



**UNIVERSITY OF
BIRMINGHAM**

**SUSTAINABLE URBAN DEVELOPMENT IN
SOUTH KOREA: COMPACT URBAN FORM, LAND USE,
HOUSING TYPE, AND DEVELOPMENT METHODS**

By

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ABSTRACT

Over the past few decades, South Korea has experienced economic development and urbanisation, the effects of which have included environmental degradation and social problems. The principles of sustainable development have gained support as an approach to dealing with these issues; and the compact city has been proposed as a means of delivering sustainable development without the sprawl of Western cities. This thesis examines the applicability of the compact city to South Korea, particularly to large-scale developments, through the perspective of sustainable development. The research questions, 'How and why have urban developments in South Korea been accompanied by compactness?' and, 'What implications does this have for sustainable development?' are examined through two case studies: Yong-in, a city developed by diverse methods; and Se-jong, a city developed as a single new project. The case studies demonstrate that new settlements by high-rise apartments in South Korea have achieved a high degree of compactness, and residents have appreciated their liveability and made them their popular housing choice. The thesis concludes that the compact city in South Korean urban development is not only feasible, but is acceptable to residents; and it suggests a compact city model and strategies applicable in the South Korean context.

DEDICATION

I DEDICATE THIS THESIS TO MY BELOVED FAMILY

**MY WIFE, JI EUN YOON,
WHO GAVE ME LOVING SUPPORT FOR THREE YEARS
IN OUR HAPPY NEST**

**MY SON, KUNHA BAK,
WHO MADE ME FEEL THE JOY OF LIFE EVEN IN TROUBLED TIMES**

**MY PARENTS, HO IL PAK AND GUY YONG YOO,
WHO GAVE ME LIFE AND ENDURING LOVE**

AND

**MY PARENTS-IN-LAW, IK SOO YOON AND MYUNG-SOOK PARK,
WHO GAVE ME THE MOST SPECIAL PERSON IN MY LIFE**

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TABLE OF CONTENTS

TABLE OF CONTENTS	i
LIST OF TABLES	ix
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	xiii
CHAPTER 1 INTRODUCTION.....	1
1.1 Background	2
1.2 Research Objectives and Research Questions.....	3
1.3 Methodology	9
1.4 The Layout of the Thesis	10
CHAPTER 2 SUSTAINABLE URBAN DEVELOPMENT	13
2.1 Introduction	14
2.2 The Concept of Sustainable Development.....	14
2.2.1 The Evolution of the Concept of Sustainable Development	14
2.2.2 The Definition of Sustainable Development	17
2.2.3 Weak Sustainability and Strong Sustainability.....	22
2.3 The Principles of Sustainable Urban Development.....	25
2.3.1 Sustainable Development in an Urban Context.....	25
2.3.2 The Principles of Sustainable Urban Development	26
2.4 Conclusion	33

CHAPTER 3 SUSTAINABLE URBAN FORM AND LAND USE.....	34
3.1 Introduction	35
3.2 The Evolution of the Compact City.....	36
3.3 The Elements of the Compact City	44
3.3.1 The Concept of the Compact City	44
3.3.2 High Density	45
3.3.3 Mixed Land Use	49
3.3.4 Intensification within a Contained Urban Boundary	51
3.4 Other Proposals for Sustainable Urban Form and Land Use	57
3.4.1 Urban Village	57
3.4.2 New Urbanism.....	59
3.4.3 Other Physical Models for Sustainable Urban Form	60
3.5 Appraisal of the Compact City.....	61
3.5.1 Environmental Benefits	63
3.5.2 Economic Effects.....	67
3.5.3 Social Equity Issues	68
3.5.4 Quality of Life Perspective	71
3.5.5 Participatory Process in the Compact City Approach.....	75
3.5.6 The Feasibility and Acceptability of the Compact City	76
3.5.7 Overall Appraisal of the Compact City.....	77
3.6 Urban Form and Land Use in Developing Countries	79
3.6.1 The Importance of Urban Form and Land Use in Developing Countries	79
3.6.2 Urban Form and Land Use in Developing Countries	80
3.6.3 Implications for Sustainable Urban Form and Land Use.....	85
3.7 Conclusion	89

CHAPTER 4 PLANNING FOR SUSTAINABLE URBAN FORM AND LAND USE	90
4.1 Introduction	91
4.2 The Role of Planning	91
4.3 Policies for Urban Sustainability.....	93
4.3.1 The Classification of Policies for Urban Sustainability.....	94
4.3.2 Comparison between Compact City Policy and Other Policies	95
4.3.3 Strategies for the Compact City	96
4.3.4 Land Use Planning Tools	102
4.4 Planning and Land Use	110
4.4.1 Land Use Plan	111
4.4.2 Residential Density.....	112
4.4.3 Open Space	115
4.4.4 Relationships between Density, Housing Types and Open Space	123
4.4.5 The Planning Process in Creating Better Public Space.....	125
4.5 Conclusion	127
 CHAPTER 5 URBAN FORM AND LAND USE IN SOUTH KOREA	 128
5.1 Introduction	129
5.2 An Introduction to South Korea	129
5.2.1 An Overview of the Land and Urbanisation.....	129
5.2.2 Concentration of Population in Large Cities	130
5.3 Urban Development in South Korea	133
5.3.1 The History of Urban Development	133
5.3.2 Urban Planning System and Tools.....	138

5.3.3 Development Methods	145
5.3.4 Policy Objectives of Large-scale Development Methods	149
5.4 The Characteristics of Urban Form and Land Use in South Korea.....	153
5.4.1 The Characteristics of Urban Form and Land Use	153
5.4.2 Housing Types	157
5.5 Conclusion	162
CHAPTER 6 METHODOLOGY	163
6.1 Introduction	164
6.2 The Research Questions.....	168
6.3 Methodology	171
6.3.1 Case Study as a Research Design	171
6.3.2 Methodological Framework	172
6.4 The Case Studies	176
6.4.1 The Selection of Cases: Yong-in and Se-jong Cities	176
6.4.2 Research Methods and Process	178
6.4.3 Interview	182
6.5 Conclusion	188
CHAPTER 7 THE CASE STUDY OF YONG-IN CITY	189
7.1 Introduction	190
7.2 The Context of the Yong-in Developments.....	190
7.2.1 An Outline of the Yong-in Area	190
7.2.2 The History of the Yong-in Developments.....	193
7.2.3 Development Methods in Yong-in City	195

7.3 The Features of the Yong-in Developments	205
7.3.1 Compactness	205
7.3.2 Features of Land Use by Development Methods	206
7.4 The Shaping of Current Development Patterns.....	212
7.4.1 Features of Urban Diffusion: Sprawl or Compact Development?.....	213
7.4.2 Changes in Policy Directions, Participants, and Decision-making Structure	216
7.4.3 Social Equity Aspects of Urban Development Projects	221
7.4.4 Conflicts between Economic Development and Environmental Conservation.....	225
7.4.5 The Sharing of Development Gains and Costs.....	231
7.4.6 Considerations in Allocating Diverse Land Uses	235
7.4.7 Urban Self-sufficiency and Regional Strategy	239
7.4.8 Large-scale Development by Urban Clearance: Will it be Sustained?	244
7.5 The Acceptability of Current Residential Features.....	249
7.5.1 The High-rise Apartment as a Housing Type	250
7.5.2 Community Activity in Apartment Districts	253
7.6 Conclusion	261
CHAPTER 8 THE CASE STUDY OF SE-JONG CITY	262
8.1 Introduction	263
8.2 The Context of the Se-jong Development.....	263
8.2.1 An Outline of the Se-jong Area	263
8.2.2 The History of the Se-jong Development	265
8.2.3 The Se-jong Development Project.....	267
8.3 The Features of the Se-jong Development.....	272
8.3.1 Compactness	272
8.3.2 Features of Land Use	275

8.4 The Shaping of Current Development Patterns.....	277
8.4.1 Features of Urban Diffusion: Sprawl or Compact Development?.....	277
8.4.2 Changes in Policy Direction and Governance.....	278
8.4.3 Social Equity Aspects of the Project.....	283
8.4.4 Conflicts between Economic Development and Environmental Conservation.....	285
8.4.5 The Sharing of Development Costs	287
8.4.6 Considerations in Allocating Diverse Land Uses	288
8.4.7 Urban Self-sufficiency and Regional Strategy	290
8.4.8 Large-scale Development by Urban Clearance: Will it be Sustained?	292
8.5 The Acceptability of Current Residential Features.....	296
8.5.1 The High-rise Apartment as a Housing Type	296
8.5.2 Community Activity in Apartment Districts	299
8.6 Conclusion	303
CHAPTER 9 ANALYSING THE CASE STUDIES	304
9.1 Introduction	305
9.2 The Features of the Compact City in the Two Case Studies	307
9.2.1 High Density within a Contained Urban Boundary.....	308
9.2.2 Mixed Land Use	309
9.2.3 Self-sufficiency	311
9.2.4 Public Transport	312
9.2.5 Features of Urban Expansion	313
9.3 Relationships between Development Methods and Land Use.....	317
9.4 Negotiation Processes in Shaping Current Development Patterns.....	325
9.4.1 Political Processes around Development Projects	326
9.4.2 Economic Gains from Development Projects	329
9.4.3 Environmental Arguments in Development Projects.....	330

9.4.4 The Shaping of Urban Density	333
9.4.5 New Governance in Large-scale Urban Developments	335
9.5 Considerations of Sustainability in Current Development Patterns	338
9.5.1 Social Equity as a Policy: Affordable Housing	338
9.5.2 Considerations of Sustainability between Land Uses	341
9.5.3 Economic Vitality	345
9.5.4 Community Building in New Settlements	348
9.5.5 The Sustainability of Current Development Methods	351
9.6 The Acceptability of Current Housing Patterns and Land Use.....	354
9.6.1 Preferences for Apartments as a Housing Type.....	355
9.6.2 Social Life in Apartment Districts	364
9.6.3 Super High-rise Apartments and Open Space	367
9.7 Implications and Policy Suggestions	371
9.7.1 A Compact City Approach in the Korean Context.....	372
9.7.2 Comparison of Two Different Approaches Employed in the Case-study Cities.....	383
9.7.3 The Promotion Strategies of the Compact City	388
9.8 Conclusion	398
CHAPTER 10 CONCLUSION	399
10.1 Introduction	400
10.2 The Main Conclusions on the Research Topics and Discussions	401
10.3 Contribution of the Thesis.....	404
10.4 Evaluation and Future Research.....	407

APPENDICES	410
Appendix 1: Interviewees and Other Sources for the Case Studies	411
1-1. List of Interviewees in the Yong-in Case Study	411
1-2. List of Other Sources related to the Yong-in Case Study	417
1-3. List of Interviewees in the Se-jong Case Study	420
1-4. List of Other Sources related to the Se-jong Case Study	422
Appendix 2: Interview Topic Guide for the Case Studies	425
2-1 Topic Guide in the Yong-in Case Study: First Round of Fieldwork	425
2-2 Topic Guide in the Se-jong Case Study: First Round of Fieldwork	429
2-3 Topic Guide for the Second Round of Fieldwork	431
Appendix 3: Quantitative Data	434
REFERENCES	446

LIST OF TABLES

Table 2.1 Key Events and Documents for the Concept of Sustainable Development	15
Table 2.2 Some Definitions of Sustainable Development.....	18
Table 2.3 Some Explanations for Sustainable Urban Development	26
Table 2.4 A Summary of the Principles of Sustainable Development Suggested.....	27
Table 3.1 Major Advocates around Urban Compaction and their Positions.....	37
Table 3.2 Urban Density Indicators.....	45
Table 3.3 Density Standards and Suggestions.....	48
Table 3.4 The Characteristics of the Compact City and Urban Sprawl.....	56
Table 3.5 Other Physical Models for Sustainable Urban Form.....	60
Table 3.6 Benefits of the Compact City	61
Table 3.7 Studies on the Environmental Effects of Compact Urban Form	63
Table 4.1 Basic Land Use Planning Tools	102
Table 4.2 The Typology of Open Spaces	116
Table 4.3 The Benefits of Open Space	118
Table 4.4 Empirical Studies on Urban Density, Land Use and Open Space	119
Table 5.1 South Korean Governments and Major Policies since the 1960s.....	135
Table 5.2 Urban Development Methods in South Korea	146
Table 6.1 Main Features of the Two Cases	178
Table 6.2 The Research Questions and Methods for the Research.....	179
Table 6.3 The Characteristics of Secondary Quantitative Data Sources	181
Table 6.4 The Classification of Interviewees	184
Table 7.1 Large-scale and Public Development Projects in Yong-in	195
Table 7.2 Project Sizes on Average by Development Methods in Yong-in.....	196

Table 7.3 The Outline of Development Plan for Dong-baek HSD Project.....	198
Table 7.4 Outline of Development Plan for Dong-cheon UD Project.....	200
Table 7.5 Outline of Development Plan for Gwang-gyo NCD Project	203
Table 7.6 The Classification of Land Use	207
Table 7.7 Urban Development Methods in Korea.....	209
Table 7.8 Comparison of Land Uses in Four NCDs in and adjacent to Yong-in.....	210
Table 7.9 Comparison of Averages by Development Methods	211
Table 7.10 Changes in the Housing Stock in Yong-in by Types of Dwelling.....	251
Table 7.11 Community Organisations in Apartment Districts	258
Table 8.1 Major Stages in the MAC Construction Project	265
Table 8.2 Residential Densities in Sample New Cities	272
Table 8.3 Comparative Table of Land Uses in Se-jong NCD and other NCDs.....	276
Table 8.4 Promotion System of the MAC Development Project.....	280
Table 8.5 Housing (Multi-unit Dwelling) Provision Plan by Size.....	284
Table 9.1 Comparative Table of the Two Case Studies	305
Table 9.2 Appraisal of Developments in the Case-study Cities: Compact or Sprawl?.....	314
Table 9.3 Comparison between NCDs, HSCs, and UD in the Case-study Cities.....	318
Table 9.4 Housing Satisfaction by Housing Types	361
Table 9.5 Changes in Housing Satisfaction by Housing Types	362
Table 9.6 SWOT Analysis Table: Korean Large-scale Development for the Compact City	375
Table 9.7 Summary of Anticipated Changes in the Future	379
Table 9.8 Expected Effects of the Korean Compact City Development Model.....	382
Table 9.9 Comparative Table of the Two Case-study Developments	384
Table 9.10 Promotion Strategies and Policy Suggestions for the Compact City	396

