well. While this dissertation concentrates on the process, addressing the output is also necessary to understand the field. This is because it is not just a production system which is studied, but the combination of the system and its output, or, rather the system's ability to produce a desired output. The interface between an output and a system is not always clear or defined. This distinction can be seen in the sciences that address urban development; the social sciences might inquire into the processes, and traditional engineering might concentrate on the outputs.

The more the understanding of climate change and its effects deepens, the more the role of the built environment is emphasized in the discussions on how to decrease greenhouse gas (GHG) emissions and how to save energy. The effects of buildings and their use on the atmosphere are well known. In developed Western countries, they produce 30-40 per cent of the emissions (UNEP, 2007), but the causes seem to be extremely complex. At the moment, however, mitigating carbon emissions is the most urgent and least controversial (ecological) sustainability issue in the built environment (IPCC, 2007). Urban development producing built environments must address this issue as it becomes embedded in policies and successful business.

Adding to the complexity is the fact that the decision-makers in the built environment are very diverse. They are property owners, tenants, users, planners, industry, and governments - practically everybody. Urban

development covers more issues than ever, more actors affect it than ever, and expectations about it are bigger than ever. In the Western world, there is no longer (if there ever was) a single actor who could accomplish urban development alone, at least since the collapse of planning economies in the latter decades of the 20th century. Central governments are no longer able to play all the roles in urban development, including that of the end customer. Even in the current renaissance of cities and metropolises, local governments often lack resources themselves to step into the field of development, and they also place limitations on themselves about stepping into that field, thus maintaining the ideal of liberal government (Mäntysalo, 2000). The business of urban development remains mostly in private hands. Still, the private sector, the “invisible hand of markets”, cannot conduct the process by itself. The urban planning power still lies within government, because urban development still deals with externalities such as commuting, carbon emissions, changing usage of urban space, and provision of common goods and services (Næss, 2001). Nor are the end-users and inhabitants, as citizens and consumers, the champions of urban development, for mostly they await results at the end of the urban development chain. The evidence seems to be that at least as citizens, people are against urban development and most movements organise around the ‘Not In My Back Yard’ phenomenon.

The 20th century is considered “the golden era of urban planning” (Healey, 2010). The importance of urban planning cannot be denied, but now urban planning is only one subordinate in urban development. Urban development shall, within its system, besides providing the properties, somehow address the urban planning, provide technical and social services, and provide the infrastructure. All this must be done within some economic limitations and under some governing and planning regimes. The whole twin-system of urban planning and urban development serves to balance public and private interests (Rathcliffe et al., 2004). Especially the political limitations are often challenging for research, which often assumes professional or some other rationality to prevail instead of often agonistic democracy (Mäntysalo, 2000). The results of urban development, that is, new or altered urban areas and properties must be attractive enough to survive in the competition for users’ resources. This is because in urban areas, there are usually several similar on-going urban development projects competing with each other.

This wide and dualistic concept of urban development with urban planning embedded in it shares a lot with Friedmann’s (2000) definition of governance:

“Governance refers to the ways by which binding decisions for cities and city-regions are made and carried out. It is thus a concept considerably more inclusive than traditional government and administration and reflects the fact that increasingly there is a much wider range of participants in these processes than was traditionally the case.” (Friedmann, 2000, p. 469)

As with governance, urban development too refers to ways of making decisions (process) and implementing them (output). Both the process and output are highly complex. Due to the extreme complexity of the system, any causality is extremely hard to examine and actions within the system have repercussions for the distant future. For example, the change towards greater ecological sustainability in the urban environment is heavily dependent on the existing urban environment, and carbon emissions accumulate only in years and decades after the urban development process has taken place. Still, this research is about that change’s impact on the urban development process.

Urban development in market economies is highly polarised, and that alone would justify seeking greater understanding. In urban development, the political agenda is intertwined with markets, no matter where it is observed from. This politics and political nature of the field reflects, respectively, the research. Since there are no straight answers and often only secondary measurable results such as emissions, area covered by the urban structure, or population density, the questions and their framing turn out to be very relevant. This is visible in the scene-setting of this research, in the researcher’s position within that scene, and in interpreting and using the results. It is also true that often these kinds of urban development investigations also have to deal with organisational politics (Coghlan & Brannick, 2010).

All in all, several different actors with several aims and rationalities are needed to complete an urban development process. They need to act together. To conduct urban development together, they form partnerships. A partnership can be based on a formal agreement, but in urban development, this dissertation maintains a view that partnership more often is based on understanding. As these partnerships are the vehicle with which to conduct urban development, and as the growing consensus claims that sustainability in urban development has to be improved, the two are bound to amalgamate.

This study is located in the field of built environment research so that it has urban planning on one side and property development on another. Both sides have bodies of rigorous academic research and praxis. Urban

development has been claimed as part of both, but investigating it as a field of its own has proved to be a fruitful approach.

Already the title of this doctoral dissertation introduces three very wide concepts. It is worth defining them briefly for greater coherence and accuracy in this dissertation. The concept of urban development together with partnerships in urban development and sustainability in urban development are used in this thesis as follows:

Urban development is about change in the urban environment. In this study, urban development is understood as the process of producing the urban environment – both property and infrastructure – as well as bringing together multiple actors from the government, business, and users in that production. Where the term is used to refer to a product in this dissertation, it is clearly stated. The research concentrates on urban residential development.

Partnership is a vehicle for two or more organisations or parties to achieve some common and individual goals. A partnership involves the sharing of risks and responsibilities.

Sustainable refers to ecological, economical and social sustainability. In this dissertation, ecological and economical sustainability are emphasised. To be able to increase ecological sustainability, economical sustainability has to be at least maintained. The combination of the two is referred to as viability. In ecological sustainability, the focus of the research is on mitigating carbon emissions.

1.2 Research approach, purposes, and design

This research concerns the realm of the built environment. Research concerning phenomena in the built environment, be it community development, business, economics, or any other, as put by Yin (2009), would be challenging to conduct in laboratory conditions. This is especially the case in urban development, which is fully dependent on everything in the society that surrounds it (markets, legislation, taxation, and more). As a laboratory, at least a whole city should be used, but even this might be insufficient to capture the effects of things like markets and economic conditions on the system. Even if it were sufficient, research could scarcely be about statistically meaningful relationships between variables. For a complex issue like urban development, in-depth case studies are necessary (Flyvbjerg, 1998 & 2006). It is true that some developments have later been labelled as “laboratories” for some planning paradigm. However, in the light of historical research, it is generally considered that these

“laboratories” were originally meant to prove something else and affect other variables (Rudlin & Falk, 2009).

Real-life phenomena, like urban development, require not only observation and research, but informed decisions as well (Ehrenfeld, 2004; Korhonen, 2004; Allenby, 2006). Contemporary problems are normative, whereas science is always suggested to be positive by nature (Allenby, 1999; Ehrenfeld, 2007). This also matches Ehrenfeld’s (2007) and Næss’ (2001) “the normative imperative of sustainability” in urban development, which this thesis also underpins, but not blindly. The sustainability must be defined clearly in the aims of an urban development process; otherwise it leads to conflicts (Godschalk, 2004; Fainstein, 2010). The research worldview is pragmatic. The problem field and the research question within it reflect the pragmatic view, as do the selected methods and research purposes along with the theory usage.

The purposes of this study are to:

- Explore the role of the Public-Private-People Partnership (4P) in sustainable urban development;
- Identify the benefits of a partnership-based process in delivering more sustainable, particularly low-carbon, urban development; and
- Describe the key features of a partnership-based urban development process.

These three purposes were selected to reveal novel issues on how to conduct urban development for more sustainability. To scope the research, the research question presented below was posed to improve the theoretical contributions and to increase the relevancy of the research in practice.

This doctoral dissertation comprises this compendium document which provides an overview of the research, and seven individual, appended research publications. The publications are referred to with Roman numerals as listed in the list of appended papers above. All the publications have been prepared and scientifically reviewed to meet the requirements of the journals or conferences in which they have been accepted. Together, the separate Papers I-VII build a coherent body of research consisting of a literature review and two case studies, and provide the results to be summarised in this compendium. Each of the Papers contributes to answering the research question and exploring the problem field, and the compendium uses the results of those seven publications to establish final conclusions. This compendium aims to develop a coherent narrative of the research based on evidence, cases studies, and emergent findings.

1.3 Research problem and research question

The research problem field is about how to conduct urban development for more sustainability. This dissertation explores the essence of the complex urban residential development process, including all the relevant actors and how this process could aim at greater sustainability without compromising the economic needs of the participating actors.

The research design allowed several dimensions of the problem to be identified and approached. The dimensions identified were:

- Theory in relevant fields (T in Table 1);
- Future and present inhabitants (later People) as actors (later a party) in 4P-based urban development (4P in Table 1);
- Sustainability knowledge (S in Table 1); and
- Roles of actors and parties as key features in urban development and relationships of parties in urban development (R in Table 1).

Paper I found that in urban residential development, planning theories do not recognise the future inhabitants and Papers II-III found that planning theories have limited capabilities to deal with the future inhabitants. Papers II-III also identified that economic theories assume the urban development process taking place under economic rationale, not as a part of society in general (Papers II and VII). Furthermore, Paper III discussed that mere avoidance of conflict and participatory democracy, as assumed in communicative planning, are not enough to create desirable neighbourhoods for People. Rational planning's "stumbling" upon complexity of knowledge, especially regarding sustainability and energy issues has been suggested to exist as well (Papers III and IV).

Papers II-IV and VI-VII introduced some improvements in incorporating the inhabitants in urban residential development partnerships, suggesting a Public-Private-People Partnership (4P) framework for urban development. The developed 4P framework proved to be useful and has been used since its introduction in Paper II in this research.

During the study, Papers IV-VI contributed to system-level sustainability knowledge. Paper IV presented a new approach to sustainable energy system design in residential development, whereas Paper V discussed the emissions related to urban structure in the Helsinki region. Paper VI contributed to a system-level solution in financing low-carbon refurbishment. Papers IV and VI-VII identified and discussed the role of the actors and parties in urban development.

A research question is typically motivated by a research problem field. The research problem field is presented above and concerns the understanding

of the essence of an urban development process in conditions of increasing sustainability and the role of actors in that process. The research question was not explicitly formed in the beginning of this research. The precise research question has been a subject of refinements throughout the study. This is typical of evaluative case studies and real world studies providing information about the functioning of some system and its improvement in general (Yin, 2009; Robson, 2002) and to form good research questions that reveal something essential about the studied phenomenon this uncertainty has to be suffered.

Based on statements above, this thesis answers the following research question: How does a Public-Private-People Partnership improve the urban development process to achieve greater sustainability?

Interestingly, in Paper II, a question arose in the discussion section: “How does 4P affect sustainability?” In a way, the ultimate research question follows from that question posed in the early stages of this study.

Along with this ultimate research question, the study has provided answers to separate research questions posed in Papers I-VII and fulfilled their purposes, and it has raised other important issues in the problem field due to the selected research method. The Papers’ research questions and purposes are presented in Table 1, along with the aforementioned research problem dimensions. Not all the Papers had explicit research questions.

Paper	Research question (if stated) and purpose(s) of the Paper	Dimensions of research problem (T – theory, 4P, S – sustainability, R – Roles)
I	<u>Question:</u> How could public-private partnerships improve participation of future inhabitants? <u>Purpose:</u> To examine the possibilities of participation in new residential areas.	T, 4P
II	<u>Purpose:</u> To throw light on what an innovative, consumer-orientated, communicative urban planning process could be in practice.	T, 4P
III	<u>Purpose:</u> To examine the identification and engagement of future inhabitants in planning processes for residential developments using a new “4Ps” participation method.	T, 4P
IV	<u>Purpose:</u> To examine the possibility of achieving measurable results in reducing carbon emissions with a 4P approach for planning low-carbon residential developments and offering them an alternative path for energy system design.	T, S, R
V	<u>Purpose:</u> To examine the possibilities that the Input-Output Life Cycle Assessment (LCA) based screening-LCA approach provides for modelling consumer behaviour and its climate change implications for urban development purposes, and to test whether urban structure and income level related GHG emissions can be identified with the method.	T, S
VI	<u>Question:</u> How can the current land ownership of housing companies be used as a vehicle for low-energy refurbishment of existing suburbs? <u>Sub-question:</u> How could a 4P improve this refurbishment process towards producing an assortment of more economical and energy efficient refurbishment options? <u>Purpose:</u> To show how energy efficient refurbishments could be partly financed by using external investments in building rights and how the local government possessing the planning monopoly could set the scene for energy efficient refurbishments.	T, S, R
VII	<u>Question:</u> What kind of existing or potential customerships are there in an urban redevelopment process in owner-occupied housing? <u>Purpose:</u> To consider the relationships between parties in a 4P urban housing development using an empirical study of the real-life urban redevelopment process of Siltamäki.	T, R

Table 1. Research questions and purposes and research dimensions of separate Papers I-VII

1.4 Research methods

For the reasons presented in Subsection 1.2, a complementary two-case case study was chosen as the main research method to collect evidence of urban development processes, their actors and relationships, and to allow an answer to the research question. Both qualitative and quantitative data were used. The case studies were residential developments located in the Helsinki region, Finland. Cases were selected to provide an overall view of residential development. The first case was investigated by an action research approach and the second one by a traditional, observational case

study approach. The scope of both cases, as well as the dissertation, is on a neighbourhood level and is developed as a whole.

The selected method enabled this study to answer its research question while remaining open to other emergent important issues in the problem field. During the research, the method provided these emergent issues, which were analysed for deeper theorisation and analytical generalizability of the research.

1.5 Research contributions

The overall contribution to the problem field is that Public-Private-People Partnership is a social system that integrates economic and ecological sustainability aspects. Besides contributing to knowledge, research can also be significant for practice and policy, and real-life research can serve not only academic interests but also practice and policy.

The contributions to knowledge of this research are threefold. This study adds to scholarly research and literature in:

- Deepening understanding about urban development as a process and a product;
- Deepening understanding about partnerships and sustainability in urban development;
- Deepening understanding about partnerships, especially 4P; and
- Deepening understanding about the potential of partnership to improve sustainability in urban development.

Contributions of this study to practice are:

- Decreasing the carbon emissions of urban residential developments;
- Incorporating more business opportunities in urban development; and
- Increasing the potential for successful projects as understanding of urban development increases.

This study will help to improve policies in:

- Tackling the carbon challenge of the built environment; and
- Creating partnerships in urban development to deliver a more sustainable built environment.

The research question also serves well the practical dimensions of the contributions, for it indicates a new procedure to be formed as a potential answer. As a social system (and as will be argued later, as a social innovation), 4P can add flexibility and embrace the complexity of the urban development process, which again enables different solutions to be viable and therefore taken into use, as was identified in the cases.

Chapters 4, 5, and 6 will present these findings in more detail and provide further elaboration of these contributions. The conclusions and analytical generalisations are intended to be of value in explaining urban development, especially urban residential development in the developed world, although the cases were specific to their location and circumstances.

1.6 Structure of this compendium

This introductory chapter leads to the field of urban development and provides an overview of the research. Chapter 2 introduces current research and an overview of theories in the literature, thus placing this study in the field of built environment research and pointing out the gap in which this particular study is located. In addition, Chapter 2 will explore systems theory to build a connection between the built environment, urban development and sustainability. Chapter 3 discusses the research methodology and design, as well as quality issues of this study. Chapter 3 will present the two cases. It also includes the research approach in relation to the nature of knowledge, research method and data, and data analysis considerations.

Chapter 4 presents and summarises the findings of the research papers included in the dissertation and groups the findings of the papers into integrated results of the dissertation. Chapter 5 presents the emergent theory based on the reported findings and the emergent general concepts and constructs. Both Chapters 4 and 5 contain a discussion on findings and theory, which will cover their meanings and how the findings and theory relate to existing research and to the identified research gap.

Finally, in Chapter 6, the implications of this research are considered in the Discussion and Conclusions chapter, identifying limitations of the study and generalisation of the results, highlighting the contributions of this research and suggesting issues for future research.

2. Current approaches to urban development and sustainability

2.1 Introduction

Chapter 1 introduced urban development as part of the built environment and briefly touched upon complexity, sustainability and partnership issues within the field. The chapter defined the problem field as how the urban development process could aim at greater sustainability without compromising the economic needs of the participating actors.

Chapter 2 covers a more comprehensive background of urban development and relevant fields of study. These fields are urban planning theories, property research and systems theory, and partnerships and sustainability in urban development. In the literature, urban development is usually approached from two directions: from urban planning praxis and related theories and from property development praxis and related theories. Systems theory facilitates an understanding of connections between urban development, the field of built environment, and sustainability. Again, the focus of the literature on urban development is either on the process or on the product, which are both systems. This approach has been discussed in the Introduction as well.

The following sections briefly present the existing urban development research first from an urban planning viewpoint and then from a property development viewpoint. Thereafter, urban development is discussed as an intersection of urban planning and property development, and partnerships are introduced as a vehicle to conduct urban development. After this, a systems theory approach is presented to complement the existing theories in the field and all previous theories are discussed in connection with sustainability. The section on systems theory already leads the compendium to this communication. Because it was avoided in recent years in built-environment research, systems theory is covered in more depth than the theories within the built environment are.

The following review of existing research concentrates on both urban planning and property approaches to the urban development process, and substantial amounts of both fields is thus of necessity left out. Additional theory discussion can be found in the included research papers. Comprehensive reviews on urban planning are available, for example Taylor (1998) and by Allmendinger (2002), as well as thorough approaches on property development, for example by Rathcliffe et al. (2004) and Miles et al. (2007). Occasionally, relevant research on the end product of urban development process will be referred to, but as these end products are the built environment, it is by no means possible to provide even an overview. After all, the built environment concerns, on one definition, “both physical and abstract attributes relating to size, location, use, legal status, value, and so on” of individual buildings, cities, and any size categories in between (Guy & Henneberry, 2002, p. 4). Research within the built environment draws on a variety of disciplines and appropriate methodologies (Amaratunga et al., 2002), so a covering overview would hardly be even possible.

2.2 Urban planning approaches to urban development

2.2.1 General

Urban planning covers, both in theory and in practice, various complementary approaches. Planning is always concentrated on the future. Since 1945, the two major shifts in urban planning have been the shift in planning from design to science and the shift in the role of the planner from technical expert to communicator (Taylor, 1998). Hitherto, no uniting theory of planning has emerged, nor has an atomistic theory for more specific theories to build on. This is why the newest planning theory often invalidates old ones, but they still survive because they may be useful in some context. Planning theories have always reflected the society, time and place, and have been born as counterarguments to existing theories (Allmendinger, 2002; Alexander, 2007).

What is more, the theories and praxis do not go hand-in-hand, but practitioners use complementary theories similarly (Taylor, 1998; Allmendinger, 2002). Planning in the real world is not done exactly within any theory and, even under a single piece of legislation, there can be several approaches to urban planning used in practice at any one time (Brindley et al., 1989; Allmendinger, 2002). This debated distinction between theory and praxis means that, in relation to urban development, it is more useful

to examine different planning paradigms and theories within them rather than a taxonomy of theories themselves. These paradigms are approaches to practice with applicable methods and theories.

