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Säynäjoki, Eeva-Sofia; Inkeri, Ville; Heinonen, Jukka; Junnila, Seppo

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*Published in:*  
Cities

*DOI:*  
[10.1016/j.cities.2014.05.010](https://doi.org/10.1016/j.cities.2014.05.010)

Published: 01/01/2014

*Document Version*  
Publisher's PDF, also known as Version of record

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*Please cite the original version:*  
Säynäjoki, E.-S., Inkeri, V., Heinonen, J., & Junnila, S. (2014). How central business district developments facilitate environmental sustainability A multiple case study in Finland. *Cities*, 41(A), 101-113.  
<https://doi.org/10.1016/j.cities.2014.05.010>

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# How central business district developments facilitate environmental sustainability – A multiple case study in Finland



Eeva-Sofia Säynäjoki\*, Ville Inkeri, Jukka Heinonen, Seppo Junnila

Aalto University School of Engineering, P.O. Box 15800, 00076 AALTO, Finland

## ARTICLE INFO

### Article history:

Received 30 January 2014

Received in revised form 28 April 2014

Accepted 25 May 2014

Available online 2 July 2014

### Keywords:

Urban regeneration

Sustainability

Central business district development

Environmental considerations

Multiple case study

Finland

## ABSTRACT

Sustainability is widely accepted as an important conceptual framework within which to position urban policy and development. Furthermore, urban planning is recognised as an important instrument for promoting sustainable development. The purpose of this study is to examine how Finnish central business district developments are designed to facilitate environmental sustainability. Three recent urban regeneration projects are explored as a multiple case study, firstly to model the central business district development process in Finland, and secondly to analyse how the expected outcomes of such regeneration projects support environmental sustainability. Official plan reports and supplementary case data are analysed qualitatively. A common development process model is identified and environmental sustainability is found to be promoted through higher urban density. However, environmental considerations are made only in the beginning and at the end of the linear planning process. In each of the cases studied, the contribution to environmental sustainability appears to be scarce.

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## Introduction

Both the source of and the solution to the main sustainability challenges of our increasingly urbanized world lie within cities (Grimm et al., 2008; Rees & Wackernagel, 1996; Tan, Wang, & Sia, 2013). In the late 1990s and early 2000s urban development policy and practice has undergone radical restructuring: resources have been redirected towards the development of the inner city and, at the same time, urban sustainability discourses have emerged (Bramley & Power, 2009; Dickinson, 2005; Krueger & Buckingham, 2012). Agendas of urban sustainability have been widely adopted in European and North American cities, and sustainability schemes have emerged, such as BREEAM for Communities, LEED for Neighborhood Development and CASBEE for Urban Development. New planning discourses and practices typically lie at the nexus of higher urban density, improved infrastructure, new city centre retail complexes, mixed use and creative design of public space (Bramley & Power, 2009; Dixon, 2005; Henderson, 2011; Krueger & Buckingham, 2012). Given the competition between cities (Book, Eskilsson, & Khan, 2010; Vigar, Graham, & Healey, 2005; Warnaby, Bennison, & Davies, 2005), central business district (CBD) development projects seek to create

favourable images, and a general expectation is that additional investments, employment and even environmental improvements will simply follow on from the flagship development projects (Henderson, 2011; Rousseau, 2009).

Urban development strategies based on higher urban density are often claimed to support *environmental* sustainability: dense urban structures and improved infrastructure can cost-effectively facilitate sophisticated sewer systems, waste collection, material recycling, and reduced per capita demand for occupied land; waste process heat from industry and power plants can be used for space-heating in dense urban developments; and use of motor vehicles can be reduced by facilitating walking, cycling, and public transportation in denser urban areas (Holden & Norland, 2005; Kenworthy, 2006; Van der Waals, 2000). However, the potential of the compact city policy to contribute to environmental sustainability is actually very limited when the environmental impact of consumption is considered (Holden & Norland, 2005; Neuman, 2005; Van der Waals, 2000). Cities are concentrated centres of consumption, dependent on the productive capacities of ecosystems well beyond their city boundaries, and responsible for a host of local and global environmental problems. These problems occur not just in cities themselves, but also in the rural and industrial areas that supply them with the energy and materials demanded by urban lifestyles and that absorb their waste (Bithas & Christofakis, 2006; Grimm et al., 2008; Paloheimo & Salmi, 2012). This notion is not new: almost 20 years ago, Rees and Wackernagel (1996) concluded

\* Corresponding author. Tel.: +358 504 086 126.

E-mail addresses: [eeva.saynajoki@aalto.fi](mailto:eeva.saynajoki@aalto.fi) (E.-S. Säynäjoki), [ville.inkeri@newsec.fi](mailto:ville.inkeri@newsec.fi) (V. Inkeri), [jukka.heinonen@aalto.fi](mailto:jukka.heinonen@aalto.fi) (J. Heinonen), [seppo.junnila@aalto.fi](mailto:seppo.junnila@aalto.fi) (S. Junnila).

that urban policies should strive to massively reduce the energy and material consumption associated with cities. Similarly, Grimm et al. (2008) have stated that as our ecological footprint expands, so should our perception of environmental issues of a greater scale, and of the broader impacts of our individual and collective life-styles, choices and actions.