LIST OF FIGURES

Figure 1.1 Urban Land Consumption per Person in 50 Cities.....	4
Figure 1.2 Research Procedure and Structure	12
Figure 2.1 Three Models of Sustainable Development.....	22
Figure 3.1 Poundbury Village in UK.....	57
Figure 3.2 Private Transport Energy Use and Urban Densities	64
Figure 3.3 The Compact City and the Goals of Sustainable Development.....	77
Figure 4.1 Milton Keynes New Town in the UK.....	111
Figure 4.2 An Exemplification of Relationships between Density and Land Uses.....	114
Figure 4.3 Various Compositions of Land Coverage, FSI, and Heights of Buildings.....	114
Figure 5.1 Major Cities in South Korea	131
Figure 5.2 The Structure of Plans and Planning Authorities in Korea	139
Figure 5.3 The Allocation of the Territory as a Whole by Zones in Korea	143
Figure 5.4 Population Densities in the Built-up Areas of Nine Metropolitan Cities.....	154
Figure 5.5 A Compact Development Model in Korea.....	156
Figure 5.6 Changes in the Proportion of Apartments in Total Dwellings for Korea.....	158
Figure 5.7 Proportions of Housing Types in Total Dwellings for 2010.....	158
Figure 5.8 Apartment Complexes in Korea.....	160
Figure 6.1 The Research Area of the Thesis.....	165
Figure 6.2 Key Variables in the Dimension of Land Use.....	166
Figure 6.3 The Methodological Framework.....	172
Figure 6.4 Research Process.....	180
Figure 7.1 Cities near Yong-in in the Capital Region.....	191
Figure 7.2 Boroughs and Urban/Non-urban areas in Yong-in City	192

Figure 7.3 Locations of Development Sites as Embedded Cases in Yong-in.....	197
Figure 7.4 Dong-baek HSD Project Area.....	198
Figure 7.5 Map of Land Use Plan for Dong-baek HSD Project.....	199
Figure 7.6 Dong-cheon UD Project Area.....	201
Figure 7.7 Map of Land Use Plan for Dong-cheon UD Project.....	201
Figure 7.8 Locations of NCD projects in the Capital region.....	202
Figure 7.9 Gwang-gyo NCD Project Area.....	203
Figure 7.10 Map of Land Use Plan for Gwang-gyo NCD Project.....	204
Figure 7.11 Participants in Large-scale Development Projects in Yong-in.....	220
Figure 7.12 Dong-baek HS Surrounded by Hills.....	237
Figure 8.1 Geographical Location of the Se-jong Site.....	264
Figure 8.2 Basic Urban Structure of the MAC and Location of First Village.....	269
Figure 8.3 Se-jong MAC Project Area and First Village.....	270
Figure 8.4 Map of Land Use Plan for the MAC Project.....	271
Figure 8.5 Aerial views of Public Facilities in First Village.....	274
Figure 8.6 A Traditional House and Modern Apartment Complex.....	297
Figure 9.1 Percentages of Land Use by Development Methods.....	319
Figure 9.2 Division of Land by Development Methods.....	320
Figure 9.3 Linear Relationships between ‘Site Sizes’ and Percentages of Land Use.....	322
Figure 9.4 Changes in Land Uses by Time in Large-scale Development Projects.....	323
Figure 9.5 Buildings for New Settlements.....	337
Figure 9.6 Apartment.....	355
Figure 9.7 A Conceptual Graph for the Compact City in the Korean Context.....	373

LIST OF ABBREVIATIONS

BRT	Bus Rapid Transit
CABE	Commission for Architecture and the Built Environment (UK)
CCEJ	Citizens' Coalition for Economic Justice (Korea)
CEC	Commission of the European Communities
CNU	The Congress for the New Urbanism (US)
CPRE	Campaign to Protect Rural England (UK)
DCLG	Department for Communities and Local Government (UK)
DETR	Department of the Environment, Transport and the Regions (UK)
DoE	Department of the Environment (UK)
DoT	Department of Transport (UK)
EIA	Environmental Impact Assessment (Korea)
EU	European Union
FSI	Floor Space Index
GRI	Gyeong-gi Research Institute (Korea)
GTX	Great Train Express (Korea)
GUIC	Gyeong-gi Urban Innovation Corporation (Korea)
HMG	Her Majesty's Government (UK)
HR	Housing Renewal (Korea)
HS	Housing Site (Korea)
HSD	Housing Site Development (Korea)
HSDPA	The Housing Site Development Promotion Act (Korea)
IMF	International Monetary Fund
KHC	Korea Housing Corporation (KLHC since 2009)
KLC	Korea Land Corporation (KLHC since 2009)
KLHC	Korea Land and Housing Corporation
KRIHS	Korea Research Institute for Human Settlements
LRT	Light Rail Transit
MAC	Multifunctional Administrative City (Korea)
MACCA	Multifunctional Administrative City Construction Agency (Korea)
MIFAFF	Ministry for Food, Agriculture, Forestry and Fisheries (Korea)
MLTM	Ministry of Land, Transport and Maritime Affairs (Korea)
MOCT	Ministry of Construction and Transportation (Korea; MLTM since 2009)

MOE	Ministry of Environment (Korea)
MOFE	Ministry of Finance and Economy (Korea; MOSF since 2007)
MOGAHA	Ministry of Government Administration and Home Affairs (Korea; MOPAS since 2007)
MOPAS	Ministry of Public Administration and Security (Korea)
MOSF	Ministry of Strategy and Finance (Korea)
NC	New City (Korea)
NCD	New City Development (Korea)
NLPUA	The National Land Planning and Utilisation Act (Korea)
NPPF	National Planning Policy Framework (UK)
NRH	National Rental Housing (Korea)
NSA	National Statistics Agency (Korea)
ODPM	Office of the Deputy Prime Minister (UK)
OECD	Organisation for Economic Cooperation and Development
PCGG	Presidential Committee on Green Growth (Korea)
PCPA	The Planning and Compulsory Purchase Act (UK)
PMO	Prime Minister Office (Korea)
PPG	Planning Policy Guidance (UK)
PPS	Planning Policy Statements (UK)
SAMACC	The Special Act for Multifunctional Administrative City Construction (Korea)
SOC	Social Overhead Capital
SPEA	The Standard State City Planning Enabling Act (US)
SWAT	Strengths, Weaknesses, Opportunities, and Threats
SZEA	The Standard State Zoning Enabling Act (US)
TCPA	The Town and Country Planning Act (UK)
TCPA	Town and Country Planning Association (UK)
TOD	Transit Oriented Development
UD	Urban Development (Korea)
UDA	Urban Development Act (Korea)
UHRA	The Urban and Housing Renewal Act (Korea)
UN	United Nations
UN-Habitat	United Nations Human Settlements Programme
WCED	World Commission on Environment and Development
YMEJ	Yong-in Movement for Environmental Justice (Korea)

CHAPTER 1

INTRODUCTION

1.1 Background

Over the past two centuries human economic activities have been organized to promote development and exploit natural resources without considering the stability of the natural environment, and it is these activities that have promoted urbanisation. As a result of continuous urbanisation, in the year 2008, for the first time in history, the urban population had come to represent half of the world population (UN, 2011). As the urban population grows steadily, it is estimated that by 2023 the urban population will reach 61 per cent of the world population; and by 2025 a total of five billion people will live in cities, which is more than the double the urban population in 1995 (2.4 billion) (UNCHS, 1996). Urban development is accompanied by economic growth and prosperity, but, at the same time, it generates many environmental and social problems. Thus, the sustainability of urban development is one of the key issues for present and future humankind. Among the core issues of urban development have been urban form and land use, because these have had physical effects on human behaviour and on the surrounding environment and, further, have influenced the social lives of urban dwellers and their quality of life.

In the field of urban planning, there has arisen a paradigm for a compact urban form and mixed land use, which argues that high-density development is more sustainable than uncontained urban diffusion (Jenks et al., 1996; Williams et al., 2000). On the other hand, it has been claimed that there is no conclusive evidence to prove that a compact urban form is more sustainable than the dispersed one which is typically observed in the US suburbs, and that American-style suburban development has been fulfilling the

needs of residents (Cox, 2007). As regards the desirable degree of compactness, it has been pointed out that there can be no consensus, and it depends on social and historical context (Hall, 2001; Jenks and Dempsey, 2005), and that housing density is eventually determined by the preferences of people (Green, 2005).

The thesis will not focus on the diverse arguments and suggestions for sustainable urban development, nor on comparisons between experiences in cities across the world. Rather, it will examine urban form and land use in South Korea (to be referred to as Korea), and its implications in terms of urban sustainability, by taking two cities as case studies. This will give rise to questions as to why Korean cities have been developed with such high densities and intensive land use; whether this development pattern is sustainable; and which principles are needed in planning and implementing development in order to deliver sustainable urban form and land use in a Korean context.

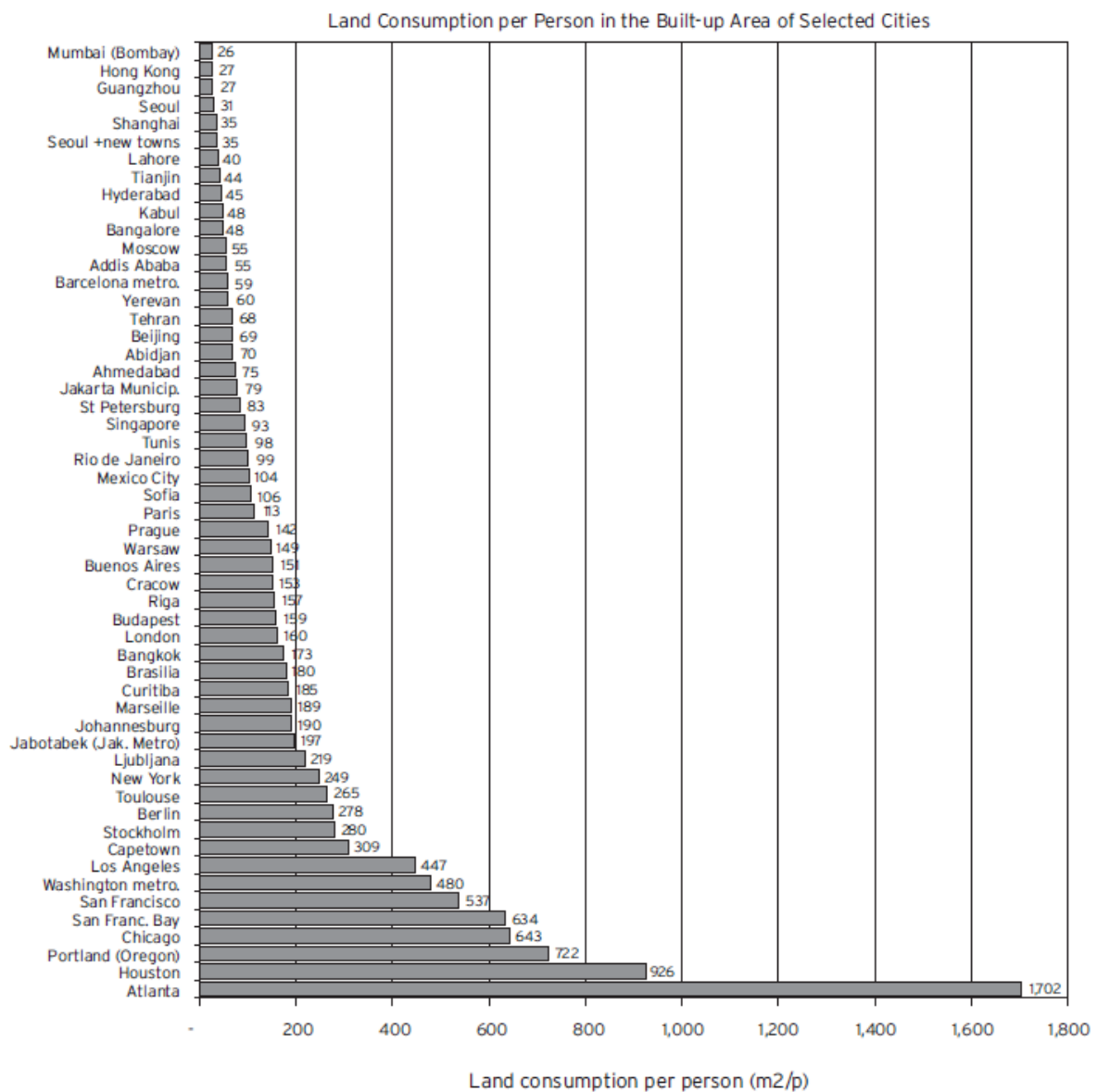
1.2 Research Objectives and Research Questions

Since the 1960s, South Korea has experienced dramatic urbanisation, and by 2009 a total of 35.4 million people¹ had moved into urban and newly urbanised areas from rural areas (MLTM, 2010a). However, only 6.6 per cent of South Korea's total territory was used as urban land in 2009, whilst the figure for the UK was 13 per cent in 2000 (ibid). Moreover, overall population density in South Korea was 498 persons per square kilometre in 2009, which makes South Korea the third most populated country in the world, excluding 'city states' such as Singapore and Hong Kong (NSA, 2010). This

¹ The total population of South Korea was 49.8 million in 2009 (MLTM, 2010a).

high population density, combined with a shortage of urban land, has inevitably caused densification. Following the urbanisation, the percentage of apartments among total dwellings increased dramatically from 7 per cent in 1980 to 58 per cent in 2010. High-rise apartments with 20 to 30 storeys are being built as the predominant residence form in new settlements.

Figure 1.1 Urban Land Consumption per Person in 50 Cities. Source: Bertaud (2010)



Note: Land consumption per person in this chart is based on populations in the 1990 census divided by the city's built-up areas measured on land use maps and satellite imagery. The built-up area does not include airports, water bodies, and parks and open space larger than 4 hectares.

Figure 1.1 displays urban land consumption per person in 50 cities worldwide. It shows that Seoul is consuming less land, at 31 square metres per person, than most other cities. Further, even if the area is enlarged to include new cities in the Capital area of Korea, the figure is still only 35 square metres, which means that new cities are also densely populated. This indicates a feature that is highly distinctive, particularly when compared with other cities which have similar conditions in terms of territory and income levels.