Alexander (1998, 2007) has consistently divided planning paradigms into four complementary categories:

- (1) Urban planning as deliberative action;
- (2) Urban planning as interactive action;
- (3) Urban planning as coordinative action; and
- (4) Urban planning as frame setting.

Of these, frame setting refers to the social process of strategic or master planning, and as such is not usually relevant to a specific urban development process within the scope of this research. Though it is relevant to the shape of built environment as a whole, frame setting will not be visited any further in this dissertation.

2.2.2 Deliberative action

The deliberative paradigm derives from the ideal of rational planning (perhaps the most purist form of planning as a technical-professional act) and the works of Faludi (Faludi, 1973; Alexander, 2007). It has brought to practice different assessments, such as assessing environmental and social impacts of the plan as part of the planning process, as well as procedural planning theory (Taylor, 1998; Allmendinger, 2002). This positivist and administrative method of planning has received criticism, mainly because it emphasises professional rationalism, which the users of built environment, the citizens and consumers, do not share. Balchin et al., (1995) label this top-down approach “blueprint planning”, although notice that it simplified the situation in land development in its time.

2.2.3 Interactive action

The interactive paradigm maintains the aforementioned professional rationality but includes more participation. It holds planning as a social interactive process, not only as a planner-led process. In praxis, this means facilitation, mediation and conflict resolution (Alexander, 2007) and a continuous reference to economic considerations (Balchin et al., 1995). A target of critique in interaction has been that this paradigm often abandons the concept of power or assumes that all actors enter negotiations with equal power (Forester, 1989).

2.2.4 Coordinative action

Coordinative planning raises not only the question about where to go, but how to reach the goal (Alexander, 2007). It recognises the participating organisations and individuals and their resources in delivering the project and in contributing to the process of urban development. Coordinative planning aims to find the missing link between planning and implementation (Alexander, 1998). It suggests that the aims of planning are to be achieved only within existing institutional structures or by restructuring them, if the planning task enables this kind of manoeuvre. A single urban development process rarely reaches this level of importance.

Since the 1990s, communicative and then later collaborative planning emphasised participation, stakeholder involvement, and collaboration, placing planners in the centre of rational communication but similarly moving them away from planning itself (Healey, 1998; Tewdwr-Jones & Allmendinger, 1998; Friedmann, 2005; Innes & Booher, 2010). Usually, this transposition has been taken as a continuation of Habermas's ideas about democratic planning (Habermas, 1984 & 1987). Collaborative practice has emerged from the work of practitioners rather than built on theory (Innes & Booher, 2010). As collaborative action, urban development aims for tailored solutions for particular sites and circumstances and can only provide a way of seeing or interpreting things. Rydin (2010) sees collaborative action as a tool of governance rather than of governing. Some critiques of collaboration have also emerged, for example Næss (2001) saw no reason in this consensus search but suggested that planning for sustainability should be based on building alliances between those who agree on some issues and can make the difference. This kind of collaboration is at loggerheads with the original collaborative approach of involving all and then forming a common opinion. There are also several unresolved problems in the collaboration ideal and aims for greater sustainability in urban development (London & Cadman, 2009).

As a response to assessments of planning's non-participatory and professional nature, planning praxis embraced communicative and collaborative characteristics such as deeper participation opportunities (Healey, 2010). Despite the recent embracing of more stakeholders, collaborative planning has been criticised, first for not addressing the power issues in planning, and when it finally embraced them, it assumed that power is not to be used or all development will stop (Flyvbjerg, 1998; Tewdwr-Jones & Allmendinger, 1998; Mäntysalo, 2000; Friedmann, 2005). However, rejecting the idea of power or its overt usage is not shown in real-life situations. Power is not everything, but there are some kinds and

strengths of relationships between actors from different backgrounds in urban development of which power may be one kind. Within participatory planning, one theorist under the pragmatist banner has been Forester (1989), who recognised the power within communication, thus finding connection with the deliberative field and later also contributing to deliberative practice (Forester, 1999).

2.3 Property research approaches to urban development

2.3.1 General

Urban planning has been approached via theories which may have ideological dimensions, whereas the mainstream property research privileges economic value. Property research covers issues such as property investment and finance, land development, land economics and valuation. Of these, land development is the issue closest to urban development and closely intertwined in urban planning. Both property and planning are continuously borrowing methodologies and theories from related disciplines.

In the field of land development, the research approaches can be categorised into four (Gore & Nicholson, 1991; Healey, 1991; Ball, 1998):

- (1) Event-sequence models;
- (2) Agency models;
- (3) Production-based approaches; and
- (4) Institutional models.

2.3.2 Event-sequence models

Event-sequence models treat the development process as a series of stages during which certain goods and services transactions occur. In a value-adding sense, the process from undeveloped or underdeveloped land to properties and their adjacent environment is, according to the literature (Balchin et al., 1995; Healey et al., 1995; Harvey, 2000; Rathcliffe et al., 2004; Miles et al., 2007), only a matter of:

- (1) Buying and selling land and rights over land;
- (2) Paying and receiving public fees;
- (3) Buying and selling planning services;
- (4) Buying and selling building and infrastructure components and related labour; and

(5) Buying and selling properties, involving second-hand transactions and services.

In these sequential phases, the research of the relationship between the customer and the provider is concentrated on supply-side and money-based transactions only. However, as urban development is located within society, it is short-sighted to state that money measures everything because society consists of many non-monetary aspects.

2.3.3 Agency models

Agency models concentrate on roles, behaviour, and decisions of different actors. In property research, urban development is seen most often as positivist action, a purely commercial act based on economically rational decisions with a developer as an allocator of resources (Guy & Henneberry, 2000; Harvey, 2000; D'Arcy & Keogh, 2002; Kotler, 2003). Developers, as well as construction management practice and theories, emphasise this rationale either directly or via productivity of the construction process (Henneberry & Rowley, 2002; Godschalk, 2004; Majamaa, 2008).

2.3.4 Production-based approaches

Production-based approaches tend to be macroeconomic and, although interesting in general, have little relevance to a specific urban development process if the decision to develop has already been taken. However, in land economics, it is a vital approach. This is because the rationale of development – to ensure that a site is in its most productive use within current circumstances – explains the urban structure (Balchin et al., 1995; Harvey, 2000; Henneberry & Rowley, 2002). Perhaps the best known explanation is the Von Thünen model of relationships between accessibility, land uses and land values, producing a concentric zoned city (Balchin et al., 1995; Harvey, 2000). The mere fact that Von Thünen's 19th century model is still in use in textbooks reveals that urban development is spatially driven by proximity to markets, and the process orientation is therefore relevant. More detailed urban structure theories have been presented since then, such as axial development theory, sector theory, concentric zone-sector theory, and multiple-nuclei theory (Balchin et al., 1995). However, these models tend to be equilibrium models (McLoughlin, 1969).

2.3.5 Institutional models

Institutional models emphasise the organisations involved more than individuals. The institutional models in property development overlap all of the previous three models. Recently, researchers have strived to understand the larger institutional concept of the development process (Guy & Henneberry, 2002). Institutions are not only organisations, but also intermediating institutions, such as markets or politics. Institutionalism provides a way of looking at institutions, not individual organisations, and as such, enables generalisations but not organisation-specific knowledge. Institutionalism is not so much a covering theory but a methodological approach to the field (Guy & Henneberry, 2002; Verma, 2007), and it has proved able to rise above the limitations of explanations of the mainstream economics paradigm (Guy & Henneberry, 2002). The focus of institutional analysis is on interactions, not decisions, something which contrasts with the rational planning paradigm where the decisions are central (Healey, 2007). Institutional models in property research share a lot with the coordinative planning paradigm.

Despite its good effort, institutionalism is still a piecemeal approach. It allows deeper examination of certain parts of the urban development system and interactions within that part, but it has to confine the examination to only one part of the system at a time. This contradicts the holistic approach that is central to the system of urban development in order to function well.

2.3.6 Housing as a property

Housing is a special form of property, a product of urban development that covers the largest volume of land use. Housing is the key form of urban development considered in this dissertation. In this study, a loose definition of housing is maintained, which states that any development that is mostly about housing is categorised as housing development. As a synonym, residential development can also be used. What is specifically relevant to this thesis is that housing can involve more actors than commercial development, whereas commercial development involves a handful of tenants or user organisations, a characteristic of housing is the large number of (future) owners or other users, such as tenants, within a development process. The decision-makers are many, and their stakes differ, and as will be presented in the findings, this makes a difference in urban development. There are several policies concerning residential

development, such as policies of energy, transport, urban sprawl, or social housing provision (Rathcliffe et al., 2004).

2.4 Urban development as an intersection of urban planning and land development

2.4.1 General

As the aforementioned theoretical approaches aim to identify, urban development is a major realm of interaction between urban planning and land development. It is an economic and social phenomenon that planning and property research approach from two different directions. So far, neither of the approaches grasp the phenomenon in a way that the same explanation could serve both planning and property even satisfactorily. Within the fields, this dissertation mostly leans on a collaborative approach to urban planning and institutional approach to property.

Urban development as a process is a part of wider economic system and operates according to the laws of economics. This urban development process can vary in scale and encompass new development only, redevelopment only, or both (Guy & Henneberry, 2002; Rathcliffe et al., 2004). Of these, especially redevelopment is a continual process of reconfiguration of the built environment to meet society's changing needs (Graaskamp, 1981; Miles et al., 2007). This is related to the rationale of development described in the previous section. The urban development process is, on one hand, a continuum for the built environment as a whole, and on the other hand, a project with clear spatial and temporal boundaries. The approach depends on whether it is viewed as an overall development of a certain city or as a certain urban development process concerning a certain space at a certain time. The latter approach is used in this dissertation, which also assumes both the urban environment and urban development to be in constant change and not aiming for any certain equilibrium state. The actions and actors in the process are interdependent and thus any such state could hardly exist.

The urban development process always concerns a project with its often unique attributes, and although processes can and must be developed, no two projects are exactly the same (Graaskamp, 1981). Furthermore, either public or private sectors can be in charge of urban development project (Henneberry & Rowley, 2002; Ball & Maginn, 2005). The roles of development industry vary under different legislations (Healey et al., 1995).

2.4.2 Urban development in space and time

The urban development process is related to a certain place. It is a spatial process. This place is one geographically bound area that is developed as a whole, whether or not it includes several plans. This place can be called a suburb, a neighbourhood, a development, an estate, or a precinct. The common denominator is that it often involves more than just a single plot and is treated as a whole in the urban development process. Webster (2003) and Joutsiniemi (2010) have discussed this scaling of space and have come to the conclusion that the idea of neighbourhood is connected not only to houses but also to the technical infrastructure and services. What is more, Webster (2003), in his theory of the neighbourhood, defines neighbourhood as a nexus of contracts, thus flagging neighbourhood's similarities to a firm. Doxiadis (1977) defines neighbourhood as a size scale to accommodate 250-1500 inhabitants. Friedmann (1999) has a more poetical approach stating that functional and political spatial planning overlie spaces of social relation, calling them "life spaces". A more mundane definition on the same issue is Healey's (1998) "distinctive locales and niches". There clearly is a distinction between the spatial and social or community nature of neighbourhood (Meegan & Mitchell, 2001).

Although urban development in general is also continuous, an urban development process is temporal. It has a start and an end. This research is about the interval from the point when urban development has started to the point when it has agreed what it is about to deliver. Urban development is also temporal in the sense that it is possible in this kind of multi-actor market society. There is a need for urban development because it delivers tangible and intangible things that the actors are not able to deliver by themselves alone.

2.4.3 Some gaps in existing research and theories

A common issue in which urban planning theories fail is their tendency to accommodate all urban processes under urban planning and to also assume that urban planning is done sequentially. This sequential approach assumes dependency, not interdependency (McLoughlin, 1969). Land development is not without sin in this sense, either. Again, both have flaws in assuming that professional rationalities prevail in the system that operates within pluralist politics. Urban planning theories nurse the myth of rational planning and strongly separated roles of participants, and development approaches stick to economic rationality (Rudlin & Falk, 2009; Innes & Booher, 2010). It is also evident that the rationality of planning is not the

rationality of development (Guy & Henneberry, 2002), nor the rationale of land economics. There are decisions made on other rationales as well, as the multi-rationale socio-political system highly affects development. Complexity is not well addressed in current traditions in either field.

The rational model, or instrumental rationality, is based on the search for a “right” solution or decision according to the prevailing rationality, and it also used to defend that decision once made (Innes & Booher, 2010; Rydin, 2010). In fact, the current planning system is so far from the rational model that Innes and Booher (2010) cite studies over 30 years old stating that planning only makes lip service to the rational model, one of course being the Flyvbjerg’s (1998) influential case of Aalborg, Denmark. A flaw in rational planning concerning energy issues is also that the utmost critical target of cutting the carbon emissions of a new development by sustainable energy production solution is seldom claimed by the planning process.

Also, since urban development involves politics, that constantly undermines professional rationalities (Mäntysalo, 2000), either directly or in the form of public policies. A positivist approach is taught in professional education and this is why professional but normative analysis is disconnected from urban development in the real world (Innes & Booher, 2010). Innes and Booher also hold collaboration is the only common rational act in urban development thus connecting to rational choice theory. In the 4P model, this rational choice has been investigated from People’s point of view by Majamaa (2008).

2.5 Partnerships in urban development

2.5.1 General

Only very recently, some urban development researchers have raised their voices and stated that in the present situation, this idea of a mechanistic sequential process with clear boundaries is flawed, and that partnerships could do better in an urban environment which is more complex than ever (Ball & Maginn, 2005; Doak & Karadimitriou, 2007; Walker & Cass, 2007; Rudlin & Falk, 2009; Innes & Booher, 2010). Now, rarely a text appears in current body of research that would not use the word “complex” to describe urban development, either as process or as product. Also, now the Public-Private Partnership, modelled in redevelopments, for example, by Glumac et al. (2010), is currently the only form of partnership mutually recognised by both urban planning and property research.

Partnership is a tool to achieve goals that the parties involved in the development process share. Lately, in Finland and elsewhere in the

developed world, the public has at least partially retreated from some former public services, such as energy and water production and delivery and wastewater treatment, or have privatised those services. This development has led to the situation in which urban development deals with additional actors ranging from public departments and agencies to public utilities, public for-profit utilities, public-owned companies, and private companies. Partnerships have been used to correct a market failure or a government failure (Graddy & Ferris, 2007), and as such, they are a form of governance used by urban regimes (Fainstein, 2008).

Partnerships may also collapse. It has been estimated that over half of private sector organisational partnerships between different companies fail, and it is assumed that in Public-Private Partnerships, the amount of failures is even bigger due to different organisational cultures (Spekman et al., 1999; Graddy & Ferris, 2007). An urban development project can fail, although this is seldom discussed in the literature. Within urban development, success and failure depend on the viewpoint and also the time of examination. Because the urban development process starts with the need to develop a site for a more productive use, urban development processes often end without tangible results due to the lack of economical viability or political opposition, with the objectives not being met.

Although partnerships are a common procedure to both urban planning and land development, there has also been debate whether collaborative action in urban planning is just a form of New Public Management (Bengs, 2005; Sager, 2005), or if land-use regulation overall serves only as a guise for the logic of market mechanisms, which is the classic Marxist interpretation of planning (Allmendinger, 2002). This kind of discussion reflects the political nature of urban development and its sub-set, urban planning, as presented already. After all, Friedmann (1987) has already defined planning as an intervention in markets. Mäntysalo (2000) holds that the political system constantly redefines its limits, so it may well be that in a different time, it will not have a stake in any partnerships with Private but conducts urban development all by itself.

2.5.2 Public-Private Partnership

In the built environment, partnership often refers to a Public-Private Partnership (PPP). A PPP is a structured cooperation between Public and Private parties in which they share or reallocate risks, costs, benefits, resources, and responsibilities and in which PPP formation processes may coincide with the development process (Koppenjan, 2005; van Rij, 2007). Increasingly, PPPs are used to deal with complex urban problems (Graddy

& Ferris, 2007). The linear PPP model assumes that Public delegates some of its power to Private while still retaining some, and together these powers would affect the new development delivered to People.

In specific projects, these partnerships require formal agreements and their tendering processes are often long and costly. However, the task of urban development is usually not a pure public one and therefore a formal agreement where public hands the task in its entirety to the private would be hard to justify. Also, the goal of the parties is common: to deliver change in the urban environment to implement policies or to make a profit.

The bipolar nature of partnership in PPPs is not necessarily the whole truth. In this study, a wider sense of partnership is adopted, because otherwise the investigation would be limited to certain agreement-based cases and two-party situations only. Partnerships in the urban development can also exist without formal agreement and thus some of the partnerships differ from Public-Private Partnerships' formal setting (Koppenjan, 2005; Ysa, 2007; Staffans & Väyrynen, 2009; Staffans et al., 2010).

2.5.3 Public-Private-People Partnership

Developments, both creating new and altering existing built environment, are multi-stakeholder environments (Healey, 1998). Recent research, along with this one, has introduced the concept of Public-Private-People Partnerships (4P's) in the field of urban development (Majamaa, 2008; Staffans & Väyrynen, 2009; Staffans et al., 2010). All of urban developments' participating actors fall into one of these categories of Public, Private, or People.

Although under different labels, researchers other than the developers of Public-Private-People Partnership framework also agree that there are three institutional parties: People, Private, and Public (Mandanipour, 2006; Staffans & Väyrynen, 2009; Healey, 2010; Staffans et al., 2010), who operate on a development process or on a neighbourhood level. A precise definition of that level has been provided in Section 2.4.2.

Rydin (2010) defines the urban development process as a social system. In 4P, this system includes three categories of actors - People, Public, and Private - who act together to achieve a common goal of altering the existing urban structure, gradually in the sense of structure, but possibly dramatically in the sense of place.

This thesis approaches urban development from a Public-Private-People Partnership (4P) perspective, meaning that urban development happens in the interaction between three parties that themselves may consist of several actors. In the field, "stakeholders" already has the meaning of someone who

has a legitimate concern about a place, according to Healey (1998). That is why “parties” and “actors” are used instead. Even if the term ‘party’ implies a treaty context, it also involves several actors (people, organisations) and suggests temporary arrangements, something that compact partnerships were already recognised as. The parties gather together in order to change the existing urban structure. The term party has been taken into use only during the course of this study, so in the earliest publications, there is some shifting between terms. Party has been adopted as having a greater descriptive potential than just stakeholder.

2.6 Systems theory approach to urban development

2.6.1 General

To connect the theories and approaches in urban development and to better communicate them to sustainability issues, the following subsections introduce the systems theory approach. Systems theory is a framework for gaining more understanding of the behaviour of complex systems, be they natural, like the built environment, or social, like the urban development process (Senge, 1992). Any urban development process is highly complex (Rathcliff et al., 2004; Innes & Booher, 2010; Rydin, 2010).