A common European approach to *social* sustainability, within the context of urban planning, is that sustainable communities are places that meet the diverse needs of existing and future residents, or more specifically, that they are places where people *want* to live and work and that contribute to a high quality of life: they are safe and inclusive, well planned, built and run, and they offer equality of opportunity and good services for all (Dempsey, Bramley, Power, & Brown, 2011). Urban developments that focus on higher density have the potential to positively impact social sustainability: to improve access to services and facilities, to decrease car-dependency (a social excluder for those without a personal vehicle), to increase the potential for spontaneous interaction and to create the sense of community in neighbourhoods (Burton, 2000; Nasar & Julian, 1995; Talen, 1999). Compact urban structures may also demonstrate a mixed usage pattern and host a less segregated urban population, even if it is not axiomatic that social mix or use mix correlates with urban density (Burton, 2000; Dempsey et al., 2011; Sharifi & Murayama, 2013). It has however also been reported that compact urban forms can worsen neighbourhood problems and related experiences of insecurity and can cause stress and dissatisfaction (Bramley & Power, 2009; Burton, 2000; Kyttä, Broberg, & Kahila, 2011). According to some (case) studies in the United Kingdom, the United States and New Zealand, people may actually prefer low-density suburban living, with medium density areas seeming to be optimal for social interaction and participation in neighbourhood activities (Bramley, Dempsey, Power, Brown, & Watkins, 2009; Gordon & Richardson, 1997; Vallance, Perkins, & Moore, 2005).

From the *economic* point of view, the development of city centres is expected to bring much-needed investment to the urban core (e.g. Krueger & Buckingham, 2012). Given that cities aspire to become and to remain attractive places to live, work, visit and to do business, a goal has been set for urban policies to present cities as attractive products (Rousseau, 2009; Van den Berg & Braun, 1999; Warnaby et al., 2005). The target market of these developments is typically the middle classes given the anticipation that their consumer power and consumption habits will overcome any wider economic decline (Rousseau, 2009). The tastes and consumption preferences of this audience thus tend to largely impact the design of current CBD developments. The marketing of urban places as a process whereby urban activities are related to the demands of targeted customers has been widely studied already in the 1990s (Ashworth & Voogd, 1990; Griffiths, 1998; Ward, 1998). In the 2000s several authors have studied the potential contribution of the retail industry to the regeneration of deprived urban areas (Mitchell & Kirkup, 2003; Warnaby et al., 2005; West, 2002). However, Dixon (2005) still sees it as vital to accurately assess the real economic contribution that retail development makes in municipalities if, as seems to be the case, retail is a core element of CBD regeneration programmes (e.g. Balsas, 2001).

Sustainability is widely accepted as an important conceptual framework within which to position urban policy and development, and urban planning is recognised as an important instrument for promoting sustainable development (Grimm et al., 2008; Holden & Norland, 2005; Musakwa & Van Niekerk, 2013). Even if the evidence of a positive link between developed urban structures and improved sustainability is relatively scarce and incoherent (Burton, 2000; Heinonen, Kyrö, & Junnila, 2011; Liu, Song, & Arp, 2012), urban infill developments are typically seen

as being favourable. Given that centralist principles have been incorporated into sustainability oriented urban planning frameworks in Europe and North America, the ability of municipal authorities to argue against decentralised and out-of-town forms of development has strengthened (Cullingworth & Nadin, 2007; Henderson, 2011; Valler, 1996). In this sense one might even consider sustainability principles to have been enrolled to bolster the case for large-scale city centre flagship projects, and thus to intensify urban entrepreneurialism (Henderson, 2011).

The purpose of this study is to examine how CBD developments are designed to facilitate environmental sustainability in Finland. The primary aim of the study is to build a general model for the Finnish CBD development process through the study of three case developments. Secondly, a cross-case analysis of the economic, social and environmental considerations of each of the case developments aims to discover how sustainability is integrated into the process and how, in considering environmental sustainability, the planning process and the approved development are impacted in each of the case areas. Furthermore, it is briefly considered whether the economic, social and environmental aspects are considered competently and with impartiality in each of the case areas. Given that the case cities are relatively small (45,000–200,000 inhabitants) on a global scale, the results are likely to be applicable only for cities and towns of a comparable size. However, each city is unique, and a case study only reveals what may occur in a similar context elsewhere.

The paper is structured as follows: the next section introduces the research methods and the material used. 'Results' models the Finnish CBD development process and presents the findings of the sustainability analysis. The results are discussed in the following section. Finally, conclusions are presented in the last section.

## Study design

The study utilises a mixed method strategy with a two-phase linear qualitative analysis structure. Two separate qualitative content analyses were conducted using data collected from three separate case projects. The primary data consisted of the textual and pictorial documentation of the land use planning process, which were supported by interviews to confirm the interpretation of the documents. All the data were commensurate between the three developments studied, ensuring that the same information was available for each of the cases.

## Data

The official plan reports were the main source of data for both analyses. A data set for qualitative content analysis usually consists of purposively selected texts that can inform the research questions being investigated (Zhang & Wildemuth, 2009). A plan report typically contains detailed information on all major elements of the land use plan and provides a comprehensive summary of the results of all impact assessments conducted during the planning process. The subject areas for the impact assessments include (1) spatial structure and the potential for utilising the old infrastructure; (2) housing supply and technical service networks; (3) traffic volumes, public transport system, networks for bicycle and pedestrian traffic and the general flow of traffic; (4) municipal economy, jobs and the operational preconditions for businesses; (5) landscape, cityscape, cultural environments and building heritage; (6) nature, natural resources, soil, bedrock, ground water and other environmental issues; and (7) living conditions, environmental health and safety, and the recreational opportunities for different population groups.

Some supporting documents for each of the cases were also evaluated, including maps, graphs and photographs; detailed assessment results of implementing the land use plans; and some additional financial accounts. The contribution of the supporting documents to the findings of the study was more corroborative than imperative. The maps, graphs and photographs enabled the visualisation of the content of the official plan reports as opposed to providing supplementary information. The financial accounts provided additional details and insights but did not reveal anything fundamentally new.