However, in order to consider whether this type of urban development is sustainable, a more in-depth study is needed. Though it is generally accepted in the discipline of urban planning that the compact urban form is more sustainable than low-density suburbanisation (Jenks et al., 1996; Williams et al., 2000), individual development patterns differ between countries, drawing on their own contexts. In the US, residential areas have been broadly dispersed over suburbs with low densities (Chavan et al., 2007), so 60 per cent of the nation's population lived in suburbs in 2006 (Kotkin, 2006). Although the UK metropolitan areas are surrounded by green belts designed to prevent suburban spread (Levy, 2003), residential density in the UK is also generally lower than in continental Europe (Dempsey et al., 2009). The area and population of South Korea are similar to those of England: 100 thousand square kilometres and 49.8 million people for South Korea, 130 thousand square kilometres and 52.2 million people for England in 2009 (MLTM, 2010a; ONS, 2010).² However, the patterns of land use are quite different: for example, 'land consumption per person' in urban areas in Seoul is 31 square metres, while in London it is 160 square metres.

² Combining South and North Korea gives a territory of 223,000 km² and a population of 72.8 million, while the UK has a territory of 242,000 km² and a population of 61.1 million (MLTM, 2010a; ONS, 2010).

Thus, the following questions are raised as the key concerns of this thesis: what causes differences in urban form and land use; and what are the implications of these differences? However, there has been little research on the relationship between Korean compact development patterns and sustainability. Examination of Korean cities will answer these questions and may also partly explain the characteristics of East Asian cities, pointing to practical implications for these rapidly growing cities, particularly, for megacities. The overall aim of the thesis is ‘to examine how urban form and land use contribute to achieving the goals of sustainable urban development in South Korea’, through the following overarching research questions: How and why have urban developments in South Korea been accompanied by such compactness? And what are the implications of this with reference to the principles of sustainable development?

The spatial scope of the research is South Korea; and the time frame is mainly after the mid-1990s, when the first-period new city projects had been completed and new policy directions were being sought. In investigating the relationship between urban form and sustainability, the thesis focuses on urban development projects and planning processes, because these are the direct instruments which have generated current urban form and land use. The thesis will address these by comparing them with UK and US planning systems and experiences, when needed,³ because the Korean planning system has been influenced by the systems of those two countries. In particular, the thesis addresses large cities. Case study cities have a metropolitan scale, which is defined as a population of 500,000 and over by the OECD (2012). Thus the thesis focuses on large-scale development projects which have created large cities.

³ Thus, ‘Western’ countries in this thesis usually mean the UK and US.

Against this background, four research objectives are set out.

- O1. To examine the relationships between the diverse development methods and land uses demonstrated in South Korean cities
- O2. To explore the processes by which development methods and land uses are determined in South Korean development projects
- O3. To investigate whether current development and housing patterns in South Korean cities will be maintained in the future
- O4. To establish the implications of South Korean large-scale development patterns for achieving urban sustainability

These research objectives will be addressed through the following research questions:

- Q1. To what extent do South Korean cities share the features of the compact city?
- Q2. What is the nature of the relationships between diverse development methods and land uses in South Korean cities?
- Q3. How have the development methods and land use plans been shaped in the negotiation processes of urban development projects?
- Q4. How have the principles of sustainable development been applied to shaping current development patterns?
- Q5. To what extent are current housing types (and associated residential features such as density and open space) acceptable to residents?
- Q6. What implications can be drawn from the case studies for the future development of South Korean cities?

These questions are based on the relevant literature about sustainable urban development and urban form. The main elements of urban planning needed to shape sustainable urban form will be identified through a review of the relevant literature, with the compact city as the focus, even though few are agreed on what these are and these depend heavily on regional contexts. The first and second questions aim to identify the characteristics of urban form and land use in Korea, and the third and fourth questions were designed to explore the reasons why Korean cities have those characteristics. The criteria for sustainability in urban development used in the fourth, fifth, and sixth questions will be identified through a literature review, and will include three perspectives on sustainable development: economic efficiency, social equity, and environmental sustainability. Through the third, fourth, and fifth questions, a ‘large-scale new settlement development scheme by urban clearance’ – a means predominantly employed in Korean urban development – and its land use will be investigated with regard to the feasibility and acceptability of the scheme. The reason why the various development methods are examined, particularly in the second and third questions, is to see whether these methods, which may be broadly divided into a ‘mass housing provision policy’ and an ‘urbanist approach’, have resulted in any differences in land use. The final question is designed to produce implications and practical principles for sustainable urban form and land use in the context of Korea. From these questions, this study focuses more on the social and quality of life aspects than the environmental effects of Korean urban development, which have been neglected in the research area. These questions draw on urban development practices in Korea, as exemplified by the subjects of two case studies undertaken as part of this research. The next section introduces the methodology to be employed in addressing the research questions.

1.3 Methodology

The research examines how urban form and land use relate and contribute to sustainable development in the field of urban planning in Korea. A case study was judged to be the most appropriate method of studying in-depth and multifaceted phenomena in a real-life context which the researcher would rarely be able to control (de Vaus, 2001; Yin, 2009; Swanborn, 2010). Drawing on the relevant literature from Korea, two case study cities were selected: Yong-in city in the Capital area⁴ and Se-jong city in a non-Capital province. The case study areas were chosen considering: representativeness and contrasting features such as different development methods and locations; abundant information about their planning and development projects; and the research time scale.

Research methods in social sciences can be divided into process-driven qualitative methods and outcome-driven quantitative methods, even though the division is not always obvious (Bryman, 2008). The choice of a research method is influenced by the type of data required (Yin, 2009). In order to examine the relationship between urban form and sustainability, data was needed to understand real events and to explain contemporary phenomena. Thus, data was collected from both qualitative and quantitative sources, such as relevant planning documents and statistical reports. And, as a main data collection method, interviews were performed with key participants in urban developments to obtain more in-depth data.

⁴ 'The Capital area' in South Korea includes three provincial-level municipalities: Seoul and Incheon metropolitan cities, and surrounding Gyeong-gi province.

1.4 The Layout of the Thesis

The issues being explored in this thesis are raised first in this introductory chapter. Drawing on a review of the relevant literature, the thesis begins by exploring the concept and principles of sustainable urban development. It also identifies the elements of sustainable urban form and land use. It then examines the relationship between sustainable development and urban form and land use through case studies of two types of urban development in South Korea. The thesis concludes with discussions and suggestions for further research.

There are a total of ten chapters in the thesis.

Chapter 1 introduces the background, aims, research questions, methodology and layout of the research.

Chapter 2 explores the key concept of the research, sustainable urban development, examining its definition and evolution. Through examination of the relevant literature, the chapter identifies the main principles of sustainable urban development.

Chapter 3 gives an outline of theories of urban form and land use, presenting the compact city as the core concept, and looking at the academic debates surrounding it. And, the compact city is dealt with in the context of developing countries.

Chapter 4 explores diverse urban development policies and practices, which affect urban form and land use directly, focusing on the planning systems and experiences of the US and UK.

Chapter 5 presents an outline of the features of urban development in South Korea through a review of the relevant literature. The chapter introduces the planning system of South Korea and describes how the urban forms have taken shape, as these are connected with the research questions in the following chapter.

Chapter 6 provides a methodological framework for the research. It sets out the research questions; explains the research methods to be used; and details how the cases were selected and the case studies conducted.

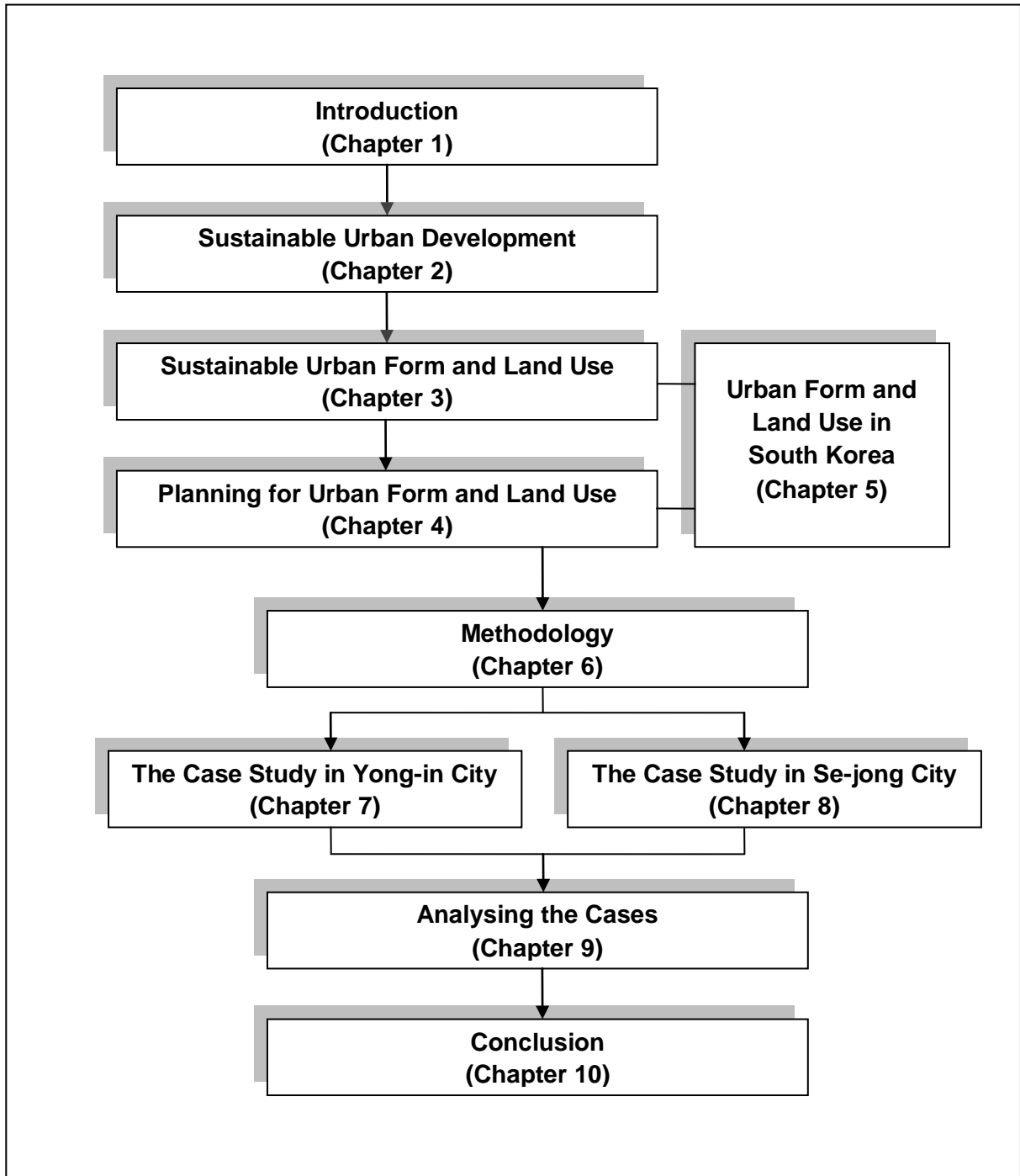
Chapters 7 and 8 present the results of the two case studies which were undertaken in the field of incremental urban development in Yong-in city in the Capital area, and in the field of a single multifunctional new city project in Se-jong city in a non-Capital area. The two chapters examine the features of urban development in these cases, and explore the processes and considerations involved in planning and implementing development projects.

Chapter 9 sets out to answer the research questions, relating the results of the case studies to the research framework derived from the literature review. The chapter provides key findings from the analysis of the case studies, which are followed by the implications and policy suggestions for the compact city approach in Korea.

Chapter 10 concludes the thesis. It addresses the research questions, summarising the main findings of the thesis; describes the contribution of the thesis to the study of the compact city in urban development; and evaluates the research, noting its limitations and making recommendations for future study.

The research procedure and structure is demonstrated in Figure 1.2.

Figure 1.2 Research Procedure and Structure



CHAPTER 2

SUSTAINABLE URBAN DEVELOPMENT

2.1 Introduction

For decades, there have been growing concerns about environmental issues such as climate change and global warming. These concerns have caused people worldwide to prepare countermeasures to the environmental threats and to look at our economic activities from the perspective of sustainability. The world population passed 7.0 billion in 2011, and is estimated to reach 9.2 billion in 2050, when the urban population, which passed the half-way mark in 2008, will be 70% of the whole (UN, 2011). Concurrent population growth, rapid urbanisation, and economic growth, have accelerated environmental degradation. The environmental degradation includes: the depletion of natural resources, greenhouse gas emissions, climate change, the endangering of species and threats to biodiversity (Hall and Pfeiffer, 2000). Rapid urban growth has resulted not only in environmental degradation, but also accompanied considerable social inequality and conflict (UNFPA, 2009). The concept of 'sustainable development' has emerged as an approach to dealing with these issues. This chapter reviews the relevant literature on the concept and the principles of sustainable development.

2.2 The Concept of Sustainable Development

2.2.1 The Evolution of the Concept of Sustainable Development

This section briefly outlines the evolution of the concept of sustainable development, so that we may better understand the concept against its historical background.

Table 2.1 Key Events and Documents for the Concept of Sustainable Development

Periods	Key Events and Documents	Main Arguments and Contributions
Till the 1970s	<i>Silent Spring</i> (Carson, 1965)	Called attention to environmental risks associated with the use and spill of toxic chemicals and the destruction of wildlife in the US.
	<i>The Limits of Growth</i> (Meadows et al., 1972)	Dealt with how to alter these trends in order to achieve sustainable ecological and economic stability with the term ‘sustainable development’.
	United Nations Conference on the Human Environment (UNCHE) in Stockholm in 1972	Declaration suggested specific actions to promote harmony between the environment and economic development (UNEP, 1972).
The 1980s	World Conservation Strategy ¹⁾ (1980)	Included wider elements of human rights, governance issues, and international economic and national development strategies, as well as ecological perspectives.
	<i>Our Common Future</i> , the Brundtland Commission report, released by WCED (1987)	Indicated that social, economic and environmental objectives needed to be interdependent in the development process.
The 1990s	Second World Conservation Strategy, <i>Caring for the Earth</i> (1991)	Called attention to actions at individual, local, national and international levels and influenced the following Rio conference.
	Earth Summit, the United Nations Conference on Environment and Development in Rio de Janeiro (UN, 1992a)	Aimed to establish a global partnership between various stakeholders. Rio declaration suggested a set of principles for sustainable development.
	<i>Agenda 21</i> , a comprehensive action plan promulgated with the Rio declaration (UN, 1992b)	Endeavoured to integrate social, economic and environmental values, and to promote partnerships and active public involvement.
	Istanbul declaration on human settlements (UN, 1996)	Contributed to establishing a global consensus on the need to provide adequate shelter for human beings and to create more sustainable human settlements.
	Kyoto Protocol (1997 in Grubb et al., 1999)	Provided an important international framework for tackling climate change. It was adopted in 1997 and came into force in 2005
Since the 2000s	World Summit on Sustainable Development in Johannesburg (UN, 2002)	Many governments, non-governmental organisations (NGOs), and various interest groups participated. Emphasis on the implementation of Agenda 21 as a part of global action for sustainable development.
	Copenhagen Accord (2009 in UNFCCC, 2011)	Accord by the 193-nation conference suggested the provision of financial support to overcome the impact of climate change

Note: 1) This was produced by the combined efforts of the International Union for the Conservation of Nature (IUCN), the United Nations Environment Programme (UNEP), and the World Wide Fund for Nature (WWF).