A crucial point in systems theory history was the publication of general systems theory, which, distinct from earlier approaches, is considered to be focusing on systems that are called “open systems” (Bertalanffy, 1951). Crucial characteristics of any system are its interdependent parts, interaction between them, system boundaries, and the interaction of a system with its environment. Open systems are defined as systems that in natural systems exchange matter and energy and in social systems exchange information and communication with their environment and thus create order (Bertalanffy, 1951; Faludi, 1973; Luhmann, 1989; Mäntysalo, 2000). Open systems are more relevant to real world studies than closed systems that seldom exist (Robson, 2002).

Another defining factor about any kind of social system is their complexity, that is, the large number of variables needed to define them (Weaver, 1958). Organised complex systems, such as ecosystems, companies or cities, can be defined by their nonlinearity rather than simple input-output linearity (Wilson, 2006). Organisations are thus open systems, a fact that has been understood for a while (Katz & Kahn, 1978). Their complexity does not stem from the number of details but from multiple causalities over time (Senge, 1992), and the approach has a lot to offer for research concerning social settings in organisations (Coghlan &

Brannick, 2010), such as the ones involved in urban development processes.

In social systems, there are contradictions that cause more restrictions rather than fewer possibilities. Contradictions signal – and this is their function – that a contract (as used by Luhmann (1995)) or other contact can be broken off, which would disassemble the system (Luhmann, 1995). Interaction within the system is a thing that is a distinction between social and environmental systems, interaction being a form of social communication itself.

Of course, the systems themselves also affect system research. When it comes to the theory of science, Luhmann (1995) has stated that:

“In this way ‘epistemological learning’, including the development of a theory of science, becomes a self-referential process” (ibid., p. 481), and
“Systems research is itself a system; it cannot formulate its basic concept so that it would not itself come under that concept.” (ibid., p. 482).

This is where Luhmann says Haberman’s thoughts differ from his own. That is, there can be no absolute closed systems to be observed, for the means of observing would make the system at least partially open to an external observer (Luhmann, 1995).

A system and its environment exist in reference to each other, and the environment consists of a vast number of systems (Luhmann, 1995; Doak & Karadimitriou, 2007). The boundary between a system and the environment is clear, yet subject to constant internal and external pressures (Doak & Karadimitriou, 2007). This applies to both social and natural systems within the problem field (Ehrenfeld, 2007; Assche & Verschraegen, 2008).

The analogy between natural and societal systems is clear (Doak & Karadimitriou, 2007). Outside the given open system is its environment, which can be called either an ecosystem (Mäntysalo, 2000) or (more appropriately in this research) society (Luhmann, 1990 & 1995). The relationship between a system and its environment is constantly changing. The interaction may be maintained not only via a shared action system but also via communication (Luhmann, 1995; Mäntysalo, 2000). No actor in modern society belongs to one system or function only, but rather everyone has to maintain access to all functions (Luhmann, 1990). A system can also be understood as an organiser of its environment, a special mode that means that an ecosystem enters into its own organisation (Mäntysalo, 2000).

According to Luhmann, an actor can only resonate in a way that is typical for it. These ways are economy, justice, science, politics, religion, and education (Luhmann, 1989). Still, systems have to deal with wicked problems, meaning that even the definition of the problem is not shared, not to mention the solution (Innes & Booher, 2010). Environmental problems are usually wicked, creating disturbance to these function systems. They have to react to problems in ways that are not the most effective (Luhmann, 1989; Rydin, 2010). For example, politics can introduce steering mechanisms to an economy, but economical actors see politicians only as producing limitations (Luhmann, 1989). The problems of modern society are no longer observable as general societal problems, but are categorised as being political, economic, scientific, religious, and so on, problems – and this “inescapable narrowness of vision” is, apparently, the biggest problem of modern society (Mäntysalo, 2000). A systems approach could be an antidote to this.

In social systems, the relationships between stakeholders are as important as the stakeholders themselves (Luhmann, 1995). Still, these relationships are too often left outside of inspection.

To count as a system, any system must contain enough self-description to recognize itself and be separated from its more complex environment (Luhmann, 1995). This self-recognition, viewing the system and its boundaries from the inside, is critical for learning to occur among the actors in the system. Learning is only possible by feedback loops (Innes & Booher, 2010; Rydin, 2010), and a system must be resilient enough to adapt new things and ideas (Doak & Karadimitriou, 2007), as partnerships often are (Wakeman, 1997). Staffans et al. (2010) see the success of urban development to lie in the ability to learn.

The ability to learn comes via constant feedback. In common sense terms, this recursive feedback is nothing but constant trial and error, which the nature of a relationship allows to happen. In built environment, Rudlin and Falk (2009) yearn for self-organising systems. Learning in systems is interpreted as happening in two loops. The first loop brings new approaches to the challenge that a system aims to solve. The second loop enables reformation of the problem itself (Innes & Booher, 2010).

A recent branch in systems thinking is complex adaptive systems (CAS) (Innes & Booher, 2010), used also within the built environment research, for example, by London and Jin (2009). CAS can undergo changes while still retaining control; they are capable of self-organization and learning. Doak and Karadimitrou (2007) use “resilient” instead of adaptive to mean the same ability. CAS’s are continuously under internal fluctuations and

external perturbations, which test the system's boundaries (Doak & Karadimitriou, 2007). If the boundaries change, the system also changes.

Systems thinking and practice are a significant contribution to situation analysis: where is the explored organisation at the moment and where is it going (Coghlan & Brannick, 2010). Applied this way, systems are close to models as defined by Robson (2002), who uses them to explain and understand the phenomena of interest:

“In open systems, we can well be in a position to explain some event after it has occurred even though we were not able to predict it. In closed systems, explanation and prediction are symmetrical; if we can explain, we can predict and vice versa. But in open systems, the actual configurations of structures and processes are constantly changing, making definite prediction impossible. This means that while the future cannot be predicted, the past can be explained by establishing the particular configuration which was in existence.” (Robson, 2002, p. 41)

2.6.2 Systems in urban development

In the context of the urban development process, a systems view of development in property has earlier been adopted by Elliot and Trevillion (1997), Trevillion (2002), and Doak and Karadimitriou (2007), although emphasising commercial development or the property market as a system.

In the case of the urban development process, several urban development systems have been suggested. A systems view of development has also been adapted by Doak and Karadimitriou (2007), although on a highly conceptual level and emphasising commercial development. According to Mäntysalo (2000), there are economic, administrative, and political activity systems in urban development. The economic subsystem is set between Private and People, administrative between Public and Private, and political between People and Public. The subsystems in urban development, at least as presented by Mäntysalo (2000), match very well with institutionalism, which is one of the traditional paradigms of planning and land development, as presented above.

McLoughlin (1969) and Chadwick (1971) were the first to introduce systems theory in urban planning, followed by Faludi (1973), who identified systems' capability of learning from outside and their capability of changing their goals. However, these ideas were soon buried as too technocratic and impossible to deliver, for largely the system planners were expecting emerging computer models to be able to model complex real-life systems, something that never happened. In a way, the early systems theorists in urban planning were similarly the last advocates of instrumental rationality

in planning, for after them, the communicative theories took place. As well, the first ideas of sustainability surfaced at the time for early system theorists in urban planning viewed the world as an ecosystem (Taylor, 1998; Väyrynen, 2010). The idea of competition is central to ecology, where systems thinking originates (McLoughlin, 1969), and the competition is also present between urban development systems and their resources, as suggested in development rationale.

A systems view can also be adopted in investigating urban development products as systems. A prominent way of doing this is to examine urban development's energy and material inputs and outputs - its metabolism. Ayres (1994) introduced the idea of metabolism in this context. This approach concentrates on the flows of the functional system, for example, a certain infrastructure system, what it takes from outside its borders, and what it returns back. This view of regarding a built environment system as inputs and outputs has often been used in industrial ecology (IE), ever since Frosch (1992), Ayres (1994), and White (1994) defined it. Another, sustainability-related approach is to examine the interface between the environmental system and the built environment system (Allenby, 2006).

2.7 Sustainability issues in urban development

2.7.1 The carbon challenge

Adding to the complexity of urban development is the common challenge of current and future decades to fight climate change (European Community, 2002; IPCC, 2007) and the identification that the built environment can be a crucial ground in that fight. The payback time for some property-related climate actions is close to zero, meaning saving energy can also save money (McKinsey & Company, 2009). The present building stock in developed countries is responsible for 30-40 per cent of energy use carbon emissions, and in Finland, the number is up to 40-45 per cent of the total emissions (UNEP, 2007).

In Europe, it has been estimated that about 40 per cent of national energy use and GHG emissions are related to household services consisting of heating, production of domestic hot water, and cooling, and only heating is estimated to represent 10 per cent of the total GHG emissions in both the EU-15 and EU-27 countries (Reinders et al., 2003; European Commission, 2005; Moll et al., 2005; European Environmental Agency, 2008). Again, in moderately cool Finland, household heating has a share of 21 per cent (Statistics Finland, 2008).

Of course, Europe and Europeans are not alone in this. Developed countries located in different climate conditions, such as Australia, Canada, and the U.S., face similar problems; and in comparative studies, household energy use and related GHG emissions can be highlighted as the most significant indicator of environmental pressure (Lenzen, 1998; Bin & Dowlatabadi, 2005; Munksgaard et al., 2006; Norman et al., 2006; Shiel, 2009).

There is a lot of detailed statistical information on the impact of climate change and contributors to emissions, but the existing research lacks proposals for action. Among the very few conclusions is the identification that more renewable energy is needed on the energy supply side (Bürger et al, 2008). This corresponds well with the European Commission's EU 2020 objectives (European Commission, 2005) to increase the usage of renewable energy and decrease the energy consumption of housing by introducing tighter requirements.

No matter how the carbon challenge is approached, there are always consumers whose decisions and actions generate all the emissions. They use the services and products that accumulate emissions. This is why the household, inhabitants of a dwelling, is a good viewpoint to carbon emissions. It is also a crucial level for pro-environmental behaviour to take place (Reid et al., 2010).

Climate change mitigation and the reduction of carbon emissions have a high prominence in the European Union's policies. The residential urban development process has a key role in producing urban sustainability and making system-level decisions affecting the emissions throughout the development's life cycle.

2.7.2 Sustainable and viable urban development

The world of sustainability research is often presented as models consisting of triangles or Venn diagrams, where the three different aspects of sustainability – ecological, economical, and social – interact between each other as in, for example, Rydin (2010, p. 4). Urban planning is a field that very much considers the sustainability of future communities, especially on the local level (Harper, 1996; McDonough & Braungart, 2002).

Urban planning gives form to social and concrete constructions, networks, and locations for people and organisations to operate in. Nevertheless, urban planning is not without conflicts between the three dimensions of sustainable development when moved from a conceptual level down to actual planning tasks (Cambell, 1996; Godschalk, 2004). It is often considered that in the urban development process, the sustainability values

of different parties are always in opposition and that conflicts are the way to deal with sustainability issues (Campbell, 1996; Godschalk, 2004; Fainstein, 2010) because of the underlying assumption that the private only marches under the banner of economic profit (Næss, 2001). Bryson and Lombardi (2009) conclude that this assumption is delusionary, because sustainability can be a private developer's competitive strategy and embedded in developer's values. Also, the private party may be nonprofit or for-profit (Graddy & Ferris, 2007), which suggests different motivations may exist for each of them. The dimensions of sustainability overlap in urban redevelopment as well as in planning and tackling carbon challenge is not the only, nor always a shared, goal. Such overlaps create tensions and even conflicts between the different sustainability targets for the different dimensions (Cambell, 1996; Godschalk, 2004). At the moment, mitigating carbon emissions is, however, the most urgent and least controversial sustainability issue in the built environment (IPCC, 2007).

Viability, defined as merging economical and ecological sustainability, is the "eating tooth" of the sustainability. If urban development is to be sustainable, it has to accept constraints of viability when operating in present society. Although an increase in sustainability has been shown to add value later in the life cycle, the urban development process operates with economic values in decision-making (Rathcliffe et al., 2004; Jones et al., 2009) and in the market economies market-driven processes are responsible for most of the urban development. An increasing trend of deliberate concentration on ecological and economical sustainability may, however, contradict in importance of social sustainability in the overall equation (Rydin, 2010).

By choosing urban development or particularly residential development as the phenomenon to study, an idea of economically viable improvements in the process making life more sustainable is similarly adopted. The techno-economic paradigm challenges the planner's role even more (Rydin, 2010). This resembles Guy's (2010) concept of pragmatic ecology, where he comes to the conclusion that within its field, the built environment must connect to social processes but has mainly to contribute to the field of techno-economical sustainability. Godschalk (2004) also shares this, stating that in urban planning, the primary values of sustainable development are ecology and economy, and that equity is a secondary value. Urban development uses resources. This means that a total decoupling of economic growth and emissions, dramatically changing consumer behaviour or other noble ideas in recent discussion on the field of built environment, for example by Rees (2009), cannot be used, but are nevertheless worth paying attention to.

At the urban development scale, it is easy to adopt weak sustainability, substituting different types of capital with each other because environmental capital, the ecosystem, is wider than the subsystem of a new development (Rydin, 2010). A search for win-win or win-win-win outcomes have to combine two or three areas of sustainability (Godschalk, 2004; Rydin, 2010), and in urban development, environmental and economical sustainability (the components of aforementioned viability) are the two most obvious to combine.

The scale of neighbourhood in urban development involves meso-level (between micro and macro levels) infrastructure systems (Schenk et al., 2007; Walker & Cass, 2007). As opposed to single-plot developing, this scale also allows energy production to be considered as part of the urban development process.

Thus, urban development consists not only of an urban planning function but of partnerships involving private developers, landowners, local government, and people – present and potential future inhabitants – aiming to create viable and sustainable new neighbourhoods and homes.

This dissertation is by no means the first one to apply sustainability issues to policy-making or decision-making in urban development. There are several usable ways to evaluate large-scale systemic changes, the most known being life-cycle analysis (LCA), which has been used, for example, in waste management systems by Kijak and Moy (2004), in the service industry by Junnila (2006), and in building energy systems by Osman and Ries (2004). Seppälä et al. (2002) provide further discussion about LCA's role in decision-making. However, LCA analyses systems that already exist or are at least already planned and thus is of little help in the urban development process.

2.8 Conclusions

This chapter provided a brief outline of approaches to urban development from both the urban planning and property fields and formed a synthesis of these. A systems approach was especially raised in the discussion to connect urban development into all related fields. Besides that, partnerships and sustainability within urban development was discussed in the light of research. And finally, some challenges to urban development posed within the last years were presented.

The significance of the chapter is in laying the theoretical foundations for the study and pointing out some deficiencies in previous studies, deficiencies that this research will address. Also, the chapter took advantage of the opportunity to introduce urban development as a

discipline in its own right. The gaps presented in planning theories as well as property research approaches to urban development are enough to justify the aim to find even a satisfactory explanation to the urban development that could be applied from both sides.

The following chapter presents the research methodology and design used to explore the problem field and to answer the research question for this research to be able to deliver the contributions promised in the introductory chapter.

3. Research methodology and design

3.1 Introduction to the chapter

The previous chapter steered through the background necessary to understand the basics of urban development and its sustainability issues to conduct rigorous research. It examined urban development from the property and urban planning viewpoints and added partnerships and sustainability as well as the systems approach to urban development to considerations.

In this chapter, the research methodology and design chosen to explore the problem field and to answer the research question are presented. The primary investigation method is that of a multiple case study, for it allows several kinds of data to be collected and analysed to fully understand the two cases, both of which are residential developments in the Helsinki region, Finland. The first case used an action research approach, the second one an observatory approach. The overall research design can be called a mixed methods approach. The worldview behind the research is a pragmatic one, which has been clearly visible from the selection of methods, the relationship with theories, and the formation of the research question.

As part of the methodology, the concept of pre-understanding is discussed more thoroughly because it has played a significant role in this research and is pertinent to theory building from cases. Also, the methods of case study and action research employed in the Nupurinkartano case are presented, as well as observatory methods of the Siltamäki case. Thereafter, the cases are presented along with their data sources and data collection methods. A separate section is dedicated to the means of data analysis that led to the emergence of theory. Finally, evaluative sections about quality issues in this study and the potential of bias along with the journey of the research end this chapter.

3.2 The chosen research methodology

3.2.1 Methodology

To achieve the research purposes and to allow an answer to the research question, a qualitative, flexible research design and mixed method approach was used to collect evidence and analyse it. Thus, the worldview of the research was pragmatist, which is typical of mixed methods (Creswell, 2009). This study fulfilled the criteria of a concurrent mixed methods approach, meaning that qualitative and quantitative data were collected at the same time but used for different purposes in the interpretation. Yin (2009) calls this approach quantitative within a case. Under both labels, research design is the logic that links the data to be collected and the conclusions to be drawn from the initial question of the study.

The concept of pragmatism is not alien to built environment research. Allmendinger (2002) and Creswell (2009) both serve a thorough explanation, latter specifically from an urban planning viewpoint. In regards to the phenomenon of urban development, a pragmatist worldview holds that if things are plausible, they are true in a given context. Along with the pragmatist line of thought, this research also investigated a “how” question in a real-world situation, placed the unit of research into a social context and was free to choose the research methods according to the problem. Also characteristic of pragmatism is the ability to enter research without theorising beforehand, as was the case in this research, and to alter beliefs when the evidence suggested so.

This kind of pragmatist view suggests that the case study, providing many kinds of qualitative and quantitative evidence, justifies its selection as an appropriate research methodology and therefore the primary method of knowledge creation.

Hierarchically (although not chronologically), this study started with providing quantitative data on carbon emissions in the Helsinki region to point out the importance of carbon mitigation in residential development cases. Then a qualitative approach was used to interpret the cases, and again the cases provided both qualitative and quantitative data for findings and analysis. This quantitative-qualitative-quantitative design is one of the designs suggested by Miles and Huberman (1994), who hold that linking both kinds of data is useful for gaining understanding. Quantitative evidence was needed in defining the effects of residential areas on climate change; rich qualitative data provided the best approach in understanding

the cases; and the cases were again able to provide both qualitative and quantitative results.

Being able to combine several kinds of evidence is vital in developing policies, as well as characteristic of enhanced research within the built environment (Amaratunga et al., 2002). Where some see this mixing of quantitative and qualitative as costing “high academic prestige”, Robson (2002) and Jensen and Rogers (2001) say that a real world enquiry must overcome such suspects in order to tell something relevant. This relevancy is also embedded in the purposes of this research.

3.2.2 Research process design

The research process has followed a similar research cycle to that which Kaplan (1998) suggests:

- (1) Observing and documenting practice;
- (2) Teaching and speaking about it;
- (3) Writing articles and books;
- (4) Implementing the concept; and
- (5) Moving to advanced implementation.