In order to fill any gaps in the textual and pictorial body of documentation, additional informal interviews were conducted with project managers and other specialists: from the city of Vantaa, the project manager and the street network specialist; from the city of Mikkeli, the manager of the city centre development organisation, the town geodesist and two civil engineers; and from the city of Hyvinkää the technical director and the town geodesist. These interviews, although unstructured and generally conversational in nature, helped to understand the project background and any impacting policies and also provided details on schedules, costs, economic considerations, the roles of different stakeholders in the process, contract details, contracting parties and the contractual obligations such as construction commencement order and contingencies. Nevertheless, the data that was collected through the interviews was utilised for the first analysis only. Given that the interviews were not recorded, any content of the analysis that leaned on the interview data (notes) was subsequently formally confirmed with the interviewees.

The key properties of the data are summarised in Table 1.

### Analysis method

There are various definitions for the method of qualitative content analysis. To name just a few, the term is suggested to refer to “an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification” (Mayring, 2000, p. 2); “any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings” (Patton, 2002, p. 453); and “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278). The main consistency of the definitions is that qualitative content analysis examines the chosen concept or hypothesis, in a subjective but scientific manner, through unique themes and meanings rather than the statistical significance of the occurrence of certain words or ideas (Zhang & Wildemuth, 2009). The themes and meanings may be manifest or latent (Zhang & Wildemuth, 2009).

More specifically, the analysis method applied in this study is *summative* content analysis. It fundamentally differs from the other

two approaches, *conventional* and *directed*, in that the textual data is analysed in relation to particular content rather than as a whole (Hsieh & Shannon, 2005). Such analysis leads to an interpretation of the contextual meaning of the chosen content. In summative content analysis, the manifest content is first identified and sorted, the aim being to understand the contextual use of the content (Hsieh & Shannon, 2005; Zhang & Wildemuth, 2009). Following this, the summative analysis extends to include latent meanings and themes, which separates it from pure manifest content analysis (Hsieh & Shannon, 2005; Zhang & Wildemuth, 2009). As part of the summative approach, latent content analysis refers to the process of interpreting the content to discover underlying meanings (Hsieh & Shannon, 2005). The main strength of the summative approach is that the textual evidence is consistent with the interpretation, which was seen to serve this study well because the topic was seen as sensitive to bias. Nevertheless, the findings from summative content analysis are “limited by their inattention to the broader meanings present in the data” (Hsieh & Shannon, 2005).

Kracauer (1952) has stated that qualitative analysis should explore the whole content of the data “in quest of important categories, free of any biasing prepossession with manifest content”. He suggests qualitative data to have so many latent meanings that to isolate their manifest content would be almost impossible and above all would not yield relevant results. However, Kracauer has also stated that qualitative analysis is resolutely impressionistic and inevitably subjective. It was attempted to consider both the strengths and the weaknesses of different analysis methods in this study design. Hence the main emphasis was given to the manifest content of the data, but the latent content was also considered.

### Research process

Data collection was considered to be the first step of the process of these qualitative content analyses. Early involvement directs the data collection toward sources that are most useful for addressing the research questions (Miles & Huberman, 1994). As the second step, the data was prepared for each analysis through simple sorting procedures. As the third step, individual themes were defined as the unit for analysis rather than for example words, sentences, or paragraphs. Therefore, as the fourth step, codes were assigned to text chunks of any size, as long as each chunk represented a single issue of relevance to the research questions. Multiple data displays were produced for both analyses, as described in more detail below. The conclusions were drawn as the last step of the analyses, which in general is the most critical part of the analysis process, relying largely on personal reasoning abilities (Zhang & Wildemuth, 2009). The reconstructions of meanings were derived from the last data display of each analysis and the inferences were made based on both the manifest and the latent content of the data.

The objective of the first analysis was to identify similarities in the processes that were followed in the planning and approval of each of the case developments. From this, a general model of the

**Table 1**  
Summary of the data.

Type of data	Substance	Scope	Contribution to the 1st analysis	Contribution to the 2nd analysis
Official plan reports	Introduction to the land use plan (basic facts) and a comprehensive summary of all impact assessment results	544 Pages	Primary data	Primary data
Maps, graphs and photographs	Images and definition of the case areas before and after the development	47 Pages	Supportive data	Supportive data
Supporting accounts	Background, detailed assessment results of implementing the land use plan, analyses of the commercial structure, plans for public participation and documentation of a planning contest in Vantaa	Exploited selectively	Supportive data	Supportive data
Interviews	Background, details of the development process, financial information and detailed calculations	Brief notes	Primary data	Not used

planning and approvals process in Finland was produced. The multi-phase analysis commenced with an examination of the structure of each CBD development process as an individual case. A cross-case analysis then followed, combining the results of the individual examinations to investigate whether a common development process model could be identified. The results of these two analyses were used to produce a common process model for CBD development in Finland, which is introduced step by step in Chapter 3. Two data displays were produced during the first analysis. The first display is a detailed description of each of the planning processes, as derived from the case data, with the steps listed chronologically. A simple matrix was then produced in order to summarise the process phases and compare and contrast their content and duration.

The objective of the second analysis was to ascertain sustainability objectives of urban regeneration in Finland and to identify which elements of the CBD development process relate to sustainability. Two matrices were built to assist with this analysis. The first was a simple table, highlighting which elements of the study data related to sustainability issues. Data reduction for the first matrix was a simple process whereby relevant parts of the case study data were flagged and included. The plan reports (a total of 544 pages) were found to provide an encompassing and coherent insight to the aims and outcomes of the case developments. In the second matrix the reduced data was analysed further to itemise the expected social, economic and environmental outcomes of each of the case developments. Both of the matrices that were created could be used for both individual case and cross-case analysis. Even though the results of the analysis are seemingly based on cross-case considerations, careful within-case observations played a major role in interpreting the data.