With regard to environmentalism, there has been a shift of emphasis from concern about the wilderness and wildlife in the late 19th century to concern about various global environmental issues since the 1960s. Particularly, since the debate *Limits to Growth*, which used the term ‘sustainable development’, in the 1970s, there has been a partial move away from anthropocentric attitudes towards more eco-centric approaches (Wheeler, 2004). The concept of sustainable development began to be interpreted in diverse ways in the 1980s. A key reference for the concept was *Our Common Future*, the Brundtland Commission report released by WCED in 1987, which noted environmental catastrophes that resulted from the growing demands made on scarce resources, and the pollution caused by human activity (OECD, 2002), and which pointed out that poverty was a critical contributory cause of environmental degradation (Rydin, 2010). For this reason the report placed an overriding emphasis on creating a global partnership which would satisfy the essential needs of the world’s poor. This was the reason why the report made an effort to achieve a balance between economic development and environmental concerns.

The Rio Declaration, which was produced by the Earth Summit, the United Nations Conference on Environment and Development in 1992, aimed at playing a significant role in reconciling the interests of developed and developing countries (McDonald, 1996) and emphasizing the importance of local initiatives on environmental problems, in particular, through *Agenda 21* (UN, 1992b). The 2002 World Summit on Sustainable Development in Johannesburg, concerned with the implementation of *Agenda 21*, recommended that all countries take concrete steps to identify sustainable national development strategies (UN, 2002). In this way, the movement for sustainability has

spread steadily outwards since the 1990s, reaffirming the importance of international, national and local partnerships, and of public involvement in the implementation of sustainable development.

However, despite the above declarations and accords, there have been considerable gaps between the announcement and the implementation. For instance, the US Congress has not yet ratified the Kyoto Protocol (Levy, 2012); and the Copenhagen Accord on financial support for addressing climate change still lacks detailed strategies for implementation (UNFCCC, 2011). What are needed are concrete policies and performances that offer participants more politically acceptable measures.

2.2.2 The Definition of Sustainable Development

Though much time and effort have been spent on the question by commissions and research, it is still not easy to define the concept of sustainable development and to translate it into practice, and it is open to a range of interpretations (Cullingworth and Nadin, 2006). This section reviews the definition of sustainable development as resting on three pillars of it. Some definitions of are presented in Table 2.2. At the top is a well-known definition by the Brundtland Commission.

Table 2.2 Some Definitions of Sustainable Development

WCED (1987)	‘Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.’
IUCN, UNEP and WWF (1991)	‘Sustainable development is used in this strategy to mean: improving the quality of human life while living within the carrying capacity of supporting ecosystems.’
International Institute for Sustainable Development (2004)	‘For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.’
HMG (2005)	‘Our strategy for sustainable development aims to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.’

However, the definition of the Brundtland report has been criticised for several reasons (Redclift, 2005): firstly, it does not define details, particularly, the concept of ‘needs’⁵; and, secondly, it could be seen as speaking for large business interests in not questioning the current path of economic growth. In terms of the first critique, the ‘needs’ might differ according to times, regions, income levels, and diverse socio-cultural backgrounds. As ‘needs’ are difficult to define ex ante, as was also pointed out by the WCED (1987), the formation of a consensus on their meaning would have to depend on the participation of diverse stakeholders (Jordan, 2008). The second critique will be reviewed in the debate on weak-strong sustainability described in the next subsection. In advance of this, three perspectives on sustainable development are presented.

⁵ Lele (1991: 613) criticised the definition for its ambiguity, stating that ‘it left sustainability being about everything and therefore potentially nothing’.

Three Perspectives on Sustainable Development

In the concept of sustainable development, the following three perspectives are central (Wheeler, 2004; OECD, 2002): first, ‘environmental sustainability’, which involves stable natural resources, the maintenance of biodiversity, and the reduction of greenhouse gas emissions; second, ‘economic sustainability’, which requires that the benefits of economic activity surpass the cost of inputs, including the cost of environmental requirements (Munro, 1995); and third, ‘social sustainability’, which deals with equity issues such as economic disparity, inequitable resource distribution, and environmental justice.

Environmental sustainability

Environmental sustainability is based on the argument that sustainable development needs to be within the limits of natural systems, which reflects the fact that human beings have already caused many environmental disasters, such as depletion of resources, loss of species, and global warming (Munro, 1995). Therefore, environmental sustainability is recognised as the first priority of the concept of sustainable development (Hall and Pfeiffer, 2000; McDonald, 1996).

Economic sustainability

Many urban populations are still short of the resources to satisfy their basic demands: for example, demands for adequate shelter and good health (Hall and Pfeiffer, 2000). These demands need to involve economic growth in sustainable development.

Economic sustainability requires that benefits surpass the cost of inputs. However, it is not easy to achieve a balance between benefit and cost, because it is difficult to put a price on environmental quality or social equity. Capitalist economics has many deficiencies which have weakened sustainability, such as decision-making failures in the provision of public goods and the insufficient correction of externalities. Among the deficiencies, Wheeler (2004) pointed out that the problem of discounting the future is serious, because most cost-benefit analyses are incapable of considering impacts more than 20-30 years into the future. Thus, current economic theory finds it difficult to adopt the long-term perspective required by sustainable planning. Further, economic sustainability is criticised for entailing a continuous supply of industrial products which may have caused environmental degradation (Shiva, 1992). For these reasons, many other strategies have been developed to reorganise capitalist economics in the direction of reconciling environmental, social and economic goals: steady-state economics, environmental and ecological economics, restorative economics, local self-reliance, and socially responsible investment (Wheeler, 2004).

On the other hand, prioritisation between economic development and environmental conservation may differ from country to country. For example, in discounting the future, poor economies would insist on high discount rates, because present hunger is regarded as more serious for them than future generations' wellbeing. In this connection, some of the alternative economics which have been offered as substitutes for classical economics may not be applicable for underdeveloped countries: for example, steady-state economics without any significant quantifiable growth.

Social sustainability

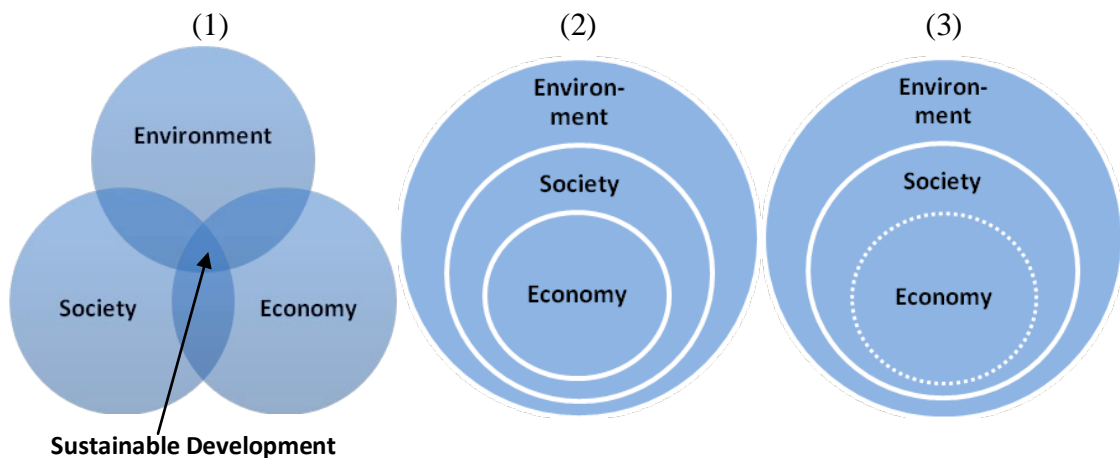
A considerable part of the world's population is still suffering from poverty. Poverty is recognised as one of the greatest threats to achieving a good environment (Hall and Pfeiffer, 2000). The poor, particularly in southern Asia and Africa, are estimated to suffer more damage from climate change than people in developed countries (Parry and Livermore, 2002). Developing countries lack the resources for a decent life. Even in the developed world, poor people are still poor. Inequalities have been aggravated by factors such as climate change and the concentration of economic power, which have given rise to diverse social issues: for example, disparity and distance between rich and poor communities, concentrations of poverty, inequitable distribution of resources, and environmental injustice. Problems of inequality are found in various areas of a society. For example, in the urban planning area, 'exclusionary zoning' for a large-lot or single-family development in the US exemplifies the aggravation of social inequality, even though it was originally designed for environmental purposes (Levy, 2003). With regard to social sustainability, sustainable development needs to pursue social integration as well as income redistribution (Hall and Pfeiffer, 2000). Social sustainability contains diverse issues, beyond the issues of poverty and social equity, such as resident participation and various aspects of quality of life (Rydin, 2010). The priority of these issues depends on the context of the society in question.

Reviews of the three perspectives on sustainability so far imply trade-off relationships between them. In order to explore the relationships between them in detail, the theorisation of sustainability using a weak-strong continuum will be reviewed.

2.2.3 Weak Sustainability and Strong Sustainability

Despite the many definitions of sustainable development that have been produced, the characteristics of the concept can be divided into two categories (Cullingworth and Nadin, 2006; Selman, 1996): ‘strong sustainability’, which prioritises the preservation of nature based on fundamental reflections on existing lifestyle; and ‘weak sustainability’, which allows the continued supply of industrial products based on the substitutability of materials.⁶ This can be illustrated with three pillars on sustainable development, as in Figure 2.1 (Lombardi et al., 2011; Rydin, 2010): (1) the left Venn diagram implies that the three perspectives are comparatively independent of each other, and that sustainability is achieved in the area of overlap between them, which represents ‘weak sustainability’; (2) the central, nested model shows that the economy and society exist within the limits of both society and the environment, representing ‘strong sustainability’; and (3) the right, dual nested model further highlights the arguably ambiguous separation between the economy and society.

Figure 2.1 Three Models of Sustainable Development. Source: Lombardi et al. (2011)



⁶ This division is called ‘the sustainability paradigm’ and ‘the modernity paradigm’ by Ehrenfeld (2000).

While the division of sustainability into weak and strong mainly relies on attitudes to the environment, Ward (2003) adds other socio-economic considerations, such as broader participation and more equitable distribution. Thus, the above three pillars of sustainable development are reduced to two dimensions, according to attitudes to the environment and socio-economic concerns (Lombardi et al., 2011). Within these criteria, ‘strong sustainability’ is given a more eco-centred and socially equitable status in order to require transformative changes to the current pattern of production and consumption, which can be explained by the above right dual nested model. Furthermore, Shiva (1992: 189) criticises the broader concept of sustainable development for reinforcing the primacy of capital, calling it as ‘pseudo-sustainability’.⁷

However, ‘strong sustainability’ raises a question as to whether it is necessary to preserve all plant and animal species at any cost. On this point, many environmentalists adopt ‘weak sustainability’ as a more practicable concept – one which allows the use of natural resources on the basis of the substitution of other resources and aims at sustaining human wellbeing (Selman, 1996). Thus, nowadays, the main challenge for sustainable development is to integrate the diverse concerns of environmental, economic and social interests (OECD, 2002). This suggests that ‘weak sustainability’ dominates current policy practices, bringing considerations of environmental, economic and social capacity into the decision-making processes, even though this may entail damage to biodiversity (Cullingworth and Nadin, 2006).

⁷ Proponents of ‘strong sustainability’ point to the following features of the eco-system to support their arguments: irreplaceability, irreversibility, bifurcation and threshold effects, negative feedback loops, and cocktail effects (Pearce and Turner, 1990).

Trade-offs Between the Three Perspectives and the Synergies Approach

The Venn diagram in the Figure 2.1 is interpreted to imply that the three perspectives have trade-off relationships under a compensation principle, while a synergies approach pursues a win-win outcome, or even a win-win-win outcome, through a compromise. The latter, which is a synergies approach combined with weak sustainability, has some advantages over the former. Firstly, it is politically much more attractive, because it is politically unacceptable to prioritise global environmental problems in the face of local unemployment, poverty and poor housing (MacLennan and Mega, 1992). Secondly, in the case of underdeveloped or developing countries which have to overcome poverty, it is not only politically unrealistic to abandon economic growth at a certain stage for the sake of the environment, but also, if the poverty is not overcome, global environmental damage through the export of pollution will be continued, hindering international and inter-regional equity (Haughton and Hunter, 1994). And, thirdly, it looks for creative new ways to deliver multiple gains, such as community-based development and ‘ecological modernization’ such as ‘green growth’ strategy (Rydin, 2010).

2.3 The Principles of Sustainable Urban Development

2.3.1 Sustainable Development in an Urban Context

Historically, economic development and industrialisation have accompanied the concentration of population into urban areas (Diamond, 2003).⁸ At the same time, cities have provided a source of innovation that is derived from the proximity of people and business (Jacobs, 1984), and this is termed ‘economies of agglomeration’. It has even been argued that ‘without cities there could have been no real civilisation’ (Bairoch, 1988: 1). Contrarily, there is a view that an urban area cannot be truly self-sustaining, because it always relies on its hinterland. Bioregional theorists seek to place an urban area within a regional context where it is possible to achieve a degree of environmental self-sufficiency. However, it is generally accepted that ‘total urban self-reliance’ may be neither a realistic nor a desirable goal (Haughton and Hunter, 1994; Rydin, 2010). The Brundtland report (WCED, 1987: 255) states:

The future will be predominantly urban, and the most immediate environmental concerns of most people will be urban ones.

The urban concentration of population has given rise to environmental degradation alongside economic prosperity. In order to solve contemporary environmental problems, the current patterns of urban development should be rethought. However, at the same time, it is argued that cities have the potential to overcome unsustainable patterns of

⁸ Thus, 48% of the population in OECD countries lived in ‘metropolitan areas’, which were defined as urban areas with more than 500,000 people, and these areas accounted for 53% of GDP in OECD countries in 2008 (OECD, 2012).

developments and lifestyles (Haughton and Hunter, 1994). Elkin et al. (1991) point out that cities have ‘great capacity to be more resourceful’.