The observation and documentation of the cases has led to publishing the appended Papers (and some others), and giving lectures and presentations. The developed concept of Public-Private-People Partnership and developed solutions such as the novel questionnaire-based participation method in the Nupurinkartano case have been implemented in real-life cases, as action research also suggests. Also, other practical results of the research, such as the geothermal district heating system, have already proven to be viable to be implemented, before publishing the final results in this compendium. The advanced implementation has taken place in practice, where the findings from the cases have been taken into use in other urban development processes.

As was mentioned in the Introduction, Paper I introduced the concept of future inhabitants. Then, Papers II and III deepened that discussion, also presenting a novel form of participation in the urban development and introduced the 4P framework. Paper IV combined sustainability (especially a low-carbon energy solution) and 4P. All the former papers investigated the Nupurinkartano case. Paper V was the quantitative prelude, although not temporally, which contributed to understanding the relevance of carbon abatement, which was already known based on the literature, but of which there was no specific evidence from the Helsinki region. The data for Paper V was gathered from a Life-Cycle Assessment database, statistics and developer company records. Papers VI and VII concentrated on the

Siltamäki case. Paper VI combined energy efficiency with redevelopment in the 4P framework, whereas Paper VII elaborated on the relationships in an urban redevelopment case. The research design process is illustrated in Figure 1 below.

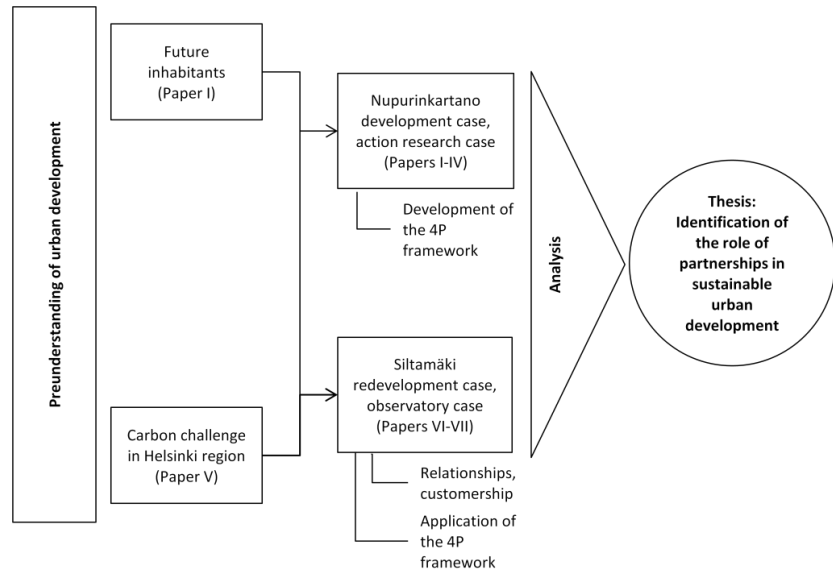


Figure 1. Research design process

The nature of this study is a doctoral dissertation. The dissertation form set some limitations, as did the available resources. Therefore, the scope of the study had to remain very precise to be reported rigorously in this compendium. This scope forms the unit of the study (Eisenhardt, 1989; Yin, 2009), which in this research was the urban residential development process in the Helsinki region, Finland, on a neighbourhood scale, involving Public, Private, and People.

3.3 Case study method

3.3.1 General

The primary investigation method of this study was a set of two complementary case studies. Case studies are a way of achieving the highest levels in the learning process and the only way of mastering some skills (Flyvbjerg, 2006; Yin, 2009), although the references do not explicitly enlist such skills. However, the urban development practice quite often has such a “master-apprentice approach”. A major virtue of the case study is that it produces context-oriented knowledge, and case studies are often used in the context of the built environment where these types of problems

are common and state-of-the-art solutions are needed (Amaratunga et al., 2002).

This study was a holistic, two-case case study. Although holistic often refers to a single-case case study (Robson, 2002), within the available time frame, a thorough understanding of two cases could be achieved. More than setting rigid research questions from the beginning, the aims of this research were put on the understanding of a holistic viewpoint within the problem field, so the potential research questions had to be corroborated with the gathered evidence. As was stated in the Introduction chapter, the ultimate research question this study answered was, “How does a Public-Private-People Partnership improve the urban development process to achieve greater sustainability?”.

A good research question should be clear, specific, answerable, interconnected, and substantively relevant, and this is where the formation of the research question aimed. Research questions are chosen so that they are answerable within time and other resource restrictions (Robson, 2002). He also holds that the questions are derived from theory, but with a case study, this may not necessarily be true or even possible. Questions “what” and “how” must be answered differently than for “why” as the last refers to the explanatory, while the former two are more exploratory or descriptive. “How” and “why” are typical for case studies (Eisenhardt, 1989; Miles & Huberman, 1994; Yin, 2009), and this also justifies the case study method. Besides the formation of the research question being appropriate for the method, Yin (2009, p. 18) prefers case studies as a powerful form of empirical enquiry especially in the following circumstances:

- When the investigator has little control over events;
- When the focus of research is on a contemporary phenomenon with real-life context;
- When the boundaries between the phenomenon and its context are not clearly evident;
- When there are more variables of interest than data points; and
- When results rely on multiple sources of evidence, with data needing to converge in a triangulating fashion.

This research fulfilled those requirements, albeit there was some management control over events in the Nupurinkartano case. To conduct the enquiry, cases studies can take advantage of many methods (Yin, 2009), not only qualitative ones. Observation, interviews, and documentary analysis are typically used.

The approach of this thesis deviated somewhat from the traditional case study method. Traditionally, theory or theoretical propositions are presented in the beginning and then modified based on the results (Yin,

2009). In this thesis, the theory was instead gradually developed alongside the research process. The existing literature was used to form the unit of analysis within the cases. This affected the structure of the dissertation. Also, in the first case (Nupurinkartano), I had some control over events and conducted research in an action research way, a method which will be introduced below. In action research, the researcher is supposed to have some control over the situation and this is in a contradiction with the traditional case study, though the methods overlapped in this study with no sharp boundaries.

3.3.2 Methods within case studies

Research methods were mostly qualitative, though certain parts of the urban development process were better understood via analysis of quantitative data and included case study and action research. A combination of qualitative and quantitative methods is recommended by several methodologists (Eisenhardt, 1989; Miles & Huberman, 1994; ; Flyvbjerg, 2006; Yin, 2009). Interpretiveness and holistic approach, aimed at in this research, are usual when using qualitative methods.

An action research approach was knowingly selected to conduct the first case study because I was involved in it as an employee of the developer company. Data collection and interpretation phases were not separated, as they often are not in real-life management research (Goulding, 2002).

Evidence of the cases can be collected in six ways as per Yin (2009):

- (1) Documentation;
- (2) Direct observation;
- (3) Participant observation;
- (4) Interviews;
- (5) Archival records (statistics); and
- (6) Physical artefacts.

Physical artefacts in the context of urban development are the overall built environment, and while it was not investigated within this research, the other five methods were used.

The purpose of the study being exploratory, the research explored the process of urban development and recognised some crucial elements of it. The research question justified the selection of methods so qualitative research did not need to be compared to quantitative (Goulding, 2002). No juxtaposition between the two existed but they complemented each other.

3.3.3 The role of theory in this research

Theory is a basis for explaining phenomenon and abstracting the reality (Allmendinger, 2002). In this sense, theory also contributes to the existing discourse and, thus, is temporally tied and carries at least some normative elements (Allmendinger, 2002), as in this study, the sustainability norm. Qualitative research often has its objectives in building or developing a new theory rather than testing an existing one (Eisenhardt, 1989; Miles & Huberman, 1994; Goulding, 2002). Miles and Huberman (1994) suggest four different theory categories:

- (1) Implicit theory;
- (2) Explicit theory;
- (3) Syntagmatic or process-oriented theory; and
- (4) Paradigmatic theory.

Of these, this thesis provided an implicit theory because the research used a multiple case study method and theory-building was conducted via analytical generalisation. Eisenhardt (1989), whose theory-generation approach this study mainly followed, labels this approach in organisational research an “inductive case study” research. In theorising, the final solution is a theory that provides the best (which is often the simplest) model for linking diverse facts. Theory framework was part of the design, as suggested by Yin (2009), for it located the study within the field but, according to the pragmatic view, no theoretical propositions were made. It may well be that the theory that emerged in the process will be challenged later by further observations, and to be scientific, this challenging must also be possible (Popper, 1970).

In real world research, as in this research, it is an advantage if links to existing theories can be shown (Robson, 2002). However, this may not be possible, or the research itself follows a “theory-in-use” or a “tacit theory” (Argyris & Schön, 1974). According to Flyvbjerg (2006), even explicit theoretical assumptions cannot form a basis for case study inquiries adopting a narrative form. If a sensible theory is found, it makes sense to test its utility, but on the other hand, no mistake is made if no theory is followed but a grounded theory approach of building theory during the research is adopted (Robson, 2002). If a connection to existing theory is found, one option is to introduce it as a broader explanation for behaviour and attitudes. Another option is to use it as a theoretical lens. A third option is to introduce theory last, doing some inductive reasoning leading towards the theory during the entire course of the dissertation or other report (Creswell, 2009; Yin, 2009). An example of this inductive reasoning during

this research has been the development of the 4P framework, which was developed in the first case and taken into use in the complementary case.

This study followed the third option and introduced the contribution towards the theory formed via qualitative analysis last as Eisenhardt (1989), Dubois and Gadde (2002), Creswell (2009) and Yin (2009) all suggest, although a view to existing research and theories was provided in the previous chapter. By doing this, the compendium aimed to achieve accessibility to both the emergent theory and the readability of the thesis. The emergent theory aimed at coherency and sense-making based on evidence and findings from the cases. In this compendium, emergent refers to the way novel constructs and patterns arise out of the system interactions, providing a holistic, sense-making “level” of explanation (Goldstein, 1999; Corning, 2002). Emergence in this sense is central to complex systems.

However, even if no hypothesis was tested, existing theories were valuable in forming a sound basis for this research to locate itself within the field and to provide the research with concepts and terms to be used. Besides the Background chapter of this dissertation, Papers I-IV examined urban planning theories, Papers VI-VII property research approaches, Papers II-III and VII customer theories, Papers IV and VI systems theory, and Papers IV-VI examined different theoretical approaches to sustainability.

3.3.4 Preunderstanding

Preunderstanding has been widely discussed in relation to theory generation grounded in evidence and case studies. Yin (2009, p. 69) calls this preunderstanding “having a firm grasp of the issues being studied” among other necessary, more technical skills of a researcher. A vigorous contribution to the issue has been written by Gummesson (2000), who holds that preunderstanding is more than just knowledge, it is also commitment. He classifies types of preunderstanding as general knowledge about theories and techniques, specific knowledge about institutions and social patterns of the context at hand, and as personal attributes of the researcher. Goulding (2002) labels these three virtues knowledge, insights and experience.

Action research in one’s own organisation, such as I undertook in the Nupurinkartano case, calls for preunderstanding as well. Action research, as well as decent analysis, requires a sound preunderstanding of the phenomenon and organisation, and both the research and the analysis should be conducted in real time (Goulding, 2002; Coghlan & Brannick, 2010). The research approach and analysis must also recognise the

organisational politics because they may affect the research setting such as data collection or whether the object of research is considered meaningful within the organisation (Coghlan & Brannick, 2010). Preunderstanding is required to be able to recognise patterns in the context of the research (Goulding, 2002), and thus preunderstanding helps to define the research problem and the unit of case study research.

Experimenters should have a substantial knowledge of the researched phenomenon before they can set up a formal experiment (Robson, 2002). Also, interest in the research topic is important (Robson, 2002; Flyvbjerg, 2006). Yin (2009) sees that theoretical propositions guide data collection and thus are, in fact, closely related to preunderstanding.

Besides this research, I had personally been involved in urban development processes from both the private developer-constructor side and as a member of a city council, maintaining both roles since 2005. Both of these roles have contributed to my preunderstanding about urban development and have placed me at a fruitful intersection between two worlds that are constructed very differently. These circumstances were exceptionally positioned, and therefore worth taking as a basis of investigation. This is why I was able to investigate a revelatory case reflecting a social real-life situation that researchers have only scarcely been able to research in the past. I had, as a result of my aforementioned circumstances, what Healey (2010) calls a pluralist attitude in my research. In this compendium, I have deliberately used an active voice when I report something I have been in charge of, thus also reflecting my own learning. In other cases, a passive voice has been used.

I sought knowledge of the phenomenon of urban development via my own interpretations, guided by my own preunderstanding. This interpretive research involved a pragmatist view. As a researcher, I participated in the process. This was the situation in the Nupurinkartano case, where I was both an employee of the developer and a project researcher (a thorough and general elaboration of this kind of fruitful position can be found in Coghlan and Brannick (2010)). Interpretive research closely equals constructivism (Robson, 2002). In constructivist research, the reality is constructed with the help of research participants and realities are multiple. This is why the research questions cannot be fully established in the beginning of research (Robson, 2002), which they also were not in this study. A pragmatic approach assumes that the reality is complex, multiple, constructed, and stratified; the theory is undetermined; and the enquiry itself is value-laden (Robson, 2002).

And, on the contrary, this preunderstanding has been said to bring bias to a study. One should not be guided only by preunderstanding during

conducting the research (Coghlan & Brannick, 2010), but also by data as it emerges and by research design. Prior dispositions and working too close to the immediate area of research must be avoided for the research to remain uncoloured. This is why in this research the Siltamäki case was strictly an observatory case because in the action research conducted in the Nupurinkartano case, it is suggested that the researcher enters the field at a very early stage and collects data in whatever form feasible (Glaser, 1978; Goulding, 2002; Coghlan & Brannick, 2010). A sound preunderstanding is therefore essential, but all the results are to be based on evidence only.

3.4 Cases and case selection

This study involved two separate but complementary case studies, Nupurinkartano and Siltamäki. The cases are real-life urban residential development projects in the growing Helsinki region, Finland, involving private developers. Both are owner-occupied, which is the most common tenure form in Finland, and in the size category of a neighbourhood. In the Finnish context, local authorities (cities and municipalities) are in charge of approving detailed plans and building permits and also do development themselves, to some extent. Within urban areas, no higher level authority decisions are usually needed to conduct urban development.

The case boundaries could be well identified spatially, temporally, and within the social context. Nupurinkartano was within the limits of one detailed plan area, and Siltamäki also had geographical and property boundaries, consisting of properties of seven housing companies. Temporally, the Nupurinkartano case started at the beginning of the planning process when the land-owner and developer approached the local planning authority in 2005. I followed and participated in the Nupurinkartano case until the city council approved the detailed plan in 2009. The case of Siltamäki started in 2009 with a research project that was to investigate the feasibility of redevelopment and refurbishment in the area. As a social system, both urban development processes included Public (the local authorities), Private (a developer company and the land-owner in Nupurinkartano, and representatives of developer and construction companies in Siltamäki), and People (future inhabitants in Nupurinkartano and existing inhabitants in Siltamäki).

Nupurinkartano and Siltamäki were complementary cases (development and redevelopment, future and existing inhabitants) and provided no chance for manipulating the variables. Even if there were only two cases, analytic generalisations could still be made because of the purpose-selected cases (Eisenhardt, 1989; Jensen & Rodgers, 2001; Robson, 2002; Yin,

2009). In the literature, even one deeply analysed case with its context and literature has been suggested to be able to lead to theory generation (Dubois & Gadde, 2002).

Two critical cases were selected to be the case studies of this research, and the cases were defined based on relevant characteristics found in the literature. Among the many on-going urban residential development processes, these were selected because they were on the frontline of development of regarding partnerships and sustainability goals. Also, their size matched the scope of this study, and they were located in the Helsinki region under two different urban planning regimes. The characteristics making the cases critical are listed in Table 2.

	Nupurinkartano in the City of Espoo	Siltamäki in the City of Helsinki
Nature of development	New development, terraced and detached houses	Redevelopment, apartments in two- to three- storey buildings
Size	Approximately 220 dwellings	Approximately 1,000 dwellings
Location	Urban fringe, some 30 km from Helsinki centre	Suburb, 15 km from Helsinki centre
Local government approach	Espoo, responsive to partnerships	Helsinki, traditional public-led approach
Tenure and inhabitants	Owner-occupied, the People are the future inhabitants	Owner-occupied, the People are the existing inhabitants
Research approach	Participatory case study, action research approach relying on preunderstanding	Observatory case study relying on preunderstanding and the 4P framework developed in the Nupurinkartano case
Temporal interval of the case	Case was observed and participated from the beginning of development process to approval of detailed plan	Case was observed during the mapping of redevelopment options
Forms of acquired data (Yin, 2009)	Documentation Direct observation Participant observation Archival records (statistics)	Direct observation Interviews Archival records (statistics)

Table 2. The characteristics of the selected critical cases of Nupurinkartano and Siltamäki

There were also differences in the respective local governments' approach to urban development. Espoo, which has grown within the past six decades, is more private development oriented, whereas Helsinki relies on its well-resourced and strong planning department (Joutsiniemi, 2010; Phelps et al, 2006). The two neighbouring cities where the cases are located are also the two biggest ones in Finland, with a total population of approximately 830,000. The population of the entire Helsinki region, including Helsinki, Espoo, and 12 additional municipalities, is approximately 1,330,000. There were also opportunistic reasons: their timing related to the research process and my particular access to these cases.

Case selection was crucial to the success of the research (Goulding, 2002; Flyvbjerg, 2006; Yin, 2009). Case or cases needed to provide the greatest amount of information available and/or be atypical or extreme. Random selection or selecting typical or average cases would not have served this purpose. Thus, the cases in this study were selected information-oriented as critical cases (if something is valid for this case, then it applies to most cases) or paradigmatic cases. Allenby (2006) encourages this type of research in order to deal with complexities not found in nature.

Flyvbjerg (2006), referring to several sources, is not able to provide a recipe for how to find the right cases, but he counts on preunderstanding, or as he puts it, “intuition”. In addition, he underlines the need for studying cases that are not too common, in order to be at the forefront of a scientific discipline. Glaser and Strauss (1968) emphasise case selection to serve cross-case comparison. Also important is the unit of analysis, what forms a case, and whether the case involves one or several entities to investigate (Eisenhardt, 1989; Yin, 2009).

In this study, both cases were selected so that they were critical cases providing the maximum application of information and logical generation to other cases and offering a holistic view. Hence, the sampling was what literature calls theoretical sampling (Eisenhardt, 1989; Miles & Huberman, 1994; Jensen & Rodgers, 2001; Robson, 2002; Creswell, 2009; Yin, 2009). They were samples chosen from a large amount of on-going processes when they were needed and not necessarily before the research (Goulding, 2002). This opportunistic view is also encouraged by some leading methodologists (Robson, 2002; Creswell, 2009). A critical case also has the means to tell investigators what may be in the future (Schofield, 1990). The cases also aimed at providing a cumulative view on Finnish urban residential development processes.