### Cases

Three recent major CBD development projects were selected for the study, in the cities of (1) Vantaa, (2) Mikkeli and (3) Hyvinkää. These three projects were selected as they met the following criteria: Firstly, a major objective of each of the developments was to change the traffic conditions and the commercial structures of the CBD. Secondly, each project was started and was estimated to be fully completed within the same time period: 2002–2016. Thirdly, the three case cities represent a variety of geographical locations and socio-demographic characteristics. The cases are presented briefly in Table 2 and in the following paragraphs.

In Finland, only the four biggest cities have a population greater than 200,000 and only five further cities have more than 100,000 inhabitants. Vantaa is the fourth most populous city in Finland and is officially considered to be part of the capital region, hosting Finland's only international airport. The administrative centre of Vantaa, where the CBD development takes place, is located in the eastern half of the capital region, some 20 km north from the downtown core of Helsinki. In contrast, the second case city, Mikkeli, represents the towns outside of the influence sphere of the Helsinki Economic Area. Mikkeli is a relatively important administrative centre in the Finnish Lake District in Eastern Finland, hosting such institutions as the new Army headquarters and the Mikkeli University Consortium. Given that both Vantaa and Mikkeli provide jobs for the people from neighbouring municipalities, the third case city, Hyvinkää, is unique in being commuter-based and strongly influenced by the Capital region. Mikkeli and Hyvinkää are approximately of the same size, being the 20th and the 24th most populous cities in Finland.

The main goals of the case developments are clearly stated in the official plan reports. The CBD development in Vantaa aims to be a “complementary construction that creates an attractive, characteristic and architectonically high quality city core”. In

**Table 2**

CBD development cases.

Case city	Vantaa	Mikkeli	Hyvinkää
Population (2011)	203,000	48,900	45,500
Annual population growth	1.5%	0.3%	0.1%
Working population	99,600	20,500	20,800
Workplace self-sufficiency	102%	103%	88%
CBD development project started	2002	2002	2006
Construction started	2010	2005	2008
CBD development project finished (estimated)	(2016)	2011	(2014)

addition, the railway station and the bus terminals are re-designed to serve increasing numbers of transit passengers. In Mikkeli the redevelopment aims to “improve the vitality and the competitiveness of the CBD area, to ensure high quality services, to facilitate more housing and to make running errands easy and comfortable within the area”. Rather similarly, the main goal of the CBD development in Hyvinkää is “to revise the detailed plans of the eastern quarter to allow new construction for both commercial services and housing”, while the spatial design of the area aims for “a shopping mall -like environment, with a focus on on integrated parking arrangements”.

### Results

#### CBD development process

##### Case 1 Vantaa

The construction phase of the CBD development in Vantaa started in 2010 and was still in its early stages when the study was conducted, however the process of confirming the new land use plans had been completed. The old railway station was to be replaced with a very large service and infrastructure centre that would include a travel centre, with a railway station and bus terminals, and an office and retail centre with, among other amenities, a citizen services office. In addition, the town square was to be re-located next to the City Hall, closer to the new travel centre, and six apartment buildings for 500 people, a church and two parking garages for 600 vehicles were to be built in the immediate area. The geographic borders of the CBD development site in Vantaa can be seen in Appendix A.

Four alternative preliminary plans were prepared between 2004 and 2005, from which one was selected for development in 2005. The construction contract negotiations were based on a tendering process. The price of the building land was already fixed. Seven construction companies submitted proposals and the planning process continued with two new partners. Later on, one of the two construction companies involved in the planning process renounced the project and was replaced by another. Despite more than a year of negotiation and delays to the planning process, the city could not achieve land use agreements with all the real estate owners. The plan was eventually amended to omit the problematic area.

Prior to the approval of the CBD development, the total permitted building volume within the development site was 30,000 m<sup>2</sup> of floor area, of which three quarters was reserved for office buildings. The new plan added up to 55,000 m<sup>2</sup> of floor area to the permitted building volume. The city of Vantaa owned most of the real estate within the area and sold the land to the construction companies for a total of €12.4 million. In addition, the land use agreements obliged private real estate owners to contribute to the costs of the municipal engineering work, which amounted to a total of €2.3 million. The annual real estate tax income to the city was estimated to increase by €0.7 million.

### Case 2 Mikkeli

The construction phase of the CBD development in Mikkeli had started in 2005 and was fully completed in 2011. The old bus station was relocated next to the train station to form a new travel centre. Two new shopping centres were built on the old bus station site and in the neighbouring block. In addition, most above-ground parking spaces were removed from the CBD and a new parking hall for 600 vehicles was constructed underground. The geographic borders of the development site in Mikkeli can be seen in Appendix B.

Three alternative preliminary plans were prepared, of which two were developed further according to the statements given. A final decision was made based on a comparison of the two alternatives, with the following factors being taken into consideration: business needs, traffic and parking arrangements, fairness to the landowners, political preference, living environment and cultural environment. Following approval, an amendment was made to the plan due to permission to demolish a number of wooden houses that were built in the 19th century being withheld by the administrative court. The buildings in dispute were bordered outside of the development site.

The Mikkeli development was financed by €153 million of private investment and €14 million from the city. The approved development authorised an extra 25,000 m<sup>2</sup> of floor area to be added to the permitted building volume within the site. Given that most of the real estate was privately owned, an increase in the monetary value of the development site (€7 million in total) benefitted mainly the private owners and the land use agreements entitled the city to charge them €2 million as compensation. In addition, the city of Mikkeli sold some real estate (with included buildings/planning rights) between two construction sites for €1.9 million. The annual real estate tax income to the city was estimated to increase by €0.2 million.