A sustainable city, as a human-made artefact, needs to aim towards more than just an ecological balance at a geographical scale: it also needs to sustain its own contribution to the environment with its built form (Haughton and Hunter, 1994). In this regard, some definitions and associated explanations are presented in Table 2.3. Haughton and Hunter (1994) define the ‘sustainable city’ as a process of contributing to global sustainable development. Also, the complex interrelatedness of urban development has required taking into account of the local, regional and global implications, and cooperation in urban activities and policies.

Table 2.3 Some Explanations for Sustainable Urban Development

World Health Organisation (1992)	‘Sustainable urban development should have as its goal that cities (or urban systems) continue to support more productive, stable and innovative economies, yet do so with much lower levels of resource use.’
Haughton and Hunter (1994)	‘A sustainable city is one in which its people and businesses continuously endeavour to improve their natural, built and cultural environments at neighbourhood and regional levels, whilst working in ways which always support the goal of global sustainable development.’
Sustainable Cities International (2010)	‘Urban Sustainability: We embrace a holistic approach to urban sustainability that focuses on creating stronger more resilient cities through the integration of environmental, social and economic wellbeing. We treat each city and region as a complex system that requires a unique approach to planning, policy development and action as it strives to become more sustainable.’

2.3.2 The Principles of Sustainable Urban Development

This section reviews the generally accepted principles of sustainable development, focusing on urban development which is defined as a process producing the built

environment (Rydin, 2010). The world has endeavoured to achieve the goals of sustainable development through various national strategies and global cooperation. The strategies have different approaches to the implementation of sustainable development, because this depends upon specific local, regional and national situations. However, despite the differences, general principles of sustainable development have been established, because sustainable development has been a worldwide goal since around the 1990s and has already led to a certain degree of global consensus about diverse global issues (Wheeler, 2004; OECD, 2002; Selman, 1996). Drawing on this background, a summary of the principles of sustainable development suggested in the relevant literature is presented in the Table 2.4.

Table 2.4 A Summary of the Principles of Sustainable Development Suggested

IUCN, UNEP and WWF Report (1991)	conservation of natural resources and the biological environment of the earth, a change in the pattern of economic development, and a long-term vision and comprehensiveness
Rio Declaration (UN, 1992a)	environmental protection, eradication of poverty, global partnership, reduction of unsustainable production and consumption, improvement of scientific understanding, and promotion of an international economic system
Haughton and Hunter (1994)	inter-generational equity (or futurity), social justice (or intra-generational equity), and trans-frontier responsibility
Selman (1996)	preserving the human and natural environment for the next generation; meeting all human needs, in particular, the needs of the world's poor; and recognising the influence of human activities on the environment and the resources of the world
Jordan (2008)	improving intergenerational and intra-generational equity, alleviating chronic poverty, encouraging public participation in decision making, observing important environmental limits to growth, and integrating an environmental dimension into all sectoral policy making

Thus, the main principles for sustainable urban development are set out in the thesis as the following: the conservation of the environment, sustainable economic development,

improvement of social equity; betterment of the quality of life; and enhancement of participatory democracy. Fundamentally, the strategy of sustainable development requires a holistic outlook with a long-term vision which integrates environmental, economic and social perspectives horizontally and harmonises the different strategies of local, regional, national and global levels vertically, because it needs to reflect the diverse and comprehensive demands of both present and future generations (Wheeler, 2004; OECD, 2002). Therefore, a drive for economic growth needs to take account of the long-term environmental and social impacts this would have (Harris, 2000). Also, in practice, a sustainable development strategy needs to link the long-term vision to all short-term action plans, inducing cooperation to this end between various stakeholders, such as the public, private and voluntary sectors and local communities. The following paragraphs will elaborate on the individual principles.

The Conservation of the Environment

The concept of sustainable development was generated in response to the claim that modern economic activities had led to the world facing the limits of growth with regard to nature which had always sustained human lives and livelihoods (Wheeler, 2004; Meadows et al., 1972). However, urban economic activities are still increasing carbon dioxide emissions and accommodating ever-increasing demands from growing populations (Hall and Pfeiffer, 2000). Therefore, in pursuing sustainable development, the conservation of the environment has been prioritised, suggesting that development should be pursued within the capacity of the ecological system (Munro, 1995).

In relation to the urban environment, Jones and Evans (2013) suggest that urban areas are also important for delivering ecological sustainability, and they consider urban brownfield sites, such as abandoned industrial land, a better place for biodiversity in a varied habitat than the countryside. On the other hand, some scholars argue that a specific form of urban development, for example, compact development, could contribute to decreasing energy consumption for transport (Hall, 2001).

Sustainable Economic Development

Though urban areas are regarded as adequate for economic activity in that these promote innovation and economies of scale and agglomeration, in the pursuit of economic sustainability, it is required to change its current pattern of development into a more sustainable one which takes account of long-term environmental and social impacts (Harris, 2000).

However, developing countries are faced with the problem of poverty, which has induced them to continue to pursue imprudent economic development, due to limited resources and insufficient technologies, as being driven by the enormous demands of rich countries (Hall and Pfeiffer, 2000). This suggests that economic development needs global cooperation, which includes technical and financial transfers from the developed to the developing countries in order to support more sustainable economic development.⁹ In addition, as mentioned before, the pursuit of economic growth is also required for securing political acceptability, particularly in developing countries.

⁹ For example, the Clean Technology Fund promoted by World Bank provides developing countries with technical and financial support to help them reduce carbon emissions (Climate Investment Funds, 2009).

The Improvement of Social Equity

The enhancement of social equity is expressed in terms of a fair and sufficient distribution of resources ensuring a decent life for all. ‘Intra-generational equity’¹⁰ within the current generation emphasises ‘social justice’ in coping with the current inequitable distribution of economic power, giving priority to essential human needs (Selman, 1996; Wheeler, 2004). In particular, climate change is resulting in a shortage of food and more environmental damage to the poor, aggravating inequalities between people, regions and countries (Parry and Livermore, 2002). McDonald (1996) directs the discussion towards the equitable distribution of benefits and costs in diverse fields such as the environment, employment, social security, and community culture. In this regard, Jepson (2001) argues that intra-generational equity, that is, social sustainability, is more difficult to put into practice than inter-generational equity, because the former creates social disputes between diverse groups. Moreover, Haughton and Hunter (1994) raise ‘trans-frontier responsibility’ as another equity category, which is interpreted as ‘international and inter-regional equity’ and, therefore, needs global and regional cooperation. Also, it is widely accepted that the poverty problem in developing countries can be tackled through a global partnership, particularly in terms of meeting the needs of the poorest (Hall and Pfeiffer, 2000; Malanczuk, 1995).

In developed countries, also, there exists poverty, and the poor are isolated from mainstream society. This means that, in implementing sustainable development, social integration should be provided for through a supportive community as well as through

¹⁰ By contrast, the concept of ‘inter-generational equity’ between present and future generations is directly connected to the concept of sustainable development, in that it assumes that one generation should leave the earth undamaged to the next generation.

devising social welfare policies based on income redistribution (Hall and Pfeiffer, 2000). Further, ex ante equal opportunity may be more important than ex post income redistribution in that it can motivate individuals towards self-esteem and revitalise society, which is also related to the quality of life.

The Betterment of the Quality of Life

The Brundtland Commission report suggests that economic and social development should be self-reinforcing, arguing that healthy and well-educated people are economically more productive as well as more fulfilled, and that strategies should pursue a better quality of life without compromising the quality of life of future generations (WCED, 1987). The quality of urban life depends on: education, health and safety, urban infrastructure and convenient social facilities, the aesthetics of landscape, and a sense of belonging and closeness in a local community. The last element, which is described by the term 'sustainable community', is closely related to the next principle, which deals with community involvement in urban development.

A type of urban development which is deficient in these elements may be negatively evaluated, even if it is economically efficient and environmentally desirable. In addition, it is important in developing countries that the demands of future generations for a good quality of life and well-being may be quite different from those of the present generation, and urban development should reflect such changing demands.

The Enhancement of Participatory Democracy

The literature increasingly suggests that the processes of democratic debate and citizen participation are at the core of sustainability principles (Redclift, 1987; Rydin, 1998). Also, in urban development, there has been a general shift from top-down decision-making to a bottom-up consensus-building, enhancing participatory democracy and community involvement, which has led to a change in terms from 'governing by government' to 'governance'. 'Governing' means social activities which make a 'purposeful effort to guide, steer, control, or manage the sectors of societies' (Kooiman, 1993: 2). In 'governing', 'government' revolves around the authority and institutions of the state, while 'governance'¹¹ allows the engagement of non-state actors such as businesses and nongovernmental organizations (Lemos and Agrawal, 2006). The voluntary sector has contributed to this change, encouraging citizens to engage more actively in social decision-making and decision-implementation (Harris, 2000; McDonald, 1996). The enhancement of participatory democracy has induced people to become more socially integrated by establishing a highly networked community with supportive neighbourhoods (Hall and Pfeiffer, 2000).

The principles of the Rio declaration, and Agenda 21 in 1992, also concentrate on more active community involvement in coping with various environmental and social issues when it comes to sustainable development (UN, 1992b; OECD, 2002; Malanczuk, 1995). Nowadays, the participation of concerned residents is recognised to be indispensable in addressing urban issues, because local people who have practical knowledge in their area which has been built up through everyday life offer innovative

¹¹ The term 'governance' is used in two ways: one is for an 'empirical phenomenon' in politics and public administration; and the other is for a 'normative prescription' in approaching social issues (Jordan, 2008).

ideas and provide legitimacy for action (Healey, 1998). Innes and Booher (1999: 420) claim that the outcome of governance favours sustainable development, because it is a solution drawn from a consensus-building process, satisfying the diverse concerns of sustainable development. However, it is not easy to achieve a consensus through participatory democracy, because participants tend to insist on their own interests rather than compromising on common goals (Jessop, 1998), particularly in developing countries with low institutional capacities to address them. Thus, it is suggested that an effective participatory democratic process requires the transformation of the political culture and institutions (Tewdwr-Jones and Allmendinger, 1998).

2.4 Conclusion

Nowadays, the main challenge for sustainable development is to integrate a diverse range of environmental, social, and economic considerations (Jordan, 2008). This chapter has explored the concept of sustainable development and has examined the principles of sustainable urban development. However, unfortunately, as with urban form which is a directly determining factor in sustainable urban development, there is no agreed principle, although many scholars agree that a compact urban form has an advantage in environmental impact on surrounding nature (Jenks et al., 1996). On the basis of these reviews, the next chapter will explore theoretical suggestions for sustainable urban form and land use.

CHAPTER 3

SUSTAINABLE URBAN FORM AND LAND USE

3.1 Introduction

During the energy crises and urban dispersion of the 1970s, Fishman (1977) anticipated that serious large-scale planning would eventually be needed again to address those problems. In due course, with the Brundtland report (WCED, 1987) as a stimulus, concerns on global sustainability did spread rapidly, bringing the UNCED *Agenda 21* proposal (1992b) that demanded local-base action plans. At that time, the compact city, as ‘a big solution to solve the big problem’ of sustainable development, was proposed (Breheny, 1996: 20). In the 1990s, three quarters of global carbon dioxide was emitted by urban activities, and the emissions were rapidly increasing, particularly in the transport sector (Burgess, 2000). In order to solve these problems, sustainable development was considered as a common good that would be a basis for urban life. An attitude of anti-physical planning after the manner of Jane Jacobs was regarded as ineffective, and the compact city was suggested as the grand solution (Breheny, 1996).

The thesis addresses the compact city, among a variety of proposals for a sustainable urban form, which is particularly adaptable to large cities. Here, land use is an important factor for materialising an urban form by locating the diverse uses of urban land and transport facilities (Kim et al., 2007). This chapter examines the issues of sustainable urban form with the compact city debate at their centre. It looks at the development of the concept of the compact city and reviews the literature, appraising it and discussing its applicability to developing countries.

3.2 The Evolution of the Compact City

In the debate around the compact city, the following questions are core: what benefit does the compact city generate; and can its implementation be supported politically? Breheny (1996) classifies the stances around urban compaction into three categories: ‘decentrists’, who emerged as a reaction to the problems of industrial cities and accommodated a decentralisation tendency in Western cities; ‘centrists’ who believe in the advantages of the high-density city; and a third position which is a compromise between the two extremes. To understand the diverse stances more clearly, the thesis introduces another dimension for classifying intervention in urban problems where positivists and liberalists are divided. Positivists approve of policy interventions in these problems, and make a conscious effort to solve them. The grand planning advocates of the early twentieth century belong here. Whereas liberalists trust a market mechanism and individual choice more than government intervention and planning tools.

The thesis will use the terms ‘compactionist’ and ‘dispersionist’ rather than ‘centrist and decentrist’, in order to describe the proposal more neutrally, because the term ‘centrist’ brings up an image of movement into a single urban centre. The compact city proposal does not insist on a monocentric concentration (OECD, 2012); rather it often suggests intensification in subcentres or linear development along public transport nodes. On the other hand, dispersionists admit urban dispersion to a certain degree because of the considerable demerits of artificial urban densification and doubts about the technical and political feasibility of it. The following sections will briefly look at the evolution of

the debate over urban compaction. Table 3.1 summarises the work of major figures in planning history around the compact city, and their positions.