3.5 Case Nupurinkartano

3.5.1 Overview

The first case was the new development of Nupurinkartano in the City of Espoo. The development project started in 2005, and it was studied throughout the planning phase until 2009. According to the development plans, the area was to have approximately 220 dwellings in terraced and detached houses. The characteristics of the area have been described in more detail in Papers I-IV. In the Nupurinkartano project, I was involved not only as a researcher but I was also employed by the developer.

Nupurinkartano was selected as a case due to its characteristics making it a critical case for greenfield development. It was located on the urban fringe, as are currently many other new developments within the Helsinki region. These areas are characterised by rapid population growth and inadequate infrastructure (such as district heating), so energy issues and therefore decreasing system level carbon emissions as well were thought to be on the Public's planning agenda.

3.5.2 Action research in Nupurinkartano

The Nupurinkartano case used action research as part of the case study. During the case, I operated on the field and learned with the field. In Nupurinkartano, at least two clear cycles of action and research could be identified. The first was the introduction of the future inhabitants, which led to further research on their needs and again to changes in plans, that is, the development action. I entered that cycle as a research-orientated developer, and the research results challenged the existing assumptions and planning theories and praxis. Without the action research, the future inhabitants' opinion would not have been heard. The local government also approved the results, so they could be implemented in the urban development process and later they were also reported in several publications (Papers I-III).

The second cycle was the development of a geothermal district heating system, which would not have been conducted were it not for the participatory research. The business-as-usual option was direct electric heating, causing significantly more carbon emissions. I entered this cycle too as a research-orientated developer. The research started from the results of the future inhabitants' questionnaire, after which the developer initiated the energy operator and researchers to develop a viable energy solution, which again altered the urban development process. Also, these results contributed to knowledge on sustainable urban development (Paper IV).

Action research is research in action, as opposed to about action. It is a collaborative, democratic partnership approach to problem solving (Coghlan & Brannick, 2010). Action research is cyclical. It requires involvement and it aims at improvements in the process it examines (Robson, 2002). This cyclical nature has been characteristic of action research since the introduction of this method to the family of scientific methods (Lewin, 1946). According to Gummesson (2000), action research is participation with active intervention. Researcher enters the field in order to change it, not just to participate and investigate. This is why action

research is most likely done by an insider within the context or organisation under research. Sanford (1976) sees this as a virtue, for it brings the experts to the field instead of isolating them in the sterile chambers of academia.

Coghlan and Brannick (2010) suggest a cycle consisting of context and purpose followed by constructing, planning action, taking action, evaluating action, constructing, and so on. They also see action research and thesis-oriented research as separate parts, even if the cases would form an essential part of the thesis, as in this instance.

According to Coghlan and Brannick (2010), rigour in action research requires the researcher to show:

- (1) How they engaged in the steps of multiple and repetitious action research cycles;
- (2) How the assumptions and interpretations were challenged and tested;
- (3) How the different (and often contradictory) views and interpretations were accessed; and
- (4) How the outcomes are grounded in scholarly theory, and how the theory challenges or supports the results.

The first two issues, cyclicity and challenging the existing praxis, were introduced in this section. The last two are presented in Chapter 5 as part of the analysis.

This approach of a researcher having power to change things and observe the impact of change is at loggerheads with Yin's (2009) case-study approach, as well as positive science in general. However, an action research paradigm requires its own quality criteria, not that of positivist research (Gummeson, 2000), and this is why action research was adopted as a research method for the first case.

There are always two goals in action research: to conduct rigorous research and to solve a problem or several problems. Action research is interactive and aims at developing holistic understanding and recognising complexity. It can include all types of data-gathering methods. There are core action research (the projects) and thesis action research (Coghlan & Brannick, 2010). In this research, the core action research was improvement of the urban development in Nupurinkartano, and the thesis action research was both the previously published results and this dissertation.

According to Coghlan and Brannick (2010), all action research is political - not necessarily serving political ambitions and ends, but of a political nature all the way from choosing and framing a subject to disseminating and publishing results. Still, the research subject in Nupurinkartano case

did not rise from a company agenda, but out of some notifications made in the developer career.

Even if action research assumes changes are to be made to the investigated system (Coghlan & Brannick, 2010), the changes in the Nupurinkartano case were not in my power to adopt fully in use but had to be negotiated, due to the network of several actors in urban development.

3.5.3 Data collection

In Nupurinkartano, documentation, direct and participant observation, and archival records were used to collect data. The data consisted of official, publicly available planning documents and surveys, the results of the novel two-staged open Internet questionnaire to potential future inhabitants (a method more deeply described in Papers II-III), as well as observations written in field notes made during participatory research, and statistics. I took part in the process from the beginning and started publishing results from 2006. Participation was built naturally, and support of conducting research and accumulating understanding was achieved from both the developer company and the local authority. Because Nupurinkartano is located in the City of Espoo where I was a councillor, I refrained from political decision-making concerning the Nupurinkartano plan. During the stages of action research, the collected data had a major role in convincing other participants of the necessity to change processes.

With participant observation, it is hard to separate the phases of data collection and analysis (Robson, 2002), and these phases were not separated in the Nupurinkartano case. Participant observation is useful when researching small groups (Robson, 2002) such as the system of Public-Private-People Partnership and when the primary motivation is to find out what is going on.

The access to data in the Nupurinkartano case was often due to relationships or my own position in the process. This is one of the several advantages of being a practitioner-researcher, as stated by Robson (2002). An opportunistic approach was used to collect data, as encouraged by Robson (2002) and Coghlan and Brannick (2010). Pure non-participatory observation would not even have been possible in the case of Nupurinkartano because project group meetings between the local government and the developer were closed.

3.6 Case Siltamäki

3.6.1 Overview

The second case was a redevelopment of Siltamäki in the City of Helsinki. During the research, the area consisted of almost 1,000 dwellings in two- and three-storey buildings, located in a 1970s suburb with some local commercial and public services. Siltamäki represents a Finnish 1970s neighbourhood fairly well. Its planning controls aim to preserve the external appearance because of its value as a representative suburb of the era. The neighbourhood of Siltamäki was about to go through major refurbishment due to the end-of-life span of some construction components, such as the facade and the heating and water systems, and it was struggling to carry the costs of refurbishment. Redevelopment had been introduced as a potential source of equity to finance the refurbishments. The redevelopment research project called “The Agile renovation project” started in 2009. Siltamäki is described in greater detail in Papers VI-VII.

Siltamäki is an owner-occupied neighbourhood. The housing companies owned the buildings, as well as land beneath them plus some excess land. Housing companies are basically a management system applied similarly to condominiums or owners’ associations and used in owner-occupied blocks and terraced houses. The home-owners are shareholders in housing companies, entitling them to control their own house or apartment and obligating them to share the costs of management.

Siltamäki was selected as a complementary critical case to apply the findings from the original case of Nupurinkartano to a different redevelopment setting. In the second case, I did not have an active role in the urban development process, but I remained strictly as an observer. Siltamäki is a large-scale redevelopment case consisting of several properties. To gain data, I used a common research database consisting of planning documents and interviews transcripts. Besides the analysis process that is to be described in due course, it is worth mentioning that the interviews of the Siltamäki case (Paper VII) were coded and further analysed using QSR NVivo 8.0 software. This research found the software useful compared to traditional paper display.

3.6.2 Research approach to the Siltamäki case

The second case of Siltamäki, with an altered setting but with as little researcher bias as possible, was selected to accumulate evidence of this

study to the limit of saturation. However, the case was also investigated deeply enough for it to provide conclusions of its own. The 4P approach developed in the Nupurinkartano case was also used as a framework in the Siltamäki case and developed further.

My familiarity with the case and with the people interviewed were the reasons to use the research database and secondary data, and the transcriptions of interviews in the Siltamäki case study to decrease researcher bias, a method supported in the grounded theory approach (Glaser, 1978; Goulding, 2002). The Siltamäki case was approached strictly by observing, but there was also some interaction with the professional project focus group, such as the members of the research group introducing the financial model presented in Paper VI.

3.6.3 Data collection

In Siltamäki, documentation, direct observation, interviews, and archival records formed the evidence. The data of the Siltamäki case consisted of official planning documents and surveys, transcriptions of interviews, minutes of focus group workshop meetings, and statistics. These were collected for and retrieved from the common database of the aforementioned research program. Papers VI-VII were also part of that program.

Siltamäki was, as a case in a wider research project, more open to non-participatory research than Nupurinkartano. I collaborated closely with other members of the research group who had conducted the interviews and documented the project group meetings.

3.7 Analysis

Qualitative data gathered was rich and provided many potential approaches in theory generation. Because the two cases did not provide a fruitful ground for convincing statistical cross-case conclusions (Yin, 2009), and because of the stated deficiencies in current theories, a qualitative analysis approach was adopted to fully understand the phenomenon and to generate analytical generalisations as suggested by Eisenhardt (1989) and Yin (2009). This analysis of a multiple case study also contributed to the Emergent Theory chapter of this compendium, whereas each of the Papers' results, including qualitative and quantitative results, are summarised in the Findings chapter.

The research process of this study was relatively long, more than five years, and contained data from two different cases as well as supportive

data and findings from their urban region. This, and the fact that the first results were published already very early, meant that there was a need for a sound general analytic strategy (Yin, 2009). The analysis followed the coding process described by Eisenhardt (1989) related to inductive case studies. The coding aimed to generate constructs that would be able to explain the problem field, but there were no a priori constructs, opposing what Eisenhardt (1989) holds as an option. This approach is also supported by Creswell (2009), who requires a researcher to design the analysis themselves in a mixed-method approach.

The main method of analysis was coding that was structured around certain key themes. The coding went through stages, from codes gathering the key points of the data to concepts grouping similar codes. Concepts again formed constructs, which were used in explanatory theory building. In coding, the data was constantly sampled and arranged to categories as suggested in general in qualitative research (Miles & Huberman, 1994; Creswell, 2009), in case studies (Eisenhardt, 1989), and in the grounded theory approach (Glaser & Strauss, 1968; Goulding, 2002). Yin (2009) calls this pattern matching, explanation building, and creation of logic models.

The concepts and constructs formed by coding, as well as the already published results, were constantly evaluated against their relevancy regarding the quantitative data, that is, the opportunity to contribute to measurable viability of the outcomes of the urban development process. This means that the concepts and constructs were created keeping in mind that they must contribute to the developments' economical feasibility, greater sustainability, or to the process.

Conclusions were drawn in a causal network that served well the findings established from the study's complementary and holistic cases (Miles & Huberman, 1994). This kind of network was case-oriented, contextualising, and synthetic and process theory-oriented. In making conclusions, initial plausibility was not overlooked, but strong evidence from the cases was presented as well in creating the constructs, as suggested by Miles and Huberman (1994). Clustering and making metaphors, pattern making and connecting findings to a story were also valuable to internal validity (Miles & Huberman, 1994). At the end of the coding chains, corresponding constructs emerged. These analytical constructs and their interrelatedness ultimately led to the generation of the theoretical approach of this thesis (Eisenhardt, 1989; Creswell, 2009). Whereas the emerged constructs already were present in the findings and were deeply rooted in the evidence, they did not necessarily have a straightforward connection with the research question, but they were more related to the problem field, and as a

whole, emerged due to the primary research method being able to have a holistic view of urban development processes.

The data was initially analysed to be used in publishing the appended Papers I-VII, and this compendium brings together the evaluation of the concepts in its Emergent theory chapter. Neither new data nor new findings exist for compendium purposes only. The Discussion and Conclusions chapter will suggest further research topics, and this continuous analysis may continue after the completion of this dissertation too, if only new data can be established.

Continuous analysis served the dissemination of the results in early phases, but disserved a cross-section thesis compiled at any given time and elaboration of the thesis in a dissertation. However painful the distillation of the conclusions was, Miles and Huberman (1994) kept providing confidence:

“We say again that people who are discreet, savvy in the environment under study, and conceptually ecumenical are often to get the core of a case in a matter of days, sidestepping both types of researcher bias [effects of site to researcher and vice versa] and coming away with good-quality data. It’s possible that the methodologists demanding months or years on-site before valid data can be obtained are confusing time with competence.”
(Miles & Huberman, 1994, p. 266)

This quotation refers, among other things, to preunderstanding, discussed earlier in Subsection 3.3.4. I took advantage of my preunderstanding to be able to recognise the patterns that led to concepts and constructs fulfilling the aforementioned criteria.

3.8 Quality issues of the study

3.8.1 Validity and reliability

In this study, several different kinds of data had been used along with different methods of gathering it. The research methods had been various and the mixed methods research design posed a potential threat to the validity of conclusions. Regarding quality issues, these facts might have posed a challenge, and therefore the research paid attention to quality and evaluation of research design.

The validity issues are discussed in the following subsections under four subgroups according to Yin (2009), those being:

- (1) Construct validity;

- (2) Internal validity;
- (3) External validity; and
- (4) Reliability.

To tackle these, Yin suggests case study tactics to tackle each of the issues, which was followed and which are reported below, as well as tactics to increase qualitative research validity (Miles & Huberman, 1994). Creswell (2009) proposes triangulation, clarifying the researcher bias, presenting negative or discrepant information, and spending prolonged time in the field as strategies to overcome quality issues. In the literature, there can be found several other, often overlapping, strategies aimed at increasing validity. Many of these were coined, or at least extensively described by Lincoln and Guba (1985). Unless stated otherwise, the issues in this section are shared by both Yin, and Miles and Huberman.

3.8.2 Construct validity

The first subgroup is construct validity. The multiple sources of evidence collected and used during the study were already described above. The chain of evidence was maintained throughout the study and it has been regularly subject to review by constantly publishing results based on the evidence. The relevance of data has been weighed based on preunderstanding and constant discussions with other researchers on the cases and other practitioners. The emerged constructs were present in the already scientifically reviewed and published findings throughout the research process.

A key informant review, suggested also by Robson (2002), was not conducted widely, but results were discussed with a peer group and some informants, which achieved a similar end to extensive key informant discussion. Planning documents and archival data formed a large portion of the data. In the Nupurinkartano case, the quality of action research relationships was good. Several researchers from two research groups and participants were involved in the action research cycles, as is suggested to increase validity (Robson, 2002; Coghlan & Brannick, 2010). The Siltamäki case also included several researchers.

The researcher bias and researcher effects on the case, and vice versa, that may have had an effect on the data, are discussed below in a separate section. Due to the nature of this research, they deserve to be closely examined.

3.8.3 Internal validity

The second subgroup is internal validity, which is mostly about data analysis, which again is described in detail above. Potential rival explanations and outlying data will be discussed in the Emergent Theory chapter. Eisenhardt (1989) emphasises the conflicting and supporting literature be laid out when discussing the generated theory for greater internal validity. This is done in discussion sections of Chapter 4 and especially Chapter 5.

3.8.4 External validity

Third, external validity is the domain to which the findings can be analytically generalised (Yin, 2009). In multiple case studies, a replicability of cases also presents this external validity. The cases were purposefully selected as critical cases but also for the opportunity to replicate findings via theoretical sampling. The amount of cases did not allow statistical generalisation, but analytical generalisation has been achieved. This generalisation is discussed with conclusions in Chapter 6.

The results of action research are never universal, as the situations vary from place to place. What is known needs to be differentiated for each situation. The result is practical knowing (Jensen & Rodgers, 2001; Coghlan & Brannick, 2010). However, the results can and must also be extrapolated to be used elsewhere, and the above-mentioned construct and theory comparison with similar literature improves that generalizability. In order to do this, a researcher needs to know the results and the significant factors that can be extrapolated. Extrapolation answers the “so what” question often posed by pragmatists (Allmendinger, 2002; Coghlan & Brannick, 2010). The answer to that question is valuable when pointing out the contributions of the research to practice. Every decent narrative does not need to have a moral, but there can be one and there often is (Flyvbjerg, 2006). To support the relevance of existing evidence, an observation of relevant urban development cases in Victoria, Australia, has also been conducted.

3.8.5 Reliability

Reliability is the fourth and last category. During the case studies, the case study databases were not only formed but also found to be good tools to share data within and between research groups. A precise protocol has not been used, as the approach to both cases has been different.

Communicating the research design as meticulously as possible by inside observers to outside observers is also a self-recognitive act serving reliability (Luhmann, 1995).

Prolonged involvement in the field is also considered to increase reliability (Miles & Huberman, 1994; Robson, 2002; Creswell, 2009; Coghlan & Brannick, 2010), although it can increase researcher bias as well (Robson, 2002). Prolonged involvement was exercised in the Nupurinkartano case. The development and research processes were long, altogether four years, involved several phases, and I participated in them from the start until the plans were approved. The potential of bias caused by this prolonged involvement is discussed below in Subsection 3.8.7.

3.8.6 Triangulation

Apart from the tactics described above, a specific means of increasing reliability and validity, triangulation, deserves further attention. Triangulation reduces reactivity as well as researcher and respondent bias. Basically, triangulation is done by using several different approaches to research. If the approaches converge, this means that research has been conducted rigorously and the results are more valid than if the approaches lead to diverging conclusions. In this dissertation, all four types of triangulation known to qualitative research were used: methodological, data, theory, and investigator triangulation (Miles & Huberman, 1994; Patton, 2002; Yin, 2009).

Methodological triangulation in this research was diverse. First, the methods that were used were various. The methods included both qualitative and quantitative methods. In the Nupurinkartano case, documentation, direct and participant observation, and archival records were used within an action research approach. In the Siltämäki case, documentation, direct observation, interviews, and archival records formed the evidence. Action research, multiple case study, and coding all added layers to the core research data. These multiple methodologies have been adopted to be able to tell the essentials of the phenomenon and that they have been used rigorously.

Second, in this study, data was collected in five ways (documentation, direct observation, participant-observation, interviews, and archival records), as presented above. In the collection of evidence, I used my own preunderstanding to judge what was important and what was less important. Since the studied phenomenon was new and its boundaries were formed during the study, the observations formed the main source of data.

The third form of triangulation is theory triangulation. Although theories were not applied to data as such, literature, as presented in Chapter Two, was used to provide the basis for argument to identify gaps in knowledge and to provide supplementary validation. What is more, the literature formed part of the preunderstanding that unearthed the research problem field and helped to form the boundaries of the cases. The findings from the cases converged enough to unearth an emerging theory.

The fourth and final form of triangulation is investigator triangulation. The doctoral dissertation, including both this compendium and its appended publications, is an independent body of research solely by me alone. However, both cases studied involved several researchers. Nupurinkartano had several independent research programs besides this doctoral research. All the Papers concerning the case studies (I-IV and VI-VII) have involved several authors, some of whom have operated in the field and some stayed out. Also, Paper V from outside the case domain included several authors. The results that have been published so far (or that are accepted to be published) have successfully undergone a scientific peer review.

3.8.7 Potential for bias

The literature (Miles & Huberman, 1994; Robson, 2002) recognises three kinds of bias that may pose a threat to the quality of results: researcher bias, respondent bias, and reactivity. The following paragraphs discuss the potential of those biases and what has been done to reduce that potential.