### Case 3 Hyvinkää

The construction phase of the CBD development in Hyvinkää started in 2008 and was estimated to be completed by 2014. The city hall, some other administration functions, the fire station and most over-ground parking places were relocated from the development site to release land for new commercial activities. A new business and retail centre was planned, consisting of three new buildings and serving as business premises for two supermarkets and for 75 shops and offices, creating jobs for 300 employees. In addition, 80 apartments were designed for the immediate area and 1600 new parking places were to be located underground. The geographic borders of the CBD development site in Hyvinkää can be seen in Appendix C.

In Hyvinkää, the plan for the new city centre development was put together in conjunction with the private real estate owners and construction companies. The two major real estate owners of the proposed development site were the two biggest retail conglomerates in Finland. In a similar manner to the planning process in Mikkeli, three alternative preliminary plans were prepared, of which two were developed further. Of the two shortlisted plans, the main difference was that one would conserve an old office building whereas the other, which was eventually selected, would replace the old building with an extended shopping centre and new apartment buildings.

The city owned most of the real estate within the CBD and bought two additional pieces of property, which were demolished in order to accommodate a new shopping centre. The new development increased the permitted building volume by 44,000 m<sup>2</sup> of floor area within the development site. Prior to the development, over-ground parking areas dominated the CBD and the permitted building volume was mainly reserved for non-commercial

buildings. With the new plan, a protected library building was retained but all the other land was allocated for commercial and apartment buildings. The city of Hyvinkää commissioned all of the municipal engineering work itself, at a cost of €1.8 million, and was thus the sole beneficiary of the increase in the monetary value of the real estate. Following completion, the city sold the property, with the exception of the old library, at market prices and gained €14.5 million in revenue. The loss in value from the demolition of the city hall and the fire station was estimated to be €6.5 million.

### The process model

In all three cases, the CBD development process can be divided into two main phases that are (I) *planning and decision-making*, and (II) *construction*. The *planning and decision making* phase consists of four sub-phases that are (1) *preliminary reporting*, (2) *preliminary planning*, (3) *contract negotiations*, and (4) *alteration of existing detailed development plan*. Similarly, the *construction* phase can be divided into two sub-phases that are (5) *municipal engineering work*, and (6) *construction*. Sub-phases 1 through 4 can typically overlap with one another, as can sub-phases 5 and 6, but only within their respective main phase. The ratification of the CBD plan clearly separates the two main phases from each other.

In each case, the duration of the *construction* phase was fairly constant, at 5–6 years, but the length of the *planning and decision-making* phase varied greatly, and ranged from 3 to 9 years. The average duration of the whole CBD development process was 10 years, but within the three cases it varied from 8 to 14 years, due to the variation in the duration of the *planning and decision-making* phase. Each of the six sub-phases is described in more detail in the following paragraphs.

### Planning and decision-making phase

#### Preliminary reporting

A wide body of accounts and reports is prepared during the *preliminary reporting* phase to examine the diverse influences and impacts of the forthcoming CDB development. Typical interests of preliminary reporting are (1) traffic: connections to other areas and destinations, improvements to walking and cycling facilities, and traffic calming schemes within the CBD; (2) services: availability, purchasing power and potential service providers; and (3) the quality of the environment: cultural values, ecosystem services and health factors. Impacts to wider area within the municipality are considered in the local master plan. Arrangements for project partnerships can begin already in the *preliminary reporting* phase. Typical CDB project partners are real estate owners and investors and construction companies. The vision and the specific aims of a CDB development project are typically determined in the *preliminary reporting* phase. The duration of the first sub-phase varies, and part of it can be seen as precursory to the actual CDB development process as opposed to being part of the development process itself.

#### Preliminary planning

Even though a city may have a clear vision of the desired CDB development, multiple alternative preliminary plans are typically prepared to demonstrate possible variations. Some accounts and preliminary reports can still be prepared during the *preliminary planning* phase. According to the interviews, transparency and sincerity, early-arrangement of project partnerships, close co-operation with stakeholders and active community engagement during the *preliminary planning* phase are beneficial to the process and reduce opposition later on in the process. In each of the cases studied, the duration of the second sub-phase was from one to two

years, from submission of the preliminary plan to a single plan proposal being published.

#### Contract negotiations

Two types of contracts were needed in each case: (1) land-use contracts with land owners, where the costs of the municipal engineering work were apportioned, and (2) construction and other related operations contracts with assigned partners, where the construction plan and the related schedule were fixed. Approval of the proposed alteration to the existing detailed development plan cannot be made before the required land-use agreements are signed, but construction contract negotiations can continue, overlapping with the *alteration of existing detailed development plan* phase. From the interviews that were conducted, it was established that effective contract negotiations facilitate a smooth transition from the *planning and decision-making* phase to the *construction* phase. The duration of the *contract negotiation* phase varied from half a year to one year in each of the projects studied.

#### Alteration of existing detailed development plan

This phase encompasses the entire chain of decision-making that takes place to the point that the alteration (i.e. the approval of the new development) comes into force. The proposal that was selected in the *preliminary planning* phase is finished and is formally validated and approved. Co-operation with the building inspection authorities is often required in order to avoid the misinterpretation of the amended detailed development plan. The display of the amended plan for public inspection and the right of the general public to file a complaint about the amended plan are fundamental to this phase. According to the Land Use and Building Act (188§), a legally valid local master plan restricts the right to file a complaint to the Supreme Administrative Court of Finland about an alteration of detailed development plan. However, in practice any attempt to file a complaint usually delays the development process. In each of the cases studied, it took between half a year and one year for the amendment to the detailed development plan to be approved.