Table 3.1 Major Advocates around Urban Compaction and their Positions

Advocate (year)	Main Argument	compaction	dispersion	positivism	liberalism
Howard (1898)	Garden city	△	△	○	
Wright (1935)	Broadacres city		○	○	
Corbusier (1935)	Radiant city	○		○	
Abercrombie, Mumford (1940s-1950s)	Regional planning		○	○	
Osborn (1950s)	New towns		○	○	
Jacobs (1962)	Urban vitality and diversity	○			○
de Wolfe (1971)	Civilia	○		○	
Newman and Kenworthy (1989)	Higher density and reduced car travel	○		○	
Urban Village Group (founded in 1989), Aldous (1992)	Urban village	○		○	
CNU (founded in 1993), Duany and Plater-Zyberk (1991)	New urbanism	○		○	
Calthorpe (1993)	Transit-oriented development	○		○	
Richardson and Gordon (1993)	Market mechanism		○		○
Hall (1991), Breheny (1997)	Community value, acceptability		○		○
Neuman (2005), Ferreira and Batey (2011)	The compact city fallacy		○		○
Dempsey and Jenks (2010)	Healthy and green city	○		○	

Ebenezer Howard

Twentieth century urban planning emerged as a response to the urban squalor of 19th century cities, which had followed the Industrial Revolution in Europe (Cullingworth and Nadin, 2006). It began with a profound and influential idea, the Garden City, proposed in 1898 by Ebenezer Howard¹². A garden city in his idea accommodated a

¹² Hall (2002) called him ‘the most important single character in this entire tale’.

population of 32,000, but he sought the consolidation of the best of town and country, calling it 'town-country' (Howard, 1898). His proposal was not just an individual garden city, but a multi-core city which would connect many areas of town-country with a high speed railway system. Hence, his ultimate suggestion was the planning of conurbations with several million people as a whole (Hall, 2002). Howard called it a 'social city' with a railway running between corporate self-governing cities. The suggested population density was 25-30 people per acre, which was higher than that of London; and the individual towns had 1,000 acres, surrounded by a 5,000 acre belt of agricultural land as a green belt (Howard, 1898; Hall, 2002). Though Howard insisted that every resident in the garden city should enjoy ample space, in reality his idea means contained decentralisation (Breheny, 1996).¹³

Howard believed that 'cooperative civilization could be fulfilled only in small communities embedded in a decentralized society' (Fishman, 1977: 37). Howard's idea was not restricted to land use planning, but had strong implications for social and economic planning, encompassing health and welfare issues (Welbank, 1996). In addition, much of his thinking was devoted to legal and financial matters of land ownership and the distribution of development profits. Howard thought that land should be permanently owned by residents, and he endeavoured to design elaborate financial devices to cover the costs and make gains from this proposal (Hall, 2002). This shows that his idea was not only visionary and imaginative, but also a practitioner's one, which might make him sensitive to the needs of the times and be confident in his own vision.

¹³ Thus, Breheny (1996) regarded Howard as a representative figure of compromisers in contrast with Jane Jacobs, who had counted him as a villainous decentralist.

Dispersionist-Positivist View

New town development projects in the UK after the Second World War were directly connected to Howard's ideas, as implemented in Letchworth, Welwyn and Hampstead: his successors, Mumford and Osborn, supported new town projects with an approach of moderate decentralisation and urban regeneration (Cullingworth and Nadin, 2006). However, in 1935¹⁴, two extreme opinions arose as antidotes to Howard's legacy: Le Corbusier's Radiant City and Frank Lloyd Wright's Broadacres City (Breheny, 1996).

Wright's plans for Broadacres city took decentralisation to a level where individual family homes were placed beyond the small community that had been Howard's ideal. It meant freeing individuals to live and work in the countryside, choosing their own lifestyle on their own land (Fishman, 1977). While Howard's thinking was oriented towards cooperative socialism, and Le Corbusier's was based on centralised control, Wright's philosophical background had its roots in the Jeffersonian individualism and pioneer tradition of the American Dream (Breheny, 1996). However, it did not mean laissez faire: rather it was aesthetically controlled urban dispersion. Nevertheless, the massive suburbanisation, and later counter-urbanisation, in the US was not intended or planned (ibid).

On the other hand, the proponents of regional planning admitted decentralisation trends in their city planning at a regional scale, even though not activating these. The

¹⁴ At the same time in 1935, the green belt around London to control urban growth was first proposed by the Greater London Regional Planning Committee, which is appraised as the beginning of modern compact city policy (OECD, 2012).

regionalists, who can be called ‘confirmed decentrists’ (Breheny, 1996), were Patrick Geddes and his followers, Patrick Abercrombie and Lewis Mumford.

Compactionist-Positivist View

Le Corbusier in France was conscious of the same problems, but presented a different solution: decongesting cities by increasing their density (Hall, 2002). Le Corbusier’s urban plans were characterised by high tower blocks, grand open spaces and improvements in traffic circulation, which were to be brought about by the total clearance method (Breheny, 1996). Though this was denigrated as a draconian approach by Hall (2002) or ‘urban surgery’ by Jane Jacobs (1962), many new cities with such high-rise blocks following rigid space norms, situated in open countryside, were constructed in various countries in the 1960s; and these are classified as collectivist cities (Hall, 2002).

Compactionist-Liberalist View

Jane Jacobs denigrated the views of both dispersionists, including Mumford and Howard, and compactionists, such as Le Corbusier (Breheny, 1996). Jacobs (1962) argued that high density and intensified urban activity created vitality and diversity, which were necessary for urban life; and, further, that such vitality and prosperity was achieved by active local communities and a natural urban economy, not by government intervention or ‘urban surgery’. However, her non-interventionist approach did not succeed in reversing the strong trend towards urban dispersion in the US.

On the other hand, in the UK too, scholars continued to argue for a contained urban form, as seen in the work of Ian Nairn (1955) and Dantzig and Saaty (1973), and they sometimes advocated positive measures to prevent urban dispersion. A representative figure among these scholars, de Wolfe, in his book *Civilia*, published in 1971, presented a vision of a high-density city resting on the traditional town philosophy. Deploring sprawl and car dependence, de Wolfe claimed that a society has a natural centripetal tendency, and that the high-density city promotes 'multi-centred cities', as well as urban regeneration, in suburban areas in which intensified transport and activity nodes are created. This tradition has led to the current compact city proposal.

The Compact City Controversy in the 1990s

In the late 1980s, as the concept of sustainable development began to be discussed globally, urban form and planning became central to the promotion of sustainable development, and, as it was argued that urban containment could contribute to alleviating global warming, the debate in the 1990s was dominated by compactionists (Breheny, 1996). They argued that the compact city made car journeys shorter, promoted public transport, and lessened the need for car travel, so contributing to the reduction of carbon dioxide emissions (Newman and Kenworthy, 1989a), when car travel was the fastest growing contributor to global warming (Thomas and Cousins, 1996). Controversy around the compact city at that time was focused on the evidences and methodology employed in a series of empirical studies which will be reviewed in Section 3.5. As a secondary environmental benefit, the compactionists claimed the protection of open land and valuable wildlife habitats. In addition, the 1990 European Commission's *Green Paper on the Urban Environment* (CEC, 1990) suggested that

proximity in mixed land use brought about a ‘more pleasant urban environment, economic competitiveness, and social cohesion’. Thus, the compact city was in vogue in both the academic and the political realms.

However, the compact city proposal had to be modified, due to objections based on liveability, even though the quality-of-life argument was also used by the compactionists (Jenks et al., 1996). The ‘good-lifers’ believed that people chose their own lifestyle and appreciated rural values rather than urban life (Breheny, 1996). Their objections were broadened into a stance that put the emphasis on the sustainability of communities (Hall, 1991). Thus, the compact city’s pursuit of physical densification was recognised not to be acceptable to residents (Williams et al., 1996).¹⁵ Another opposing group was the ‘free marketeers’ who put their trust in a market solution rather than planning intervention.¹⁶

The Debate on the Compact City since the 2000s

A compromise has been reached between the above conflicting positions in order to solve current urban problems, and this is based on evidence and the principles of sustainable development. This compromise draws on the advantages of each position and discards the disadvantages, because the issue is not about ideology, but lies in

¹⁵ Of the benefits suggested for the compact city, Hall said (1997a: 214): ‘Like most such fixed ideas, this one has a small element of truth and a much larger element of myth’.

¹⁶ The good-lifers could be classified as dispersionists, whilst the free-marketeers were liberalists. Another dimension can be assumed in the classification of diverse stances, following attitudes to view a city as ‘good’ or ‘evil’. The latter would claim that impacts from a city on the environment should be minimised as observed in ‘Campaign to Protect Rural England’ (CPRE), whilst the former is familiar with denser cities as seen in urbanist arguments. Interestingly both of them approve of urban compaction. Rather, free marketers may have neutral attitude to urban form, just claiming for non-intervention.

reality and practice (Breheny, 1996). The result is the selection of degrees of implementation in order to achieve an acceptable policy combination. For example, UK new town projects have evolved into Eco-towns, launched in 2007, which combine desirable features from the two positions, such as well-connected transport and wide green spaces within towns (DCLG, 2007). Along with this, the physically-oriented approach of the compact city has been modified from a process-prioritising position (Neuman, 2005).

Currently, efforts to find the conditions that will make possible the realisation of the compact city vision are being continued (Dempsey and Jenks, 2010), expanding its proponents' concerns toward diverse aspects of urban life such as health and mobility, which will be detailed in the following sections. Another trend in the compact city debate is a focus on large cities rather than small-scale projects, as exemplified in Ferreira and Batey (2011) and OECD (2012). In particular, the 2012 OECD report, *Compact City Policies*, suggests various practical policies applicable to large cities in different local circumstances. The following section will elaborate the elements of the compact city, and traditional and small-scale proposals will be reviewed briefly in 3.4.

3.3 The Elements of the Compact City

The compact city is frequently described as a high-density and mixed-use urban form. However, the consensus on the definition is insufficient, and indicators for measuring it are not standardized (Burton, 2002). Therefore, this section will examine diverse elements forming the compact city, followed by a comparison with the counter phenomenon, urban sprawl.

3.3.1 The Concept of the Compact City

The compact city brings up the image of an intense medieval city whose boundary is distinctively defined by the city's wall (Thomas and Cousins, 1996). However, an agreed definition of the compact city does not exist (Neuman, 2005), partly due to the expanding social and cultural implications of the term (Dempsey, 2010).¹⁷ Scholars including Elkin et al. (1991), Breheny (1992), Burgess (2000), and Burton (2002) have suggested the following characteristics: high density, mixed land use, intensification within the boundaries of non-expanding urban areas, self-sufficient urban functions, and well-connected public transport. In addition, for the travel-reduction argument, urban areas require sufficiently large population size, so that they can deliver a full range of facilities and services (ECOTEC, 1993). The OECD report (2012), which suggests the compact city as the product of urban spatial policies, presents three key characteristics: 'dense and proximate development patterns; urban areas linked by public transport

¹⁷ Some scholars have used other terms to express their expanded meanings: the 'social city region' of Green (1996) emphasises an efficient transport system connecting spatially dispersed urban units; the 'sustainable social city' of Breheny and Rookwood (1993) is a modified version of the ideas of Ebenezer Howard; and the 'autonomous city' of Scoffham and Vale (1996) is a city that is self-sufficient and independent of outside economic and political forces. In UK policy, the expression 'free-standing, contained urban settlement' has been used (Burton, 2002).

systems; and accessibility to local services and jobs’. In this regard, the report clarifies its goals as follows:

The core value of a compact city is its capacity to integrate urban policy goals such as economic viability, environmental sustainability and social equity.

Thus, this section will examine the following core elements of the concept as its focus: high density, mixed land use, and a contained urban boundary. Other characteristics and associated indicators¹⁸ will be addressed in relevant sections.

3.3.2 High Density

Density Indicators and Related Arguments

High urban density is the ‘most common interpretation’ of the compact city (Elkin et al., 1991). In many studies, density has been used as the sole independent variable (Burton, 2002; Hall, 2001). Table 3.2 presents commonly used density indicators.

Table 3.2 Urban Density Indicators. Source: Roseland (2005)

Indicators	Measurement
gross (residential) density	density on all land uses calculated as persons per hectare or housing units per hectare (acre)
net (residential) density	the number of dwellings located on residential building sites, excluding roads, parks and other non-residential land uses
floor space ratio (FSR)	the ratio of the number of square metres (feet) of floor space in buildings to the square metres (feet) of the property or lot

¹⁸ Measurement is crucial for research on the compact city, because the degree of compactness, the contribution to sustainability, and the effects of policies need to be indicated (Burton, 2002). However, the qualitative aspects of the phenomenon are difficult to measure, for instance, ‘residents’ perceptions of density and overcrowding’ (DETR, 1998a), even if they have significant implications for policy determination. Also, other subsidiary indicators may be useful, for example, ‘children density’ to stand for the healthiness of a community, even though these are not used as key indicators of compactness.

This research also will use these indicators to measure population, households, and the intensity of land use and housing on development sites. Burton (2002) classifies the density of the compact city according to the following four indicators: density of population (gross density); density of built form (net density); density in subcentres; and density in housing form design. Here, arguments about the compact city will be examined following Burton's classification.

The core argument for the compact city is that 'high density of population' replaces car travel with other forms of transport such as walking and cycling (Barrett, 1996; Newman and Kenworthy, 1989b). The UK Urban Task Force's report, *Towards an Urban Renaissance* (1999), states that high population density increases the use of public transport and makes urban facilities and services, including recycling and local power generation, viable through the production of dense demand for them. Further, Cadman and Payne (1989) argue that closer proximity produces more social interaction, and thus gives 'life to the space'. This sort of thinking is rooted in that of the sociologists of the 1970s, such as Wilmott and Young (1973), who studied people who were relocated from dense urban centres to new suburban settlements.

Secondly, 'higher density of built form' directly reduces the loss of open and rural land.¹⁹ It also contributes to savings in energy consumption (DoE, 1994) and more affordable housing (DETR, 1998a).²⁰

¹⁹ For this land-saving benefit, the DETR (1998a) and Urban Task Force (1999) suggested 'more than 20 dwellings' and '40-60 dwellings' per hectare respectively.

²⁰ In addition, it was suggested that 'limited parking provision' is a policy tool which has a significant impact on densities (DETR, 1998b).

Thirdly, ‘high-density subcentres’ are about the shaping of densities across the city. A compact city is commonly depicted as a city with a dense core and subcentres (Haughton and Hunter, 1994). It has been argued that this pattern of density, which has frequently been called ‘decentralised concentration’, makes it possible to provide local facilities and services more efficiently than uniformly high density across a city (Burton, 2002). Also, from the viewpoint of transport, development concentrated along public transport corridors or subcentres with high densities has been judged to have more environmental benefits, by concentrating traffic in a way that promotes public transport (Newman, 1992; Nijkamp and Rienstra, 1996; DETR, 1998b; Rydin, 1992).

Lastly, on the topic of ‘design of high-density housing forms’, it has been claimed that the deliberate design of housing forms and streets is increasingly important in the compact city (Urban Task Force, 1999; Sherlock, 1996).²¹ In particular, this has been discussed in relation to the height of new dwellings. Much literature has pointed out that the belief that high density means high rise is a fallacy, arguing that high density for the compact city, which supports energy-saving effects, can be achieved through low and medium-rise housing and adopting traditional street patterns and land use (DETR, 1998a; Urban Task Force, 1999; Breheny et al., 1996).²² This is important if the compact city strategy is to overcome the concerns of common people who hold an image of Le Corbusier-style tower blocks against the compact city (Hall, 2001).