In qualitative studies, the possibility of researcher bias has to be taken seriously. After all, the researcher is often the most important, even the only, “research instrument” who interprets all the results for readers. That is why it is necessary to commit a self-conscious examination of bias in each stage of the research process (Gummesson, 2000; Goulding, 2002).

My role changed between the cases during the evidence collection phase from year 2005 to 2010. In the Nupurinkartano case, I was a complete, though concealed, participant, and in Siltamäki I was an observer and an open participant. The second case was analysed in the role of observer also due to greater validity. So in the Nupurinkartano case, I was a complete member of the project team (Coghlan & Brannick, 2010), and in the Siltamäki case, I was not. The role boundaries can be flexible, and some situations in which one acts in a practitioner role may be useful for research purposes (Coghlan & Brannick, 2010). Dual roles can also be applied in information flows between industry and academia, the former getting first-hand knowledge and a competitive edge, and the latter getting the

opportunity to use real-life data (Williander & Styhre, 2006), as was the case in this study.

As in most action research projects, this study too had a dualistic role. The research of the Nupurinkartano case was formed of a part made by me only (this dissertation) and parts by us (the core project), reflecting what has happened; and aimed to be used by me (self-learning), by us (the participants involved) and by them (fellow researchers and policy-makers), trying to shape the future (Coghlan & Brannick, 2010). Reporting this kind of diversity is not an easy task. When writing, the three audiences of (1) self, (2) us, as the participants of the research project, and (3) them, the external audience that results are delivered to, should be kept in mind at all times (Yin, 2009; Coghlan & Brannick, 2010).

I approached the social research situation from a similar cultural background to the literature used. In this kind of study, it made the research easier but similarly did not allow generalisations to other cultures. The distinction between spending prolonged time in the field and being native was, in my case, impossible to make because I have been willingly involved in the built environment business for years.

Personally, I value sustainability, and therefore the research was normative in that sense as well, although I pointed out and relied on literature that showed the research problem to be meaningful. This normativity was, however, visible in the selection of the research subject.

These openly stated issues of researcher bias also help readers to judge the quality of the research. During the course of the research, this researcher bias has dealt with triangulation, peer debriefing, and partial member checking. What is more, in the following section, the journey of the research is provided as suggested by Robson (2002) to decrease researcher bias.

The other aforementioned biases of qualitative research are respondent bias and reactivity (Robson, 2002). In data gathering, my roles were multiple and access to data was easy and did not disturb the case setting, as is often characteristic of insider action research (Coghlan, 2007). I mostly used publicly available material, but due to my roles in and especially concerning the Nupurinkartano case, I may have had preconceptions, or some gatekeeper to data may have been interested in guiding my attention. On the other hand, I was able to recognise what documents exist in an urban development process overall, and I was able to weigh the importance of data relating to the urban development projects.

In the Siltamäki case, even if I were an external observant, I knew the key participants and the development scheme. This is why I decided to use the transcriptions of interviews from the case database instead of conducting the interviews myself to retain my observatory role.

3.9 The journey of the research

This section contributes to the research by providing an account of the journey of the research. The section contains some information on the research circumstances and self-reflection of my role as a researcher and a “research instrument”.

My own role changed during the evidence collection and research phases in between the cases. As the research approach is a pragmatic one with an ability to adopt changes during the research, this change may have affected the research. Due to these reasons, the following section strengthens the reactivity, reliability, and replicability of this research by providing a self-reflecting journey of the research, including changes made in the original research design and setting as a part of the design (Robson, 2002; Flyvbjerg, 2006; Coghlan & Brannick, 2010). Also, Yin shares this idea of case study as an evaluation, although he accordingly states that a mere evaluation does not qualify as a doctoral dissertation but the bar must be higher (Yin, 2009).

Although the problem field has remained the same throughout the study, the research question has become more focused. I started with the rather ambitious idea of more sustainable urban developments in current societal and market situations. It soon turned out that in the time and resource frame of a dissertation study, sensible answers could not be given. However, I decided to maintain the focus on holistic urban development because judging upon my preunderstanding and the emerging results, I formed the view that the process and its participants are both important in delivering the urban environment and that the holistic environment is crucial if some general truths about the issue are to be claimed. Throughout the study, viability set the course for sustainability.

Originally, the initiative to examine Nupurinkartano using scientific means had already been taken in academia before I joined the case’s developer company. The official planning documents were publicly available, and I could enter into explanatory discussions with all the parties about them during the process, and I could follow and conduct the development process on site. Quite early, it occurred that the traditional process was about to fail in providing a sustainable energy solution to the case area, so action research was taken with the real concerns about the feasibility of the project and certainly without knowing the results beforehand. Also, the complementary case of Siltämäki, in which I was strictly an external observer, was a grateful one to enter because it had an existing research data base that I could use.

As discussed, an urban development project allows a case study researcher to take advantage of five kinds of evidence, none of which overrules others in importance. My preunderstanding guided me in choosing the most relevant issues to build the coding on. However, in this research, I found this coding strategy hard to execute because the data was manifold and made more sense in regards to the case and relations in it. According to the literature, this is not uncommon either in case studies or with a pragmatic world view.

The design has been referred to as flexible. This is related to case selection and the evidence gathering, which have been opportunistic. Nupurinkartano was deliberately selected as the action study research case, but the generalisations come from the fact that the Siltamäki case, being both a redevelopment case and located in different city, was found through my connections in academia. Still, looking back, there has clearly been a uniform research purpose within a uniform problem field.

This journey also serves as the narrative of cumulative learning of the researcher and forms an important part of thesis research (Coghlan & Brannick, 2010). After all, it has already been stated that in thesis-oriented action research, there were two separate parts: the case(s) in which I operated in the field and the thesis research, both of which I conducted independently.

In terms of first-, second-, and third-person research (Yin, 2009; Coghlan & Brannick, 2010), the track started as second-person research, working on practical issues with other relevant people, then moved to first-person research when I undertook the thesis-writing task, and finally to third-person research, aiming to generate understanding and a theory extrapolated from the experience to be disseminated to the research community and other audiences.

3.10 Conclusions

This chapter introduced the research methodology and design. The overall methodology is a multiple case study and the design included mixed methods. Also, the structure of the research, including a combination of independent scientific articles and thesis-oriented research, was introduced. The scope of the research was defined in this chapter to be at the neighbourhood level. After that, the chapter presented sources of data and the data collection methods as well as a means to analyse the data. What is more, this chapter illuminated the quality issues of this study, thus aiming to increase validity. Hence, the quality issues will not be any more

brought out in the Discussion chapter but instead, that chapter will be dedicated solely to discussing the results.

Because solid design and methodology are crucial to successful research, the design, methodology, and quality issues were present in one chapter instead of separating the quality discussion to the end of the dissertation. This chapter was dedicated to describing the chosen methods and the general real-life approach of this research. After the research design and methodology, the next chapter presents the findings from the cases and a summary of the published results organised in a useful form to provide an answer to the research question of this study.

4. Findings

4.1 Introduction

The previous chapter presented the research methodology used to explore the problem field of conducting the urban development process for more sustainability and to answer the research question, “How does Public-Private-People Partnership improve the urban development process to achieve greater sustainability?” Also, the research design was presented and the research approach discussed.

The purpose of this Findings chapter is to answer the research question based on the findings and summarise the already gathered and published results of the two case studies. Similarly, the findings are the contributions to knowledge produced during this research. An exhaustive answer to the research question is provided and, finally, the findings are also discussed in the light of existing theories.

In this chapter, the findings from the cases are summarised firstly according to Papers I-VII and then in relevant order to serve the further analysis and construct formation. Besides the summary, the chapter also presents the differences found in this research between the sequential and the 4P urban development processes, which contributes to knowledge in the problem field.

4.2 Summary of findings from cases, based on Papers I-VII

4.2.1 Summary of the findings

This dissertation consists of this compendium, which is a concluding independent thesis summary, and seven separate independent scientifically refereed publications (Papers I-VII), which together form a coherent body of research into urban development. The Papers approached the research question in the problem field each from their own angles. Some of the

Papers also had their own research questions. Besides summarising the results of those case studies, in this thesis, an emergent theory based on these findings is provided later in Chapter 5.

The Table 3 below displays the most significant results from the Papers I-VII in support of this thesis. The research questions and purposes of each Paper can be found in Subsection 1.3.

It is worth pointing out that due to the evolution of thinking during the research process, the terms in the Papers have not always remained the same and the concepts have clearly advanced to be more abstract and more rigorous. The earliest Papers (I-III) discuss urban planning, whereas Papers IV and VI-VII advance to the level of the urban development process, which urban planning is a part of. The 4P is introduced in Paper II rather ambiguously as a form of participation in PPPs and becomes a framework only in Paper III. The concept of customership emerges in Paper VII, but customers and consumers have been discussed in Papers II-III. The non-partnership-based, traditional, urban development process was labelled as a sequential process in Paper IV, and used in comparisons after that. Later, in Paper VI, also Public-Private Partnerships (PPPs) were included in sequential processes as a distinction from 4P. In Paper IV, they were interpreted to be the Public-Private relationship of 4P, but this is not necessarily always the case.

Paper	The most relevant findings and conclusions applicable to this thesis
I	<ul style="list-style-type: none"> - New ways of participation, such as including future inhabitants as stakeholders, could turn participation from merely opposing all changes into creating new possibilities and thus closer to collaborative place making benefiting all stakeholders. - Future inhabitants must be considered as important stakeholders in communicative planning theory. - Public-Private Partnerships can improve participation of future inhabitants.
II	<ul style="list-style-type: none"> - Participation benefits all stakeholders through adding flexibility to the process. - Planning theory is poorly equipped to accommodate future inhabitants. - Communicative planning, avoidance of conflicts, and participatory democracy are not enough to create desirable neighbourhoods. - Communicative planning and development processes can be developed to also include future inhabitants as stakeholders. Thus, the processes become innovative and customer-oriented through their openness, end-user orientation and interpretative nature. - The participation method described gives flexibility and benefits all stakeholders and is a method to create consumer desirable neighbourhoods. - Engaging future inhabitants in planning processes opens previously unseen potential for including consumerist possibilities for cities and developers.
III	<ul style="list-style-type: none"> - Developers and construction practice are economically or productivity focused and ill-equipped to deal with consumerist perspectives. - Planning theory problems are related to knowledge management. - 4P can improve communicative planning. - The relationship between Private and People is a new one in Finnish urban development processes.

Table 3, part A. The display of the results of Papers I-III from Nupurinkartano action research case study.

IV	<ul style="list-style-type: none"> - 4P can improve sustainability. - Sustainability requires institutional arrangements in the system. - There is a distinction between 4P and traditional planning process. - Urban development processes should be viewed as one system instead of several different subsystems. - 4P offers an alternative approach for urban planning, specifically energy system planning, and it can deliver significant improvements in carbon efficiency. - A residential development system is improved, albeit with increased complexity, by adding a 4th P.
V	<ul style="list-style-type: none"> - There are significant differences in the emissions caused by consumers living in different types of metropolitan areas. - A significant share of the difference comes from urban structure factors. - The carbon footprint of a consumer is dominated by energy consumption related to housing, other housing related activities, and private driving. These are also categories with high variation, making them the key points when analysing the results, especially from an urban development perspective.
VI	<ul style="list-style-type: none"> - Public has a crucial role in driving the change. - People's participation in refurbishments was arranged via owner-occupied housing companies. - The urban development analysis model allows several different scenarios to be presented for decision-making without compromising any of the stakeholder's financial interests, and that owner-occupiers can, as a result, have new energy efficient refurbishment options. - 4P process seems to contribute in creating more options for the People. - There is a strong interdependency of parties. - Private expects to be able to develop large-scale refurbishments, not single plots. - The current land ownership of housing companies can be transferred as equity to finance refurbishments. - Introducing 4P to a redevelopment process can be fruitful for all parties. - 4P can bring the stakeholders closer to each other without anyone having to give up their position, and that can lead to a situation where energy efficient refurbishment can be affordable.
VII	<ul style="list-style-type: none"> - Distinction between 4P and traditional urban development processes was confirmed in redevelopment. - Urban development processes can be considered as a system. - Customership is an explanatory form of one urban redevelopment relationship. - Different rationalities of parties. - Distinction between developer and constructor within Private in the partnership. - Owner-occupied housing companies represent People. - 4P can bring the stakeholders closer to each other without anyone having to give up their position - 4P can lead to a situation where energy efficient refurbishment can be affordable and the People can have several refurbishment and finance options to choose from. - 4P, where the People are included, creates the possibility of equity financing.

Table 3, part B. The display of the results of Papers IV-VII. Paper IV is from Nupurinkartano action research case study, Paper V from Helsinki region, and Papers VI and VII from Siltamäki observatory case study.

4.2.2 Differences between sequential urban development process and the 4P-based urban development process

Figure 2 (below) presents the sequential urban development process and 4P-based urban development process with its parties and interactions based on both cases, combining the findings from Papers IV and VII.

The most important differences are the unilateral and bilateral connections in the sequential process and 4P respectively, and the latter's potential for feedback loops in the process. The sequential process assumes dependency on "above" parties; 4P accepts interdependency between all

parties. Although the actions are mostly the same and the sequential process has several rationalities, it works one-way only. The 4P enables several feedback loops, thus enabling learning and adapting in the urban development process.

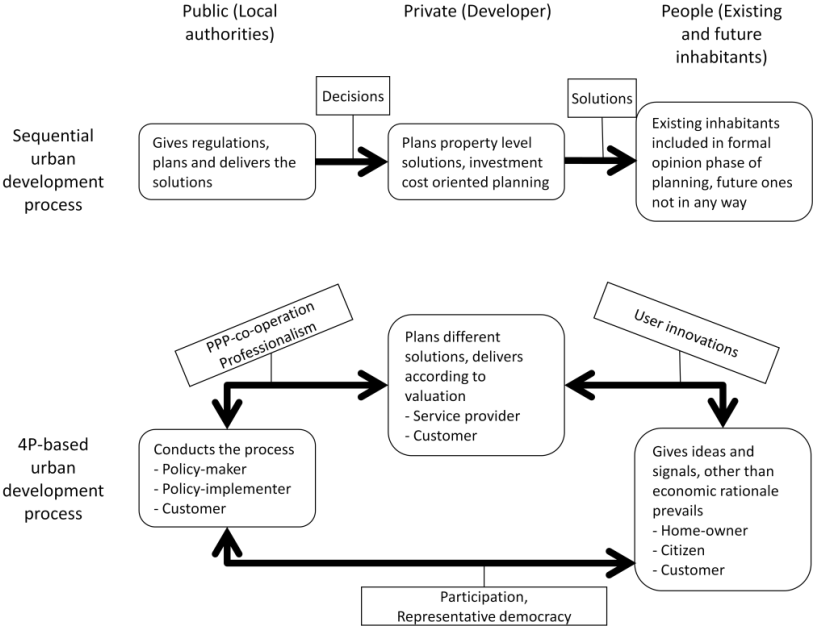


Figure 2. Sequential and 4P models of urban development, developed from Papers IV and VI-VII

4.2.3 From future inhabitants to 4P

Within the urban development process or even within an urban planning process, the idea of including future inhabitants in the process was a new one. In Paper I, the future inhabitants were recognised and introduced to the urban development process of Nupurinkartano and to the theory of communicative planning as important participants. These future inhabitants formed the People in 4P in this case. Within the introduction of future inhabitants, a new relationship also emerged for the urban development processes, the relationship between Private and People. Earlier, that relationship had existed only post-development as sales and marketing (Papers II-III). During the first case study, the 4P model was introduced and taken into use as part of a theory contribution. In practice, the 4P model was first a new way of finding and empowering future inhabitants developed in the action research process, and taken into use (Papers II-III).

To accommodate this emergent relationship, during this research a Public-Private-People Partnership (4P) model, including the inhabitants, was developed and introduced as a proposition for the field of urban residential development. First, the 4P model emerged as a form of Public-Private Partnership (PPP) powered participation and inclusion of the future inhabitants (Papers II-III). Later, this model was used to interpret urban development processes (Papers IV, VI-VII). The 4P model divides stakeholders into three parties (Public, Private and People) and integrates their roles in urban development partnerships. The concept of 4P is a form of partnership that accommodates more complexity than PPP, or the sequential planning process, as stated in Paper IV. Throughout the Papers there was a clear path that the 4P model took from participation of future inhabitants towards a model of urban planning and then forward to introducing people as a party in urban development partnerships. The 4P model shares a lot with former partnership models as well as the institutional property research approach.

4.2.4 4P and sustainability

The first research phase, the case of Nupurinkartano, revealed that a 4P-based urban development process can lead to significant improvements in carbon emissions of a new residential development (Paper IV). The action research then advanced to an actual development task of developing an energy solution for the area (Paper IV). The complementary case, Siltamäki, revealed that involving the Private in a redevelopment process, more viable choices could be offered to finance the desired low-carbon solutions (Paper VI).

The sustainability discussion of the research began with the questionnaire conducted with future inhabitants, presented in Papers II and III, where People clearly expressed their interest in living in a more sustainable neighbourhood. Paper IV introduced, based on the literature, the search of sustainability as a planning norm and identified the 4P model as capable of increasing the sustainability by reducing carbon emissions radically, if the energy system design is adopted as part of the development process.

Besides relying on international research on the residential developments' role in climate change, during the research, the consumer perspective and residential developments' role in climate change were combined in Paper V. Paper V suggested that the consumers' carbon emissions differ within the Helsinki region depending on their residing area, and that urban structure factors explain a significant share of the differences in emissions. What is more, Paper V suggested that since there are differences, the most efficient

approaches to reduce the emissions differ from neighbourhood to neighbourhood. The emphasis on sustainability in this research was on searching for economically sustainable solutions that lead to emission cuts. In the literature, this combination of economic and ecological sustainability is referred to as viability. Emission cuts involve changes in both energy production, such as in Paper IV, and energy consumption, such as in Papers IV-V and VI. Thus, 4P can be more adaptive than the sequential process in embracing sustainability tasks outside the current urban development realm.

4.2.5 Systems thinking

In Paper IV, urban development as an end-product was considered as a system and 4P as the process delivering that system more sustainably, particularly so that it generates considerably less carbon emissions. In the Nupurinkartano case, this was approximately 75 per cent less than business-as-usual would achieve. Without the Private's participation, the energy issues would not have been on the urban development agenda at all. Achieving greater sustainability requires institutional system-level arrangements, such as introducing 4P to the system as the vehicle of the urban development process (Paper IV). Paper VII elaborated the systems thinking and stated that, besides the end-product, the urban development process can also be considered as a system.

The dual nature of urban development as product and process was clearly visible throughout the research, especially in Papers II, IV, and VI-VII. What is more, a distinction was found in Paper IV between the traditional, more restricted, sequential urban development process and the 4P process enabling more relationships and negotiations between the parties. This finding was confirmed in the Siltamäki redevelopment case in Papers VI-VII. During the study, the viewpoint (strongly embedded in the literature) that an urban development product is a system was confirmed; and it was also suggested that the urban development process is a system. The distinction between the two is that urban development as an end product - a neighbourhood - is a technical-ecological system with flows of energy and matter, whereas the urban development as a process is a social system with flows of information and communication.