#### Construction phase

##### Municipal engineering work

Each municipality is responsible for building basic infrastructure within a detailed development plan. Municipal engineering work typically includes construction of streets and pipelines and transfer of power lines. Ideally, the timing of these activities does not interrupt or delay other construction work. Within the case projects, it took between one to one and half years for municipal engineering works to be completed.

##### Construction

The municipality is responsible for overseeing construction and ensuring that work is conducted in accordance with the detailed development plan and related requirements of the CBD development project. The construction contracts prepared in the *contract negotiations* phase may contain some more detailed clauses. In Hyvinkää, construction took three years and in Mikkeli five years. In Vantaa, construction is not yet complete.

#### Environmental sustainability in CBD developments

Sustainability is mentioned a total of 8 times in the 8 plan reports that cover the three development cases (a total of 544 pages). Here, the environmental aspect dominates the considerations of sustainability. The occurrences are listed below, case by case.

#### Case 1 Vantaa

- (1) "The supplementary construction is sustainable because of the use of the existing infrastructure."
- (2) "The technical care would have been sustainable without the alteration of plan as well."
- (3) "The alteration of plan targets ecological sustainability."
- (4) "The costs of an over-ground bus terminal are more economically sustainable."
- (5) "The development takes place on brownfield, supplements existing urban structures and promotes higher urban density. It improves the functionality of public transport and leans on excellent railway connections. The parking needs of both the cars and the bicycles of the railway passengers have been taken into account. In addition, new pedestrian streets and higher urban density encourage cycling. The development diversifies commercial services, which reduces private driving. Given that also urban runoff control has been taken into account, the plan can be considered to meet the objectives of sustainable urban development."

#### Case 2 Mikkeli

- (6) "Considerations of sustainable development are particularly important in both land use planning and construction preparations when urban planning causes environmental changes in a county centre."
- (7) "The solution must respond to partly contradictory requirements (good living environment supports ecologically, economically, socially and culturally sustainable development, nurtures cultural values, facilitates the best functionality of a society and creates supportive conditions for business)."

#### Case 3 Hyvinkää

- (8) "As sustainable development, the CBD development reduces dependence on private driving and supports walking, cycling and public transport."

Even though sustainability is mentioned only a few times in the plan reports, the social, economic and environmental aspects that were considered are described in detail. The expected outcomes of the CBD developments, both positive and negative (as cited in each of the plan reports) are presented in [Tables 3, 4 and 5](#).

Finally, four development themes form the core of the CBD development in each case: (1) enhancement of commercial services, (2) higher urban density, increased permitted building volume and new construction, (3) high quality of the built environment, and (4) new parking arrangements and improved accessibility by all means of transport. All the four development themes facilitate a number of desired social, economical and environmental outcomes. The central CBD development themes and the related desired outcomes are presented in [Table 6](#).

#### Discussion

The CBD developments strongly promote higher urban density and the enhancement of commercial activity. Urban densification is highlighted in the case development plans as being an environmental improvement in itself but the related detailed contribution to environmental issues is not always clarified. Furthermore, the detailed list of the occurrences of the term sustainability indicates that the term is used rather randomly, as vastly simplified and disconnected from the broad idea of sustainable development. It could be argued that the term is not thoroughly understood or is

**Table 3**

The social outcomes expected to emerge from the case developments.

Expected social outcomes (P = positive, N = negative)			Case 1 Vantaa	Case 2 Mikkeli	Case 3 Hyvinkää
1	P	Improved consumption facilities	x	x	x
2	P	New jobs	x	x	x
3	P	Equal accessibility	x	x	x
4	P	Improved conditions for walking and cycling	x	x	x
5	P	Improved parking arrangements	x	x	x
6	P	Lively urban atmosphere	x	x	x
7	P	Safe, high quality living environment	x	x	x
8	P	Increased social interaction and social control	x	x	x
9	P	Pleasant public indoor-space that facilitates spontaneous interaction	x	x	x
10	P	Improved housing availability	x	x	x
11	P	Special housing for senior citizens	x		x
12	P	Tailored, high-quality housing	x	x	
13	P	Higher social status of the CBD	x	x	
14	P	Shopping mall-like spatial design		x	x
15	N	Increased traffic and related emissions and noise within the CBD and residential areas	x		x
16	N	Reduced and limited green space	x	x	
17	N	Houses very close to one another and courtyard spaces smaller		x	
18	P	Underground parking releases city space for other uses		x	
19	P	Balanced population structure	x		

**Table 4**

The economic outcomes expected to emerge from the case developments.

Expected economic outcomes (P = positive, N = negative)			Case 1 Vantaa	Case 2 Mikkeli	Case 3 Hyvinkää
1	P	Higher commercial status of the CBD	x	x	x
2	P	More space for business activities	x	x	x
3	P	Denser and more attractive commercial structures	x	x	x
4	P	Improved competitiveness of commercial services	x	x	x
5	P	Customer flows and purchase power directed to the CBD	x	x	x
6	P	Increased business activity and new entrepreneurship	x	x	x
7	P	New jobs	x	x	x
8	P	More space for parking	x	x	x
9	P	Increased value of the real estate within the CBD	x		x
10	P	Self-sufficient development (positive business plan)	x	x	
11	P	The costs of required renovations covered		x	
12	P	New investment		x	
13	P	Attracts new workforce to the area	x		
14	P	Supermarkets (their attractiveness) staying within the CBD			x

**Table 5**

The environmental outcomes expected to emerge from the case developments.