²¹ For example, among arguments about crime, ‘public fronts and private backs’ are known to produce safer environments (Bentley et al., 1985).

²² It had already been proved by Martin and March (1972) that high density could be provided by a proper arrangement of non-high-rise blocks which gave a view of open space and direct access to the ground. Hall (2001) suggests that high density can be delivered by three-storey houses with some outside space.

The Level of Density

Table 3.3 presents density standards in the UK and suggestions for the compact city or sustainable development, and it shows there is no consensus about a desirable density level (Dempsey, 2010). Jenks and Dempsey (2005) point out that UK density standards have increased slightly from 20-30 houses per hectare in the Tudor Walters report in 1918 to 30-50 in Planning Policy Guidance (PPG) 3 in 2000, despite arguments over higher density.²³

Table 3.3 Density Standards and Suggestions

Advocates and Cases		Level of Density
Howard's garden city		45 houses per hectare (Hall, 2003)
UK Standards	Unwin's standard in 1912	30 houses per hectare (Ravets, 1995)
	Tudor Walters Report in 1918	20-30 houses per hectare (Jenks and Dempsey, 2005)
	Milton Keynes in the 1960s	22 (net 68) persons per hectare (Sherlock, 1991)
	PPG 3 standard in 2000	30-50 houses per hectare (Jenks and Dempsey, 2005)
Suggested Standards	Urban Task Force	40-60 dwellings per hectare (Urban Task Force, 1999)
	Urban Villages	fewer than 59 dwellings per hectare (Biddulph et al., 2003)
	New Urbanism	more than 15-17 dwellings per hectare (CNU, 2001)
	Transport-Oriented Design	25-64 dwellings per hectare (Calthorpe, 1993)
	Hall	30-40 dwellings per hectare in urban areas (Hall, 2001)
	Friends of the Earth	225-300 persons per hectare (Burton, 2002)

The recognition and practices of density are drawn from relative values bounded in cultural and historical contexts (Dempsey, 2010; Hall, 2001; Rapoport, 1975).²⁴ On the other hand, some have criticised the compact city for relying excessively on the density

²³ Dwelling densities in the UK are much higher than those in the US, but are generally lower than those in European continental countries (Jenks and Dempsey, 2005). Densities differ from country to country. For example, central districts in Kowloon, Hong Kong have 500 persons per hectare (ibid).

²⁴ DETR (1998a) demands that density should be harmonised with local characteristics.

variable, pointing out that density has comparatively weaker effects on the well-being of residents than other variables such as population size and composition (Neuman, 2005; Verbrugge and Taylor, 1980).

3.3.3 Mixed Land Use

Mixed land use refers to activities that make varied use of the land in an area. It has been argued that mixed land use combined with high density promotes a jobs-housing balance and diverse facilities and services in an area, and thus reduces car travel (Ferreira and Batey, 2011; Breheny and Rookwood, 1993; Owens, 1992). Elkin et al. (1991) point out that local facilities and services, by comparison with large stores and leisure facilities outside a town, contribute to the reduction of car travel; and they show that a continuous decrease in the proximity of urban facilities over the past decades has coincided statistically with increasing frequency and distances in car travel. The UK Housing White Paper, *Our Future Homes*, declares (DoE, 1995: 47):

There is a trend back to mixed use development, providing homes alongside shops and offices. Such development can increase vitality through activity and diversity, help to make areas safer, and help to reduce travel. As well as mixing uses, we need to mix different types of housing. A balanced mix of households helps ensure sustainable city communities.

The provision of diverse facilities and services in a local area brings more benefits than just environmental ones, and so improves the quality of life. This argument is also supported from a perspective of economic sustainability, because such an urban environment provides firms with access to high-quality labour and innovative clusters through spatial proximity to amenities and accumulated intellectual assets (Burton,

2002).²⁵ It is widely believed that a mixed-used city makes for urban vitality and safety. The ‘pavement-cafe’ approach embodied in many reports, including those of the CEC (1990) and Urban Task Force (1999), and originally expressed in Jacobs’ ideas (1962), is expected to contribute to a culturally diverse urban life and social integration (Haughton and Hunter, 1994; Burton, 2002). As Sherlock (1996: 293) indicates when he says of traditional European cities that ‘such areas do not become “dead” in the evening and at weekends when the offices are closed’, urban activities of this type raise the feeling of safety (Petherick, 1991).

Mixed land use does not include only a horizontal mix of uses, but also a vertical mix, which means mixed use within individual buildings (Burton, 2002). For this, the policy of ‘living over the shop’ is suggested for promoting the development of mixed residential and commercial spaces (Goodchild, 1994). The merits of this concept are similar to those of the horizontal case discussed above.

However, as to the best type of mixed land use, there is a lack of consensus (Dempsey, 2010), and it may be argued that it depends on the socio-cultural context. On the other hand, it has also been claimed that a mix of different land uses decreases the welfare of residents (Acharya and Bennett, 2001). Foord (2010) shows that mixed-use locations are frequently associated with negative features such as lack of security on the streets, insufficient open space, and low community cohesion. In addition, the location of unpleasant land uses such as a landfill site and prison is not only a difficult task in local planning, but also a challenge to mixed land use (Healey, 2006; Dempsey, 2008).

²⁵ Gottlieb (1995) points out that urban amenities are becoming an increasingly significant consideration for knowledge-based and high-technology companies in determining location.

3.3.4 Intensification within a Contained Urban Boundary

This sub-section will address intensification within a contained urban boundary and other related issues of the compact city, including expected effects and suggested strategies.

Development Methods

Implementation methods for the compact city are largely divided into two groups: urban infill; and the development of new settlements.²⁶ However, the construction of entirely new settlements which are large enough to ensure compact city benefits is rare in Western countries, where the rates of increase in urban population are quite low (Barrett, 1996). In this regard, Breheny (1992) argues that the extreme compact city approach is neither desirable nor realistic. Thus, the main concern is to control and promote incremental changes rather than to create new settlements, and intensification within an urban boundary is the preferred method (Burton, 2002).

Urban Size

Before reviewing intensification strategies, we need to look briefly at the issue of urban size. Although optimum urban size was one of subjects for conventional debates in geography, particularly in the 1970s, recently it has been addressed in terms of environmental effects. The ECOTEC report (1993) suggests that there is a negative

²⁶ The UK government is prepared to consider various strategic development methods: infill, new settlements, and extension of existing towns (DETR 1998b).

correlation between urban size and average energy consumption in transport. Travel distance per person increases, as one moves from large cities to rural areas in the UK, except for London, the largest city (ibid; Headicar, 2003). The former travel distance is double the latter, and it is entirely accounted for by the difference in car travel. This argument strongly supports the compact city proposal.²⁷ Therefore, it is concluded that the benefits from the compact city are generated once a city reaches a certain size at which it can support public transport and, further, self-sufficiency in local jobs and services.²⁸

Intensification within an Urban Boundary

An urban intensification strategy aiming at compactness means the implementation of containment and consolidation policies, where growth is restricted within an existing urban area (Burton, 2002). Representative policies for this in planning history are those of the green belts in the UK and Urban Growth Management in the US. The merits of intensification can be summarised as follows: decrease in the need for car travel (DETR, 1998c; ECOTEC, 1993); protection of open and rural land (Breheny et al., 1996); regeneration of decaying city centres (UK Round Table on Sustainable Development, 1997); and reduction of costs for public facilities and services (Newman, 1992)²⁹.

Intensification processes within an urban boundary may be divided into three groups:

²⁷ However, Breheny (1995) showed that energy savings in the UK would have reached just 2.5% in 1991, if it had not been for urban decentralisation during the past 30 years. It was a trivial degree for him by comparison with immense costs required to control the urban tendency.

²⁸ In addition, Neuman (2005) claims that, as increased choice and opportunity is one of the important features of the compact city, it depends on size more than density.

²⁹ Urban sprawl and greenfield development require the construction and extension of infrastructure and utilities, while infill development can achieve economies of scale through using and reinforcing existing facilities and services, and this can also result in tax reductions (Newman, 1992).

increase in population, increase in the mix of uses, and increase in development related to urban structure (Burton, 2002). These will be examined in the following paragraphs.

Densification of population through re-urbanisation is required to reverse or mitigate the recent counter-urbanisation trend, which has caused the deterioration of inner city areas. The rich have moved from the city centres to the peripheries, partly due to the transformation of industrial structure, employment, and services. Along with this, local facilities and large stores also have relocated to suburban areas, to which the poor left in the abandoned inner cities cannot access without cars (Elkin et al., 1991). The re-urbanisation argument has an implication for social equity. There are many people suffering from the results of counter-urbanisation, particularly women. Even rich women in the suburbs are isolated from the social interaction they need because of limited access to transport (Haughton and Hunter, 1994). For densification, policies to provide more dwelling units in inner city areas, such as the subdivision and conversion of existing buildings, are suggested.³⁰ However, as it has been caused by structural economic change, the problem cannot be solved simply by physical planning, and diverse economic and social policies are also needed to be considered.

Compact and Mixed-use Development

As for the compaction process in relation to urban structure, various types of development may be considered: development in existing urban areas and in the suburbs; mixed-use development; and development concentrated on subcentres and

³⁰ In the UK context, such policies have been supported: the 'living over the shop' initiative (LPAC, 1998; Urban Task Force, 1999); and transforming superfluous commercial and industrial property into residential buildings (Barlow, 1994; Urban Task Force, 1999).

nodes. 'Built-form intensification', which is development on previously urbanised sites, is suggested for the reuse of urban land, and is supported in the policies of most countries (Burton, 2002), such as in the development of unused open land (Lock, 1995) and higher-density redevelopment. It has been strongly supported in UK policies (DETR, 1998b) in order to conserve rural open land and revive urban areas.³¹ Development in the suburbs is also advocated for the same reason. In the US, an urbanism slogan, 'walkable urban villages', has been promoted in the suburbs (Southworth, 1997). The UK Urban Task Force (1999) points out that small-scale intensification in the suburbs can be more practical, while the restructuring of built forms may well face local resistance.

In designing housing forms, medium and high-density consolidation is suggested, particularly in infill residential development, including various housing types such as apartments, terraced houses, and town houses (Minnery, 1992). It is suggested that new development should accommodate traditional street patterns and dwelling forms, while raising densities (Llewelyn-Davies, 1994; Burton, 2002) and cutting car-parking space (Urban Task Force, 1999). For the mix of uses in new development, commercial use such as stores and recreational facilities is recommended in locations near existing residential areas (DETR, 1999).

³¹ The UK government put forward an objective of brownfield development to raise the proportion of new dwellings constructed on existing developed sites to 60% (DETR, 1998b), which was one of the major indicators of sustainability at that time (DETR, 1999).

Development Concentrated on Transport Nodes and Urban Structure

Densification in subcentres or transport nodes is supported by the transport argument, which contends that development concentrated on specific areas is more beneficial than overall densification. Hall (1991) criticises Newman and Kenworthy's research (1989a; 1989b), pointing out that travel distances and transport modes are associated with urban structure more than urban density. Brotchie (1992) maintains that urban journey times rise in cities with uniform densities and concentrated employment, while they decrease in cities with multiple subcentres.³²

The compact city tends to be seen as a monocentric urban structure, in contrast to decentralization (Breheny, 1995; Gordon and Richardson, 1997; Bertaud and Malpezzi, 1998). However, in reality, the majority of metropolitan cities have polycentric urban structures. Large cities, particularly megacities, cannot pursue a monocentric compact city strategy, and if they did, this would create significant negative situations, such as congestion and pollution; so, a polycentric compact city strategy is a realistic choice (OECD, 2012). A polycentric large city can be a compact city, if it shares the elements of the compact city, and the city centres and subcentres are not widely dispersed and are connected by transport systems (Anderson et al., 1996; OECD, 2012).

³² Furthermore, clustering journey destinations gives a positive boost to public transport (Barrett, 1996), though it occasionally causes long journeys (Thompson, 1977).

Comparison between the Compact City and Urban Sprawl Characteristics

To sum up, the characteristics of the compact city and urban sprawl are compared in Table 3.4. The report of Burchell et al. (1998) resulted from an analysis of 475 studies on urban sprawl. The top three characteristics of urban sprawl are contrasted with the three basic elements of the compact city. This will be used as a criterion for this study. In addition, though this table does not include the elements related to urban size, size may be also an important variable (Dempsey and Jenk, 2010).

Table 3.4 The Characteristics of the Compact City and Urban Sprawl

Source: Neuman (2005) and Burchell et al. (1998)

Compact City Characteristics	Urban Sprawl Characteristics
<ol style="list-style-type: none"> 1. High residential and employment densities 2. Mixture of land uses 3. Fine-grained land use (proximity of varied uses and relatively small land parcels) 4. Increased social and economic interactions 5. Contiguous development (some parcels or structures may be vacant or abandoned or used for surface parking) 6. Contained urban development, demarcated by legible limits 7. Urban infrastructure, especially sewerage and water mains 8. Multimodal transportation 9. High degree of accessibility: local / regional 10. High degree of street connectivity (internal/ external), including sidewalks and bicycle lanes 11. High degree of impervious surface coverage 12. Low proportion of open space 13. Unitary control of planning of land development, or closely coordinated control 14. Sufficient government fiscal capacity to finance urban facilities and infrastructure 	<ol style="list-style-type: none"> 1. Low residential density 2. Unlimited outward extension of new development 3. Spatial segregation of different types of land uses through zoning 4. Leapfrog development 5. No centralized ownership of land or planning of land development 6. All transportation dominated by privately owned motor vehicles 7. Fragmentation of governance authority over land use between many local governments 8. Great variations in the fiscal capacity of local governments 9. Widespread commercial strip development along major roadways 10. Major reliance on a filtering or ‘trickle-down’ process to provide housing for low-income households

3.4 Other Proposals for Sustainable Urban Form and Land Use

The above section examined the key elements of the compact city. This section will review other proposals for sustainable urban form. ‘Compact city’ as a city level term is different from ‘compact urban development’ which applies to a development project mainly on a neighbourhood scale (OECD, 2012; UN-Habitat, 2009). The following are practical proposals for compact urban development. These are expected to have implications for a compact city strategy that is fit for individual development projects and incremental changes in existing cities.

3.4.1 Urban Village

Over the past decades two practical approaches to the search for desirable urban form have been attempted on the two sides of the Atlantic: the Urban Village in the UK (Urban Villages Group, 1992) and the New Urbanism in the US (Mohny and Easterling, 1991).