4.2.6 Relationships and customership as a relationship

Papers II and III suggested that current sequential planning and development processes do not accommodate customer perspectives and

that engaging future inhabitants opens previously unseen potential for both Public and Private. Paper VII further elaborated this idea based on interviews in the redevelopment case and combined the customer perspective with a 4P urban development process, introducing a new concept of customership. Furthermore, Paper VII defined the term “customership” to mean “a relationship observed from the customer viewpoint between the customer (the subject of customership) and the provider (the object of customership)”. These customerships take many forms and are not only bilateral but also multilateral, thus knitting the net of partnership. The concept of customership, elaborated and published in Paper VII, explains the rationality of interactions between parties in an urban development project, but not on a higher societal level on which the parties and actors also act.

4.2.7 Rationalities

In Paper VII, it was suggested that there are several rationalities under which the parties interact with each other. There were, at least, economic rationality, professional rationality, and non-professional, non-economic rationality within the process. These rationalities were also embedded in Paper IV’s findings regarding how the parties interact, and including a third party in partnership with Public and Private increased the interaction interfaces from one to three. Besides rationalities, the parties have different resources to contribute to the process, and they all hold some form of power within, even over, the urban development process.

4.2.8 The roles of actors and parties

The understanding of 4P sharpened during the research process. Although an urban development process requires several professionals, it seems to be evident, based on the Siltamäki case, that a Private actor, whose primary role is to develop and not construct, is required from both the Public’s and People’s side to conduct the development process. Another notion was the role of housing companies in representing People in redevelopments; something that would not even be possible in a new development because the housing companies do not exist in the development phase. They are usually established just prior to the construction works.

Also, the roles which actors take in the urban development process are not determined exclusively by the actors’ legal status (Papers IV and VI-VII). For example, the housing companies are private companies, but under the banner of People, because the inhabitants own them. Private sector land-

owners, be they companies or individuals, are included in Private. Some public-owned companies operating on a profit basis are included in Private.

A common finding in all the Papers was that all of the parties, Public, Private, and People, have highly significant and irreplaceable roles in the urban development process. Also, the relationships between them are all different, but in the context of urban development, they can be treated as customerships. In a new development process, the party perspective explained the 4P model. Private and People are one-dimensional, Private being the developer and related service providers including the constructor, and People being the individuals interested in residing in the area. In a redevelopment process, People is more established and multi-faceted. The existing inhabitants have an impact via their property rights, in urban areas in Finland usually via their housing companies. All the parties saw that the role of Private is best played by a developer and not a constructor.

4.2.9 Partnership forming

Paper IV suggested that by forming a partnership, a space, or a niche, is created to implement all the necessary roles within an urban development project. The view of the parties is thus more complete, being considered as holistic parties instead of one-issue actors, as opposed to agency models which concentrate on behaviour and economically rational decisions, as was presented in Subsection 2.3. In different roles, the parties have different expectations towards the process and its outcome in general, and with regard to a specific urban development project.

Partnership in the cases was formed so that People were amalgamated into an open Public-Private Partnership, as in the Nupurinkartano case, or Private was included in the early stages of a deliberative planning process, as in the Siltamäki case. The scope of the study did not allow examination of the circumstances of partnership formation, so it is possible that other formations exist, such as all three parties coming together from the beginning.

4.3 The answer to the research question

The findings from the cases approach the urban development process from the actors' and parties' viewpoint, from a partnership viewpoint and from a sustainability viewpoint. This thesis suggests that the Public-Private-People Partnership can improve the urban development process so that greater sustainability, particularly economically viable solutions contributing to climate challenge by reducing the emissions, can be achieved.

During the research, first the role of 4P was explored in sustainable urban development; secondly, some benefits of a partnership-based process in delivering more sustainable, particularly low-carbon, urban development product were identified; and thirdly, the key features of partnership-based urban development process were discussed, as were the three purposes of this study.

The Public-Private-People Partnership improves the urban development process by making it more flexible and forming new connections between the parties. 4P adds complexity to the urban development process and is a system-level institutional arrangement. 4P can bring the parties and actors closer to each other without anyone having to give up their position. By changing the urban development process, 4P enables alternative approaches and solutions to be considered. For example, more sustainable energy production or energy conserving refurbishment solutions can prove to be viable.

4.4 Discussion of the findings

This section discusses the findings related to the pointed gap in existing research, as well as the findings' meaning related to the nature of urban development, sustainability, partnerships, and recently established research findings concerning Finnish urban development.

Existing theories explain the phenomenon of urban development only partially. Planning theories did not recognise future inhabitants and when they were identified, the theories were ill-equipped to deal with the future inhabitants. Communicative planning aims for consensus and avoidance of conflicts, which is not always possible or desirable in partnerships involving a political element. The myth of rational planning leads to problems related to, for example, knowledge management or providing an energy infrastructure that is not part of the planning process but lies totally in private hands. Property theories, mainly under economic rationality, did not recognise the diversity of actors. Both approaches mainly suggested the process to be sequential.

The research found that the nature of urban development is twofold. It is both a process and an end-product of that process. This thesis concentrates on the process, but to fully understand that, it is also important that elements of the end-product are considered.

During the research, it became evident that there is no singular sustainability in urban development. The dimensions of sustainability overlap and even conflict with each other, and therefore sustainability must be defined. In the context of the built environment, techno-ecological

sustainability is the one the field can best contribute to. At the neighbourhood level and for overall residential development, energy production and consumption are extremely relevant and have a high impact in fighting climate change. Sustainability is ranked high in urban policies and in consumers' wishes, but achieving greater sustainability requires the inclusion of institutional arrangements.

In the context of urban development, there are at least two approaches to partnerships: one suggesting partnerships are agreement-based and another suggesting that they are based on common understanding. Based on the results, the nature of urban development is better served with the latter approach. Urban development could be treated as agreement-based partnership, like Public-Private Partnership, only if it is held that it is the public sector's role to plan and deliver new developments and that by PPP arrangements, some parts of this role are transferred to Private. In the sequential urban development process, Public delegates some of its power to Private and maintains some for itself.

Within a Public-Private-People Partnership, as the research found, all the parties have a crucial role in the urban development process. The Public often acts as a gatekeeper, making decisions whether development in some area is desirable, and by weighing the implementation of its policies, it can make certain changes to the policies that may benefit other parties. In the Private party, the most important actor is the developer, even to the extent that other actors are not welcome in the partnership, as was the situation with the constructor in the Siltamäki redevelopment case. The Public's role is to drive the change as end customers, once they are included in the process. Also, the land ownership and rights over land are crucial in any urban development process.

The urban development process can also fail to deliver anything, or the partnership can fail. Regarding the systems theoretical approach, this happens when the pressure either from inside the system or from the environment is more than the process can adapt to and fails to undergo the necessary learning process.

This research identified that urban residential development can efficiently contribute to overall ecological and the parties' economical sustainability. To do that, the urban development process must include design and delivery of energy systems as well, although the possible systems will differ from neighbourhood to neighbourhood because of different energy usage and available viable solutions.

The nature of the urban development process is complex. The environment in which the process is to be conducted is in constant change, and the environment also inflicts new demands on the process, such as the

demand for cutting emissions. The traditional sequential process stumbles in responding to these demands. The research found that introducing a partnership can provide the opportunity to turn the urban development process into a system, hence adding complexity but also enabling the process to adapt to changes. This helps the urban development process to embrace the emerging complexity of the real world, and hence deliver more sustainable solutions.

In Finland, the urban development process has been recently researched from different viewpoints by Edelman (2007), Ahlava and Edelman (2008), and Väyrynen (2010). Although they all have emphasised the need for change in processes, they have mainly adopted the view of planner or proposed a new profession in the field to solve the problems they identify. To date, no research on Finnish urban residential developments appear to have been done that would take advantage of several rationalities and approach the issue from a holistic viewpoint aiming at sustainability.

4.5 Conclusions

This chapter presented the most relevant results, findings, and conclusions from the scientific publications included in this dissertation and provided associated findings in an order that is most beneficial to the purposes and research question of this dissertation. Also, as a concluding result, the differences identified and published during the research between traditional and partnership-based urban development processes were presented.

Regarding this compendium, these original findings summarised the already published pieces of work in order to allow an answer to the research question. In short, 4P adds flexibility and complexity to the urban development process but similarly can bring the parties closer to each other and help to introduce new solutions.

The findings deepen understanding about urban development processes and partnerships, especially 4P in urban development when aiming towards greater sustainability. The findings are further analysed in following chapter, which also contributes to theory-building in the problem field. That analysis will lead to the formation of constructs, which are then used to formulate a theory based on those constructs and their interrelations. These constructs are then discussed in light of this study and some others.

5. An emergent theory of urban development

5.1 Introduction

The previous Findings chapter summarised the findings already achieved and published from the two cases and provided an answer to the research question. However, the case study method also revealed findings that prompted a possibility of deeper theorisation on the problem field and a potential additional contribution to the research purposes.

Whereas the previous chapter answered the research question, this chapter summarises the exploration of the problem field. The purpose of this chapter is to further analyse the findings, following the procedure described in the Methodology chapter, in relation to the problem field and contribute to theory generation about urban development processes as systems. This will be done strictly based on evidence and findings from the cases by providing a parsimonious set of constructs and their relationships, which were already present in the findings, though not specifically. Nevertheless, this chapter contains new knowledge as is allowed within the limits of an article dissertation. To strengthen the theory, some negative evidence will also be discussed. The theoretical approach will be further compared to conflicting and similar literature to build internal validity and via corroboration to increase the dissertation's level of theorisation.

5.2 Constructs

5.2.1 Introduction of constructs

The rich data acquired and the key findings from the cases were presented in the previous chapter. A cross-case comparison led to the formation of six constructs, found in both cases, in the context of an urban residential

development process. The constructs were formed by continuous coding of the key themes. A thorough description of the analysis process is served in Section 3.7. The constructs are:

- (1) Parties;
- (2) Relationships and interaction;
- (3) Power;
- (4) Rationality;
- (5) System; and
- (6) Adaptation.

All these constructs are to be found in the literature as well, and to strengthen the validity of the emerging theoretical approach, they were also compared to the literature both against and in favour of them.

The constructs are the key concepts in their final form. As was discussed in the Findings chapter, the concepts were a subject of evolution during the research. All the constructs exist in the findings of this compendium and thus in the corresponding Papers as well, but they were not a priori constructs. Instead, they were formulated during the research.

“Party” is a construct covering Public, Private, and People parties that participate in the Public-Private-People Partnerships and in the urban development process. They are loosely formatted but all the participants can be labelled under these three categories. What is more, the rationalities under which the actors in a party operate are close to each other. The parties enter the urban development system holistically, though a party may belong to several urban development systems. The existing theories do not recognise this approach.

The “Relationships and interaction” between the parties is a quintessential part of the 4P. The partnership is not only the parties coming together but also the interaction between them. Customership is a form of partnership which emerged during the research and proved capable of explaining the relationships in a real world situation with different rationalities and distributed asymmetric power.

“Power” in 4P is distributed and asymmetric. This distribution of power between the parties enables an equal basis of partnership where there is a strong interdependency between the parties. In a sequential approach, the dependency is upstream only and the actor upstream possesses a superior power to those downstream.

“Rationality” is the set of basic assumptions according to which the actors or parties act. In 4P, the rationalities exist similarly and this affects the system. The findings suggest at least three rationalities to be present:

- (1) Economical rationality;
- (2) Professional rationality; and

(3) Non-economical and non-professional rationality.

The first guides Private actions, the second guides both Private and Public actions, and the third one is a Peoples’ rationality. Behind the rationalities are factors such as land value or reduction of carbon emissions.

“System” covers the attributes of the urban development process as a system. 4P resembles very closely an open system, as described in systems theory, whereas the sequential urban development process is more a closed and apparently linear system.

“Adaptation” and ability to adapt are the distinction between nonlinear and linear systems, the former having the ability caused by several feedback loops in the process, as in 4P.

This research was conducted on a holistic basis. Holism holds that any holistic entity is more complex than just its parts put together, denying the Newtonian linear metaphor of the development process as a machine that can, if not working properly, be disassembled into pieces and put back together again. This is why the constructs in the 4P framework seemed to suggest a good theorisation of the urban development phenomenon and can challenge the existing sequential view.

The Table 4 below summarises the created constructs and also forms a data analysis display.

Construct	A sequential view of urban development process	An open system in relation to the constructs	A 4P urban development process
Parties	Simple input-output units. No parties, only actors.	The system consists of vast numbers of individual agents connected through multiple networks.	Three parties, each consisting of one or several actors. Parties and actors enter the partnership system holistically. The actors may be part of several similar urban development systems.
Relationships and interaction	One-way top-down relationships.	Dynamic interaction, exchanging information (social system), and energy (ecological system). Effects of interaction between actors propagate through the system. Interaction defines the system, not the components	Dynamic interaction, exchanging information via customerships. Effects of interaction between actors propagate through the 4P. The components are important in a sense that all parties must be represented.

Table 4., part A. Constructs in urban development process, compared with sequential view of urban development and systems view

Construct	A sequential view of urban development process	An open system in relation to the constructs	A 4P urban development process
Power	Oppressive power, excess use of power leads to stalemate, or power unrecognised altogether.	Distributed power.	Distributed, asymmetric power.
Rationality	Several but sequential rationalities, assumed singular.	Several similar rationalities.	At least three similar identified rationalities.
System	Closed linear system.	Open system, the behaviour is determined by the interactions and not the components. System cannot be broken into parts or examined via independent components. Nonlinearity. Interactions are recursive, iterative and self-referential. Several direct and indirect feedback loops.	Open system, the behaviour is determined by the interactions and not the components. Process cannot be broken into parts or examined via independent components. Nonlinearity. Several direct and indirect feedback loops.
Adaptation	If the sequential chain breaks, it remains broken.	System memory exists nowhere in particular and system parts can be replaced. System has the capacity to maintain viability and capacity to evolve. The actors in system adapt to each other. System can reorganise itself without outside intervention.	4P has the capacity to maintain viability and to evolve. The actors in 4P adapt somewhat to each other. 4P can reorganise itself without outside intervention, provided it does so within some external limitations.

Table 4., part B. Constructs in urban development process, compared with sequential view of urban development and systems view

5.3 A parsimonious emergent theory

Because case studies allow analytical generalisation, as was stated above, the produced explanation could be widened to other cases with similar configurations. As an explanation, a hypothesis towards a parsimonious theory is formulated in the following paragraph, thus concluding in an emergent theory of participatory partnership in urban development.

The theory of Public-Private-People Partnership in urban development holds that all the parties enter the partnership deliberatively and holistically, and interact with each other. By the interaction in the partnership, all parties aim to fulfil their own needs, be they concerns over quality of the urban environment, needs and wishes towards housing, policy implementation, or profit targets. Within this particular process, the concept of customership explains the interactions even if the parties may have other kinds of interactions with each other.

5.4 Discussion on the emergent theory

5.4.1 Implications for the theory to existing literature

Besides the limitations of the sequential process view and conflicting rationalities in the existing literature, this research also pointed out gaps in existing research in the rather limited view of partnerships and the lack of knowledge on how to conduct the urban development process more sustainably, even if the effects of urban development on climate change are well known.

This section discusses the emergent theory and its meaning in the illumination of some other theories or approaches. These include the nature of the 4P and the parties and their relationships in it, rationalities, and adaptation abilities.

The constructs and their relationships suggested a theoretical approach as to the essence of a residential urban development process. That theory holds that the interaction happens in a Public-Private-People Partnership, which is a social framework consisting of three loosely defined but strongly interactive parties: Public, Private, and People, thus following Chadwick (1971), who noticed that system components may be “real” or conceptual. The parties in 4P are more of the conceptual kind, or at least they would be hard to explicitly define by means other than as participants of an urban development process. All these parties do not necessarily have an agreement-based formal relationship between them, thus making a distinction from Public-Private Partnerships, as Koppenjan (2005) and Ysa (2007) noted. Despite the lack of a rigid organisational hierarchy, these partnerships can be and have been considered organisations within an institutional approach. This connection allows the theory to be examined in light of property research.

Following Chadwick’s (1971) thought, the 4P as a party-based social construct helps to form a picture of the world and to derive operational theories, as has been done in this research. These parties are not indivisible,

but they are social systems in themselves. Nevertheless, they are referred in this study as bounded entities in a system. This social framework of 4P is also a social system which enables other technical and economical innovations and solutions to be used, thus advancing sustainability in urban development. In this way, the 4P improves viability in urban development, which again is needed to increase sustainability in market-based urban development.

The research found that the parties act based on different rationalities, not only based on economic rationality as the professional parties, Public and Private, seem to assume. The economic theories lack the essence of the urban development process as part of the society. Again, all the parties hold power over the process. In 4P, the power is originally fragmented in society, which according to the pluralist view, is a good thing (Jordan, 1990; Allmendinger, 2002), and Public possesses no such power to pass downstream which in a sequential process it is supposed to possess. The findings suggest that the sequential process holds much less interaction, let alone bilateral interaction, than the 4P.

The sequential process suggests planning to be a rational act, based on professionalism. According to the findings, so-called “rational planning” leaves important issues unnoticed, such as energy system planning in the Nupurinkartano case. There are several similar rationalities involved in the urban development process. Looking at only these rationalities, none of the actors seem to aim towards new development but rather other values achieved with it, such as profit, improved neighbourhood, or implementation of policies. The rationalities in the ring of interaction help to understand the logic of other actors and parties.

As an improvement to the existing process and as a contribution to theory, this study introduced a systems view to a Public-Private-People Partnership-based urban development process aimed at greater sustainability. The systems view of the urban development process developed in this study does not assume that everything is controlled under the process. The parties just need to have enough in common to form a common target for the partnership. What is characteristic of the system is to be adaptive to the changes in the environment and in the system itself. During the research, urban development as end-product was also identified as a system.

The adaptive role of 4P corresponds well to Ysa's (2007) urban regime theory, which holds that partnerships are constantly evolving and may assume variable geometries. This evolution was assumed also by Ball and Maginn (2005) in their evaluation of urban regeneration partnerships, and by Staffans et al., (2010) in their work regarding Finnish urban

development. Related to 4P, Majamaa's (2008) work in strengthening the strategic participation has to be acknowledged, although it concentrated on the participation, whereas this dissertation is about how 4P could improve sustainability in urban development. 4P can improve system-level sustainability by introducing new, feasible ways of doing things. It is a social system as Rydin (2010), too, defines the urban development process. Foremost, it is a social innovation as defined by Jonsson (2005) in that it adopts new ways to satisfy existing needs though the technology adapted in the cases has existed for a long time in commercial applications.

5.4.2 A systems view as a supporting view of the urban development process

As Eisenhardt (1989) and later Yin (2009) suggested when presenting emergent theories from case studies, the following subsections lay out some supporting and some conflicting views from the literature and some conflicting evidence that has been gathered.