Expected environmental outcomes (P = positive, N = negative)			Case 1 Vantaa	Case 2 Mikkeli	Case 3 Hyvinkää
1	P	Brownfield-based use of existing infrastructure	x	x	x
2	P	Reduced travel from the CBD to other destinations	x	x	x
3	P	Aims to reduce private driving by encouraging walking, cycling and the use of public transport	x	x	x
4	N	Increased private driving and related emissions	x		x
5	P	Aims to protect the green space and urban ecosystem services	x	x	
6	N	Major losses of trees and green space	x	x	
7	P	Brownfield development saves greenfield elsewhere	x	x	
8	P	Aims to protect ground water quality		x	x
9	N	Increased risk of ground water contamination			x
10	P	Encourages biodiversity in the new city park and courtyards	x		
11	P	Provides connections to wider green spaces	x		
12	P	Urban runoff control is taken into account	x		
13	P	Contaminated land remediation	x		
14	N	Requires re-arrangements and re-building of the existing infrastructure (water, electricity, district heat)	x		
15	P	LEED gold certification for one or more buildings	x		
16	P	Environmentally friendly building materials are recommended		x	
17	P	Costs of parking are allocated to the users		x	
18	–	None of the alternative plans causes fewer emissions than the others		x	

misconstrued. Be that as it may, the concept of sustainability is not used to systematically outline and itemise the social, the economic and the environmental aspects of the planning process.

As environmental goals, the case plans aimed to reduce private driving, to protect green space and urban ecosystem services, and to protect ground water quality. However, none of these benefits

**Table 6**  
The central CBD development themes and desired outcomes.

Development theme	Desired social outcomes	Desired economic outcomes	Desired environmental outcomes
Enhancement of commercial services	Improved consumption facilities New jobs Pleasant public indoor-space that facilitates spontaneous interaction	Increased business activity and new entrepreneurship New jobs Improved competitiveness of commercial services Customer flows and purchase power directed to the CBD Higher commercial status of the CBD More space for business activities Denser and more attractive commercial structures Self-sufficient development (positive business plan) The costs of required renovations covered New jobs Increased value of the real estate within the CBD	Reduced travel from the CBD to other destinations
Higher urban density, increased permitted building volume and new construction	Improved housing availability Increased social interaction and social control		Brownfield-based use of existing infrastructure Brownfield development saves greenfield elsewhere Aims to reduce private driving by encouraging walking, cycling and the use of public transport
High quality of the built environment	Lively urban atmosphere Improved safety of the living environment Shopping mall-like spatial design Equal accessibility Improved conditions for walking and cycling Improved parking arrangements		Aims to protect the green space and urban ecosystem services
New parking arrangements and improved accessibility by all means of transport		More space for parking Customer flows and purchase power directed to the CBD	Aims to reduce private driving by encouraging walking, cycling and the use of public transport Costs of parking are allocated to the users

was anticipated to materialise in the end, and, quite to the contrary, *increased private driving and related emissions, major losses of trees and green space and increased risk of ground water contamination* are outcomes that were actually expected to occur. The fact that the expected environmental outcomes of all of the cases were contradictory to the environmental objectives specified at the outset indicates that environmental evaluations were made only at the beginning and at the end of the linear planning process and were not considered in the decision-making phases. Furthermore, as shown in Table 7, two of the expected negative social outcomes actually appear to occur as a result of the negative environmental impact. Table 7 also demonstrates how the environmental aims and the expected environmental and social outcomes appear to be rather inconsistent in the projects studied.

In the case developments, provision of commercial services and creating high urban density are especially seen as being urgent issues. According to the plan reports in each case there was “need for” more commercial services or “lack of” certain kind of commercial services within the CBD. Similarly, the urban structure of the CBD was for example “scattered” and “required higher density”. In contrast, many other issues were barely taken into account. Rather interestingly, all the expected negative social and environmental outcomes could be viewed as being consequences of higher urban density. Noticeably, there is not a single negative economic outcome mentioned in the plan reports. The economic perspective therefore appears to dominate decision-making, but the evidence for this is not solid.

For example in Mikkeli, the chosen proposal was criticised by the Southern Savonia Centre for the Environment and by the Finnish National Board of Antiquities because of the high increase in permitted building volume and the proposed demolition of wooden houses. In addition, most of the trees and green spaces were to be removed and residents were expected to look for green areas outside of the CBD. As justification for the decision to select this plan, a comparison with the other plan was shown. The selected plan earned more points than the alternative plan in the areas of “business needs”, “traffic and parking arrangement”, “fairness to the landowners” and “political preference” but fewer points in the areas of “living environment” and “cultural environment”.

Even if compensation of green areas is a part of the formal planning procedure in some areas, for example in Germany (Rundcrantz & Skärbäck, 2003), the issue was not brought up in the cases of this study. The value of undeveloped urban land is commonly seen to lie in socioeconomic benefits, outdoor recreation and sustained biodiversity (Gustavsson, Hermy, Konijnendijk, & Steidle-Schwahn, 2005; Skärbäck, 2007). Therefore compensation of green areas refers to the substitution of ecological functions or qualities that are impaired by spatial development (Cuperus, Canters, & Piepers, 1996; Cuperus, Canters, Udo de Haes, & Friedman, 1999). In each of the case developments the socioeconomic benefits of urban green areas as well as possibilities for outdoor recreation within the CBD were considered but not prioritised highly. In Vantaa and Mikkeli especially, brownfield development was considered to save natural green areas and thus biodiversity elsewhere. In Vantaa, the new city park and courtyards were also stated to encourage biodiversity. However, no explicit comparison of the green areas to be lost and the new green areas to be built was made in any of the cases. As a scarcely populated country, Finland has relatively large natural areas far away from urban settlements and also many natural green areas within city boundaries or in their immediate surroundings. This may explain why the compensation of green areas was not seen to be an issue of interest in the planning and decision-making processes for these CBD developments.