The urban development process is a subsystem to the systems of economics, government, and politics (Rydin, 2010). Furthermore, the system of urban development has economic, administrative, and political subsystems within itself (Mäntysalo, 2000). As this seemingly simple three-level systems example shows, systems in a postmodern networked society are highly intertwined, and in no system can the rules of interaction be totally separate from any of the rationalities that exist outside the examined system. In the 4P process, there are institutional parties and mediating institutions, such as the housing market or representative democracy. The relationship between the parties happens within these mediating institutions and the concept of customership can explain the interaction in all three possible relationships. In all its meanings, 4P is a social system.

Adopting a systems view provides some liberty. With the view, a chosen part of an extremely complex postmodern welfare state or society and its overlapping systems can be examined holistically. The findings through the inquiry referred to systems theory. Already, the last publications had dealt with the issue and found it a fruitful explanation of the urban development phenomenon.

4P is a conceptual framework. The parties are not well-formed or thoroughly explained in the concept, but can be identified in any given case both by the system itself and by external observer. The self-recognition and adaptability viewpoints suggest an interpretation that 4P is a former PPP system that adopted People in it for strategic reasons, which was also evident in the findings.

In the partnership, each party has something, a resource, or a form of power that the others want or want to be used in a way that serves their intentions. In 4P, these resources or forms of power can be planning resources, plan approval, or customer habits and needs. By this, it is assured that interest to stay in the partnership is real, that is, the stakes to stay in the partnerships system are greater than the stakes to leave it. Processes are diverse, and this makes them resilient to changes in the environment, such as political changes or economic changes, and ensures that an election will not stop a development project (Innes & Booher, 2010). This can, in theory, decrease the failure rates of partnership, but empirical proof would need quantitative analysis of several cases to establish this. Aforementioned issues contribute to systems' resilience and adaptation to internal changes.

Nevertheless, because there is a possibility of failure, the 4P as a system may face circumstances in which only some of the parties within an existing network continue the process. As stated, any system faces external pressures all the time and adaptation within the system is not always possible or even favourable. This is a very high level feedback loop if a process is continued after one of the three quits, but as a matter of fact, that happened in the instance of Nupurinkartano before the research or the current urban development project took place. The developer at the time withdrew from the process. Within the boundaries of the urban development system, it is also possible to "change" the existing inhabitants by reforming the development area boundaries or change the future inhabitants by targeting the development to a totally different market sector. Changing public authorities is not possible as such, but planners in charge do change, which can change the adopted interpretive approach to urban development, as do the political power relations over time. It is not unknown for the property development industry to keep a project alive until the circumstances are more favourable. Although the urban development process can continue in these instances, regarding the 4P system, they should be considered as new systems altogether.

It is always possible in an urban development project for a disagreement over means or ends to emerge, but general consensus is also needed to create coherence in the project. That coherence then emerges firstly as social capital, trust, and better strategies, later possibly as new partnerships and changes in practices, and even as new collaborations, more co-evolution, and better results (Innes & Booher, 1999). Similarities of this to learning processes are obvious.

It has already been shown in Papers II and III as well as by Majamaa (2008) that 4P is able to create new relationships instead of just conflicts

between stakeholders, as often happens in rational planning (Innes & Booher, 2010; Næss, 2001).

5.4.3 The sequential model as a conflicting view and negative evidence

To strengthen the reliability and validity of the research, the following subsection presents an alternative explanation or second-best theory and some negative evidence from the cases as several methodologists suggest (Eisenhardt, 1989; Miles & Huberman, 1994; Robson, 2002; Yin, 2009).

However good an explanation the systems view is, the possibility of a sequential process being agile enough to deliver the low-carbon solutions presented in the cases cannot be totally abandoned. The sequential process having the means to do that is by no means impossible, but the evidence from the cases does not point in that direction. As well, the partnership could well be formed between People and fully public actors, if they only cover the responsibilities needed to conduct an urban development process. This was even suggested in one of the public representative interviews in the Siltamäki case. Similarly, in the Siltamäki case, there were some actors operating in the Private realm (the housing companies and the management company), but that counted nevertheless as People due to their purposes within the system. The 4P model is not a rigid categorisation of actors based upon what they essentially are, but instead is based upon what roles they represent in the process.

If the parties and actors can reach an agreement, the sequential model can work without unnecessary discontinuities and deliver sustainable urban development effectively. However, Næss (2001) is highly sceptical about the traditional process reaching agreement on sustainability issues in urban development. As Campbell (1996) and Godschalk (2004) suggest, the traditional path leads to conflicts.

Furthermore, the sequential model relies on modernism and rational planning, which is thought to be able to create one “right” solution by analysing area qualities. In the sequential model, the developer has only a little decision-making power within the urban development process. Decisions are made top down: Public in the upstream makes the important decisions that later affect all parties. These decisions are handed down to the Private to implement and to deal with the decision’s consequences, and this happens again in the Private-People relationship where Private creates the urban development to be consumed by the People.

Because neither the end-user nor the developer have the opportunity to contribute to the decisions, the decisions must be done wisely in the Public realm, and it must be ensured that information does not get lost, as

Väyrynen (2010) sees it as one of the major problems in Finnish urban residential development. The top-down relationship constrains those downstream, the developer and end-users, that is, and also limits their interest to produce and retain information.

Besides contradicting data, there was also data that did not correlate with findings nor oppose them. In both cases, the data acquired directly from the People has undergone some interpretation or gathered via representatives. Although data in the Nupurinkartano questionnaire did not point in the opposite direction, it is clear that not all future inhabitants share similar values on low-carbon or sustainability issues, or at least they are not the primary rationales. Many of the responses of the open-ended questionnaire were concerned about quality issues in housing, such as facilities for domestic tasks and the size of plots, or simply living, such as possibilities to barbeque.

5.5 Conclusions

This chapter presented further analysis of the acquired results. This analysis was done based on constructs that already existed in the findings, and no new evidence or unpublished findings were used. These constructs and their interrelations then contributed to the theory of Public-People-Private Partnership in urban development. This theory contributed to the overall research purposes, which the sole answer to the research question in Chapter 4 could not do alone.

The importance of this chapter is in the emergent theory now evident and how it will be used in the future to explain urban development processes. The emergent theory held that all the parties enter the partnership deliberately and holistically and interact with each other to fulfil their own needs. In the urban development process, customership can explain the interactions. Along with the earlier findings, this new theory is also part of the new knowledge generated in this research. What has been concluded in this chapter is the usability of the findings and confirmation of what actually are the achievements, that is, what was not known before this research took place. In the case of a multiple case study taking place both in the real world and in advancing a scientific discipline, such as urban development, this was not a trivial task.

The following Discussion and Conclusions chapter will discuss the generalisations, limitations, and contributions of this study and provide conclusions to this dissertation as well as suggest future research issues.

6. Discussion and conclusions

6.1 Introduction

The previous chapter provided, through inducting from constructs based on the findings and evidence, an emergent theory based on those constructs and their interrelations and discussed that theory in the light of other existing theories.

The purpose of this Discussion and conclusions chapter is to compare the results of the conducted research to what might have been the expected results based on the theories and what actually is of novelty in this research. The purpose is also to point out the generalisation value of the results and some limitations caused by the dissertation nature of this research, different approaches to sustainability, and public policies and chosen research methods. What more, the aim is to illuminate the primary contributions of this research.

This chapter discusses the findings of the cases and the analysis presented in the previous chapters, followed by sections on generalisations and limitations, and contributions. With the last section, some suggestions for future research are offered.

6.2 Reconnection to the problem field and research question

The research was able to answer the research question and illuminate some issues in the problem field, how to conduct urban development for greater sustainability, by conducting a multiple case study. The existing research did not give a clear answer to the research question, nor did it explore the problem field in a way that could enhance emerging theories on urban development's ability to contribute to sustainability. The gaps identified in Chapter 2 were related especially to:

- The process being treated as sequential;

- The different co-existing rationalities in urban development and urban planning, and those rationalities leading to the search of one “right” solution;
- Limited views on partnerships; and
- The lack of actual knowledge on how to conduct the urban development process more sustainably.

The originality of this research lies in accepting a novel view on partnerships, the non-linear 4P developed during the research, and applying that view to sustainability aims of the urban development process. As the research was partially conducted with an action research approach, the results were identified as valuable in real-life situations, and the research setting was also valuable because within urban development research there is little evidence of insider research. The value to scientific knowledge follows in the Contributions section of this chapter.

The purposes of this study were, first, to explore the role of Public-Private-People Partnership in sustainable urban development; second, to identify the benefits of a partnership-based process in delivering more sustainable, particularly low-carbon, urban development; and finally, describe the key features of this partnership-based urban development process.

The findings allowed an answer to the research question, “How does Public-Private-People Partnership improve the urban development process to achieve greater sustainability?”. The 4P as a social system can add flexibility and help to embrace the complexity of the urban development process, which again enables different solutions to be viable and therefore taken into use. These often techno-economic solutions are existing solutions that can enhance sustainability. The emergent theory in the problem field holds that all the parties enter the 4P deliberately and holistically, and interact with each other. By the interaction in the partnership, all the parties aim to fulfil their own needs, be they concerns over quality of urban environment, needs and wishes towards housing, policy implementation, or profit targets. In 4P, this can happen without the parties or actors compromising their own position. Within this particular process, the concept of customership explains the interactions, even if the parties have other kinds of interactions with each other in general. This theory added to fulfilling the research purposes.

The findings are in accord with some recent studies concerning urban development. The findings and the emerged theory provide a good example of DIAD (Diversity, Interdependence, Authentic Dialogue) in urban development, introduced by Innes and Booher (2010), based on their multi-decennial work on collaborative rational processes. The parties in 4P are

interdependent in a reciprocal way, that is, new development will not happen unless cooperation takes place. This dyadic high dependence and high power over each other form a sound basis of collaboration in networks according to findings of Ritter, Wilkinson, and Johnston (2004). The 4P represents non-linearity, which is an emerging trend in urban planning within urban development. Non-linearity is suggested to be able to contribute to a shared understanding among stakeholders for action, if not universal truths (Allmendinger, 2002; Innes & Booher, 2010; Rydin, 2010). This supports the emergent theory.

The identification of 4P as a social innovation enabling better but existing technical solutions to be used resembles Guy's (2010) conclusion that the built environment must connect to social processes but has mainly to contribute to the field of techno-economic sustainability.

The research suggests that 4P provides good opportunities in enhancing sustainability, especially viable low-carbon solutions, in the urban residential development process.

6.3 Research generalisations

This research aimed for analytical generalisations so that results could be also valuable elsewhere in similar situations. Already during the research, the following generalisations concerning the usability of the results in different circumstances, presented in Papers I and IV-VI, have been made: firstly, the carbon challenge and carbon emissions of housing is a problem shared with the developed world. Paper V compares the situation among different areas within the Helsinki region in Finland, and although there are distinctions in emissions, housing is still the biggest single emitter. Secondly, Paper VI discusses the land value in related to construction value in redevelopment, and states that land must have a relatively high value that often only occurs in urban areas. Thirdly, in Europe, especially in central Europe and Scandinavia, urban development has been during recent decades transposing from strictly government-led to allowing possibilities for different kinds of partnerships. This means that a partnership approach will be the prevailing approach in most urban development processes. The aforementioned combination of the need to decrease the emissions caused by housing, the land value as the trigger to develop, and a partnership approach are somewhat common to all western market economies.

The two cases, along with research literature and preunderstanding, allow some generalisations as well. Within the Finnish urban residential development context, the findings and conclusions of this study are

applicable, for the cases were purposefully selected to represent two different planning regimes. The carbon challenge of residential developments is common in the developed western world, and thus the actions in energy efficiency and sustainable energy production are also needed elsewhere, but the operating environment may be different when it comes to the roles of parties. However, based on experiences in the Victorian urban development context in Australia, it seems that the developed model is also useful under different legislation, even if the actual sustainability issues elsewhere are other than in heating energy usage.

An element even more applicable elsewhere than in Finland is the notion in the redevelopment case that a developer is needed to play a role in the partnership. The Finnish urban development industry lacks pure large-scale developers, and usually the private developers are developer arms of construction companies. It can be said that the results are generalizable in urban residential development processes in developed, democratic market economies where there exists a participatory approach to urban development and which include Public, Private, and People parties.

6.4 Research limitations

This section deals with the limitations other than the quality issues. The quality issues were discussed already in Chapter 3 and are thus not revisited here. These limitations occur from the selected case study method and mostly qualitative data collection methods as well as approaches to sustainability and public policies.

Due to the nature of the study, this being a doctoral research, the amount of deeply analysed holistic cases needed to be constrained because of the time and researcher resource constraints. The resources of this research did not allow long periods of follow-up of certain developments. A recent five-year study in the UK, however, has identified that different policies in urban expansion have only a marginal five per cent improvement in sustainability and they are overruled by socio-economical changes anyway. According to the study, the key to sustainability in urban development lies in adapting technological improvements and that land use contributes to the viability of those technical solutions (Echenique et al., 2009). These results are in accord with the findings of this research.

The challenges of sustainability-aiming urban development pointed out by Godschalk (2004) also surfaced in the cases, especially that of growth management, which he sees arising from the opposite viewpoints of market-led or public-led urban development delivering the best quality urban environment. A case study cannot provide an ultimate answer for

that. Based on this study, it can only be suggested that partnership-based urban development seems to provide hitherto unseen opportunities for greater sustainability and still remain economically viable.

The 4P model in urban development only deals with the conditions and roles with which the actors enter the partnership, not for example the ownership of those actors. Under Private, there may well be public utilities or partially privatised enterprises that just act primarily under an economic rationale. They may as well be owned by the Public. The role of the Public and especially local authorities is, however, very strong in property development and related issues, and also in climate change actions (Dodman, 2009; Rydin, 2010).

Interpretations of contemporary research are temporally tied (Goulding, 2002). Something that suits the theory now may alter in the course of time. As was pointed out in Chapter 2, legislation needs to be benevolent to partnerships and participate in urban development. Also, different researchers could have reached somewhat different conclusions on the evidence, or my coding could have overlooked some key issue from the constructs.

The case studies are meant to explore the problem deeply and, especially in the action research approach, help to solve real-life problems within the cases by mastering the skills needed. This may present a challenge to induction and to the generalisation of the findings though the possibilities for generalisation seem extensive, as discussed above.

There are also limitations associated with the mostly qualitative nature of the research, however rigorously the research was conducted and reported. Although the quality issues were discussed in Chapter 3, the general qualitative approach may have left some relevant issues of urban development process uncovered. However, the qualitative data revealed new things in the research field and proved to be able to contribute to meaningful findings. Quantitative approaches only would not have been able to fulfil the research purposes.

The presented findings, the theory based on constructs and their interrelations, and subsequent conclusions are just one interpretation based on the evidence, one explanation of what has happened in the given context, but certainly one that is plausible and rings true. This is the best that can ever be said about case studies, because often falsification and not verification is characteristic to them (Flyvbjerg, 2006).

6.5 Contributions

The Introduction chapter already indicated the contributions to this study that are confirmed in this section. This study contributes to understanding about urban development and partnerships, especially Public-Private-People Partnerships. The overall contribution is that Public-Private-People Partnership is a social innovation that integrates economic and ecological sustainability aspects into the urban development process. This study also contributed to knowledge of urban development and increased understanding of the essence of present-day urban residential development and its aspiration towards greater sustainability, as the research problem was defined in the Introduction. This study connected the urban development process closely to systems theory, which proved to be of some coherency.

The academic value of this study is gained by presenting the process of urban development as a system and by constructing a theoretical model based on the constructs of that process so that it provides the hitherto hidden potential of gaining more sustainable built environment solutions. By this, the study challenged the current theories in its context in the field of urban development and added to systems theory. This study also deepened understanding about urban development as a process and a product, deepened understanding about partnerships, especially 4P, as well as partnerships' ability to contribute to sustainability in urban development.

The changes in the urban development process, both the way it is conducted and its growing sustainability aims, reflect the change in society. Governments everywhere are searching for new ways of implementing policies with diminishing resources and trying to tackle new systemic challenges, such as climate change. This calls for partnerships which can be interpreted as the political system altering its boundaries. The literature review revealed similar societal changes and challenges in housing throughout the western world. This study will help improve policies in tackling the carbon challenge of new developments and redevelopments, in creating partnerships in urban development to deliver a more sustainable built environment, and in steering the field of urban development more successfully than at present.

Increasing the understanding of the urban development process also increases the potential for economically successful and less carbon emitting urban development projects. The opportunities shown in this study to reduce carbon emissions can also generate business in the built environment for players other than traditional construction companies.

Along with the policy changes, these increase the potential for successful projects as understanding of urban development increases.

6.6 Suggestions for future research

A complementary multiple case study proved to be a suitable research methodology for gaining more understanding about urban development. It also became clear that a pragmatic approach is a relevant one, for there are no great overall theories for urban development, nor are the actions of stakeholders guided by uniform rationality. To further enhance understanding, however, more inside-view case studies are needed, also from the Public viewpoint. Surveys and other quantitative data are also necessary to drive generalisations and to have an effect on practices.

So far, this research has discussed wide issues relating to the built environment, urban development, society, politics, systems, partnerships, and sustainability. Each of these contains a myriad of potential realms for future research, but in this section only a few with relevance to sustainability in urban development are suggested.

The sustainability and carbon challenges in the built environment are evident. Urban development has a solid ground to respond to those challenges, but further research is needed on how to apply existing, often viable, technologies, especially in suggesting the system-level combining of energy system design to urban development is an urgent issue to be further investigated, as this study also suggests this being a beneficial combination.

Within the partnership research, it was suggested that the role of Public would deserve more investigation. This research has revealed novel things about Private and People, but to understand Public action and decisions would improve the partnerships in general and Public-Private-People Partnerships especially.

This research had to largely bypass the financing of urban development and rely on economic rationality taking place. The financial options and valuations of sustainable urban development are definitely worth investigating more for they can create new opportunities for sustainable urban development.

All the suggested research areas would equally contribute not only to knowledge and research but also to policy and business in the built environment. As Public, Private, and People can successfully conduct sustainable urban development within a mutual partnership, academia, business, and cities and other authorities must continuously search for ways to improve social, ecological, and economic sustainability of the built environment.

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Appended papers I-VII

This dissertation explores partnership-based urban residential development processes which aim towards achieving greater sustainability. Both urban development and sustainability are complex concepts. The problem field, combining the two, is a real-life challenge which the research approaches with a pragmatic view. Theoretically, the study places the urban development process between urban planning and property development theories and introduces urban development as an open social system according to systems theory. The primary investigation method of the study has been a multiple case study. The study suggests that Public-Private-People Partnership is a social innovation that improves the viability of technical and economical solutions in urban development, and it is these solutions that contribute to greater sustainability, especially urgent low-carbon solutions. Besides the findings, the study presents an emerging theory for considering urban development.



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