Most of the recognised development themes are seen to be win-win-solutions as they contribute both to social satisfaction

**Table 7**

Links between negative social outcomes and (inconsistent) environmental aims and outcomes.

Environmental objective	Environmental outcome (anticipated)	Social outcome (anticipated)
All the three cases: Aims to reduce private driving by encouraging walking, cycling and the use of public transport	Cases 1 and 3: Increased private driving and related emissions	Cases 1 and 3: Increased traffic and related emissions and noise within the CBD and residential areas
Cases 1 and 2: Aims to protect the green space and urban ecosystem services	Cases 1 and 2: Major losses of trees and green space	Cases 1 and 2: Reduced and limited green space

and to the municipal economy. However, in each of the cases studied, the real contribution to environmental sustainability appears to be scarce. Furthermore, the current needs have a strong dominance over the needs of the future generations. Improved consumption facilities are actually likely to encourage higher consumption volumes, and therefore encourage urban lifestyles that are, environmentally, less sustainable (e.g. Heinonen, Jalas, Juntunen, Ala-Mantila, & Junnila, 2013). Developing cities to be more functional and convenient as concentrated centres of consumption is problematic for the future generations because, in the worst scenario, increased consumption means increased production, which leads to increased materials and energy use and increased emissions. Nevertheless, consumption volumes still primarily depend on the prevailing purchasing power, which is independent from consumption facilities. In addition, alternative patterns of consumption (e.g. consumption of virtual products or consumption based on renting or sharing) can change the suggested relationships between consumption, production and environmental impact.

In the cases studied, it can be argued that sustainability will emerge in social ways, such as by (among other things) encouraging a lively urban atmosphere, providing improved housing availability, providing improved consumption facilities, and facilitating more social interaction and social control: outcomes that are typically viewed as being the social benefits of denser urban structures (Burton, 2000; Nasar & Julian, 1995; Talen, 1999). Nevertheless, the relationship between urban densification and social sustainability seems to be complex and sensitive to the local context (Kytä, Broberg, Tzoulas, & Snabb, 2013; McCrea & Walters, 2012). All the three expected negative social outcomes of the case developments are closely linked to higher urban density. According to several authors (e.g. Bramley & Power, 2009; Heinonen et al., 2011; Van Der Waals, 2000) the frequently assumed environmental and social benefits of the compact city structure tend to be overestimated.

To some extent, the findings of the study are supported by previous research. A case study by Theurillat and Crevoisier (2013) brings forth that there is a clear dissociation in time between the qualitative aspects of sustainable development and the quantitative aspects of financial returns that come into play at the very end of the planning process, by which time everything has been defined from a qualitative point of view. Another case study, by Krueger and Buckingham (2012), shows that “urban greening is dispensable in the face of certain economic and political conditions”. Furthermore, a multiple case study in Sweden concludes that recognised hindrances, such as a dependency on short term project funding and a lack of strategic resources over time, constrain the possibilities for integrating sustainability into municipal work (Keskitalo & Liljenfeldt, 2012). Finally, the effects of urban intensification policies have been recognized to be more complex and far-reaching than the policies themselves suggest (Williams, 1999).

According to Nilsson (2007), sustainable spatial planning is extremely complex today, and local authorities seek to limit this complexity by dividing social, economic and environmental considerations into separate processes. She argues that this does not

comply very well with the original idea of sustainability, but it helps planners to avoid the difficult choices and decisions that the integration of sustainability themes would require. In addition, sustainable development is typically promoted through actions that deviate only slightly from current planning practices, and alternatives that clearly differ from the standard are often not even discussed (Naess, 2001). Even if future generations are the inspiration for the definitions of sustainable development (e.g. Bithas, 2011) they seem to be ignored in sustainable urban planning if these three cases are taken as evidence.

Flyjberg (2006) states that “a scientific discipline without a large number of thoroughly executed case studies is a discipline without systematic production of exemplars, and a discipline without exemplars is an ineffective one”. The results of this study, for its part, demonstrate that cities are being developed further in order to facilitate consumption-centred urban lifestyles, consumption seeming to be the main environmental problem globally (Bithas & Christofakis, 2006; Grimm et al., 2008; Rees & Wackernagel, 1996). However, the findings are not absolute: only three cases were examined, and the qualitative analysis conducted was, even if consistent, still fundamentally subjective. In addition, this research mainly paid attention to environmental issues. Further research is needed to evaluate the contribution of constantly improved consumption facilities to social sustainability, as well as to investigate if the municipal economy issues that seem to dominate the CBD development process support wider economic sustainability.

## Conclusions

Given that urban planning is recognised as an important instrument for facilitating sustainable development, a multiple case study was conducted in Finland to examine how environmental sustainability is integrated into the CBD development process. The analysis resulted in two key findings. Firstly, environmental sustainability is considered in the beginning and at the end of the linear planning process but it does not appear to be integrated into the decision-making phases. Secondly, urban densification is promoted as a sustainable development practice, although its anticipated environmental benefits are not always explicitly stated. Furthermore, the expected environmental outcomes of urban densification may in fact be contradictory to the aims and objectives specified at the beginning of the planning process. The results of this study show that the Finnish CBD development process strongly promotes higher urban density and the enhancement of commercial services but hardly contributes to environmental sustainability. Further development in cities occurs to make them more functional and convenient as concentrated centres of consumption.

## Acknowledgements

The authors thank the Academy of Finland (Grant no: 268099) for the funding that has for its part enabled this research.

**The geographical borders of the CBD development site in Vantaa**

**The geographical borders of the CBD development site in Mikkeli**



## The geographical borders of the CBD development site in Hyvinkää



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