Figure 3.1 Poundbury Village in UK Initiated by Prince Charles

Source: <http://www.poundbury.info/>, <http://www.adamarchitecture.com/projects/residential-development>



Note: Planned population: 5,000 persons, population density: 70 persons/ha

The urban village concept stimulated by the Prince of Wales and developed by the Urban Village Group (later the Urban Village Forum), was widely implemented in the UK through the 1990s (Biddulph et al., 2003; Thompson-Fawcett, 2000).³³ The urban village principles include not only high-density mixed-use development based on traditional neighbourhood planning, but also: a social mix, with diverse tenures, a strong sense of locality, and active involvement of residents in the development process (Aldous 1992; 1995). However, the level of participation is not one where the public are asked to design the village, but one where communication makes them feel they are helping to shape the development (Aldous, 1992: 40).

As for size, the planned population was under 5,000 persons in 27 out of the 39 projects surveyed in Biddulph et al. (2003), while the planned density was under 59 dwellings per hectare in 24 out of 30 villages. For self-sufficiency, Aldous (1992: 30) suggests ‘a theoretical one-to-one ratio between jobs and residents’ as an aim. ‘Small but abundant’ open space throughout the village is advocated (Thompson-Fawcett, 2000). Urban village principles also stress the organic nature of community-building, rejecting monocultural planning. It is pointed out that overemphasis on self-sufficiency and social intimacy within a small community might cause exclusivity which would work against the entry of non-residents.

³³ Biddulph et al. (2003) identify 55 developments called urban villages through a survey of UK local authorities, though some cases showed considerable deviations from the principles of the urban village. One of the reasons for the remarkable popularity of urban villages in Britain was support from planning policies, including the recommendation of the PPG 1 (DoE, 1997) and funding (Biddulph et al., 2003).

3.4.2 New Urbanism

The New Urbanism, led by urban designers such as Andres Duany, has emerged as an alternative development model to the suburban sprawl and zoning system in the US, along with other compact development proposals such as Transit-Oriented Development and Smart Growth (Krier, 1998; Duany, Plater-Zyberk and Speck, 2001). The New Urbanism, like the Urban Village, advocates a neo-traditional urban design with mixed land use, favouring the mixing of high and low-income earners and rejecting the strict zoning system that has caused the bleakness, inconvenience and inefficiency of urban life (Levy, 2003).

The suggestions of the Congress for the New Urbanism (CNU), founded in 1993, include: the arrangement of necessary urban amenities within a five-minute walk, generally within a quarter to half mile, in order to maximise convenience by making them easily accessible on foot or by transport; higher residential density, which is more than 15-17 dwellings per hectare; urban locations framed by architecture and landscape that celebrates the locality; active community involvement and socio-cultural diversity; and coherent regional planning (CNU, 2001). Now, hundreds of new towns, villages, neighborhoods and infill developments in the US claim to have followed new urbanist principles.³⁴ However, the design-prioritising attitude of the New Urbanism has been criticised for neglecting the political process of planning (Owens and Cowell, 2002).

³⁴ The movement of 'making our liveable communities' in Korea is known to have been influenced by the New Urbanism (MLTM, 2010b).

3.4.3 Other Physical Models for Sustainable Urban Form

Newman and Kenworthy (1999), as a result of reviewing various types of cities in history, characterise the ‘postmodern sustainable city’ as a high-density city based on walking, cycling and public transport systems, linked with medium and low-density villages by transit, where car use is supplementary, not basic. The physical models suggested for sustainable urban form are diverse, as summarised in Table 3.5.³⁵

Table 3.5 Other Physical Models for Sustainable Urban Form

Model	Advocators	Main Features
Traditional Neighbourhood Development (TND)	Andres Duany and Elizabeth Plater-Zyberk (1991)	stress on a traditional design style
Transit-Oriented Development (TOD)	Peter Calthorpe (1993)	a physical model based on new urbanism
The Urban Task Force model	Richard Rogers (1999)	‘urban renaissance’ through urban regeneration
Frey’s model	Frey (1999)	a micro and macro structure of the sustainable city through spatial hierarchy
Sustainable Urban Matrix model	Hasic (2000)	consolidating apartment block housing units
Ravetz’s model	Ravetz (2000)	sustainable urban form in a city-region as a dynamic physical change in interaction with economic and social factors

Apart from those who criticize these models for their failure both to provide participation and to explain how benefits are brought about (Rydin, 1999), some people point out that they are too utopian and too based on nostalgia for the past to address current urban problems. Though the ideas carry important values aimed at future

³⁵ Among them, Calthorpe’s (1993) TOD model gains particular attention. It too emphasises streets for pedestrians and transport systems within cities and inter-city villages; and, furthermore, it advocates regional planning to encompass the problems of decaying inner cities and dispersed suburbs, and proposes charging impact fees on developers or landowners for transportation investment costs. The TOD design also aims to create a high-density mixed-use town that has pedestrian access to the necessary urban services and facilities. This model, similarly to other proposals, seeks to intensify development within a radius of about 400-800 meters of the commercial core near a transit station, and suggests a residential density of 25-64 (44 on average) dwellings per hectare.

development, it has been questioned whether these are adequate for contemporary urban situation exposed to global competition, and thus whether they can be selected by populations as a dominant urban form, particularly in developing countries where the majority of people are tied to the workplace.

3.5 Appraisal of the Compact City

The benefits that have been argued for the compact city are summarised in Table 3.6. The table shows that the compact city has been supported as meeting the diverse perspectives of sustainable development.

Table 3.6 Benefits of the Compact City

Source: Newman and Kenworthy (1989b), CEC (1990), Elkin et al. (1991), Breheny (1992), Williams et al. (2000), Burton (2002), Dempsey (2010), and OECD (2012).

Perspectives	Benefits
Environmental benefits	reduction of car travel and promotion of public transport and walking and cycling, and, hence, low fuel emissions and greenhouse gases, and low energy consumption, contributing to reducing pollution and mitigating global warming
	conservation of greenfield sites
Social benefits	increased accessibility to local facilities and services
	more opportunities for social interaction
	a feeling of safety in 'eyes on the street' (Jacobs, 1962)
Economic benefits	more efficient use of infrastructure and developed land; low transport expenditure and heating costs
	revitalisation of rundown urban centres; provision of space for enhanced business and economic activity
Quality of life benefits	incorporation of positive changes, such as taking moderate exercise, into individual lifestyle, and, thus, improved quality of life

However, some argue that the compact city proposal is excessively romantic and the effects are exaggerated (Breheny, 1996; Neuman, 2005). For example, it is pointed out that people do not feel safe simply because they live in a high-density area (Bramley et al., 2009). Though knowledge of urban form continuously grows, the debate around the compact city has still not reached a conclusion (Dempsey, 2010). This section will evaluate the compact city argument in terms of the principles of sustainable development which were set out in Chapter 2: principles concerning the environment, the economy, society, quality of life, and the democratic process.

Prior to this, a trend of urban dispersion is examined. Current urban dispersion gives rise to fundamental questions: whether the trend towards dispersion will continue, and how strong it is; what the reasons for it are; and, if it is people's choice, whether it can be reversed by policies. Rapid urban dispersion has been a feature in most developed Western countries,³⁶ including Australia, and even Japan, since the Second World War (Breheny, 1996), whilst it started in the US before then.³⁷ In European countries, the expansion of small towns and villages as well as the suburbanisation of large cities has been observed, and this is called 'counter-urbanisation' (ibid). If this trend should change, a question remains: to what extent can policies bring about changes in the face of other substantial forces? If it is possible, side effects such as political and economic

³⁶ The trend towards decentralisation has been solid also in the UK: through the 1980s, employment decreased most in old industrial cities and increased most in rural areas; and during that period as a whole, 1.2 million people moved into rural and semi-rural areas (Breheny, 1996). Such an 'exodus from the city' in the UK for the 50 years after the Second World War reveals a trend towards extensification rather than intensification, and is basically the result of individual choices (Welbank, 1996).

³⁷ Urban sprawl is most typically observed in US cities (Schneider and Woodcock (2008) where suburban and rural areas depend heavily on cars and are generally not connected by public transports (Dunham-Jones and Williamson, 2008). On the other hand, urban dispersion in the US reveals diverse patterns, including: 'edge cities' which are new concentrations in suburban areas (Garreau, 1991), and 'post-suburbia' which shows a mixture of the land uses of a city and suburb in extended and polycentric metropolitan areas, for example, Los Angeles (Phelps et al., 2009).

costs should be considered. Taking account of these factors, incremental approaches to the compact city will inevitably be chosen over sweeping regulation and development.

3.5.1 Environmental Benefits

Compactionists argue that the compact city reduces energy consumption and minimises loss of land. The former is the key argument for the compact city, which triggered the compact city debate; and the latter is conventional wisdom. There is a two-step logic in the former argument: first, the effects of urban density and size reduce car travel; and, second, the impact of this decreases energy consumption (Newman and Kenworthy, 1989a). Table 3.7 is a list of empirical studies and their main findings. The top three research studies show results favourable to the compact city, while the others present sceptical or negative attitudes.

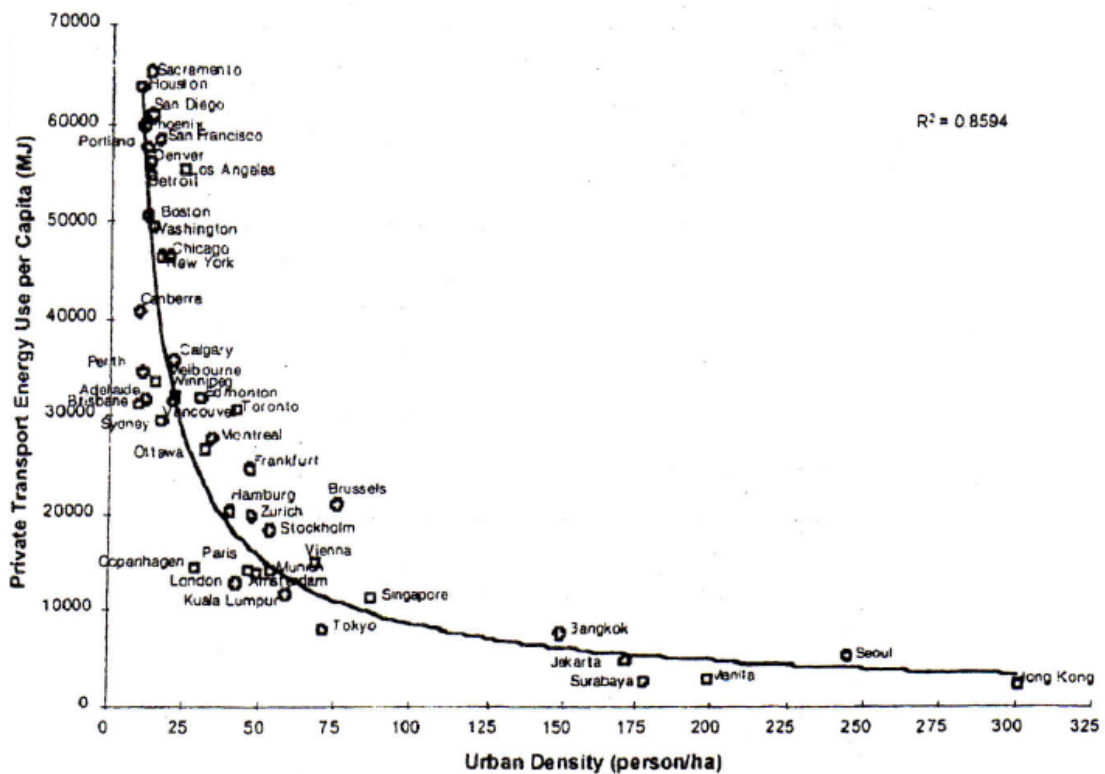
Table 3.7 Studies on the Environmental Effects of Compact Urban Form

Researchers (year)	Main Findings
Newman and Kenworthy (1989a; 1989b)	Higher densities are strongly correlated with energy consumption through car travel in large cities worldwide.
UK ECOTEC (1993)	Population densities are negatively correlated with car travel distances in the UK.
Duhham-Jones and Williamson (2008)	Car travel distances in the suburbs are twice the average for the US.
Gomez-Ibanez (1991)	Along with density, income and gasoline price are also significant variables for car travel, and these variables interact with each other.
Gordon and Richardson (1997)	Compact policy is inefficient due to the enormous costs required for public transport systems in the US.
Breheny, Gordon and Archer (1998)	There is a weak relationship between density and energy use for transport.
Bouwman (2000)	Differences in urbanization are irrelevant to energy use for transport in the Netherlands.
Williams, Burton and Jenks (2000)	Other variables as well as urban form also have a complex influence on travel behaviour.

Neuman (2005)	Overall energy consumption and quality of air is more important than just car travel.
Gaigne et al. (2010)	Monocentric urban structure is inferior to polycentric or dispersed urban structure in terms of pollution.
Ferreira and Batey (2011)	Compact policy causes traffic congestion and increases travel times. Travel times are also important to quality of life.

Figure 3.2 Private Transport Energy Use and Urban Densities

Source: Newman and Kenworthy (1989b)



Newman and Kenworthy (1989a; 1989b) find that higher population densities are consistently correlated with lower petroleum consumption per capita in large cities worldwide, as confirmed in their Figure 3.2. The UK ECOTEC (1993) empirical results suggest that car travel distances in the least dense areas are twice those in the densest areas, and the differences in car travel distances account for most of the differences in total travel distances. At that time, the transport sector represented a third of energy consumption, and this figure was increasing rapidly (Hillman, 1996). As transport was

the fastest growing cause of carbon dioxide emissions, it was argued that higher density could contribute to the state of the environment through a shift in transport modes. Conversely, urban sprawl is claimed to exacerbate transport problems persistently (Herskowitz, 1992).

Criticisms of the Argument for Transport Energy Benefits

Criticisms of this argument are made from various angles. A methodological criticism of the research of Newman and Kenworthy has been that it rests excessively on one variable: density. Gomez-Ibanez (1991) points out that household income and gasoline prices are also significant determinants of energy consumption, and, further, that the relationship between income and density makes it difficult to clarify the relationship between density and fuel consumption.

Richardson and Gordon (1993), as free-marketeers and dispersionists, believe that the market mechanism will produce an efficient polycentric urban form as the optimum solution to minimise energy consumption and congestion, and they present empirical data which show that commuting distances in the US are decreasing despite continuing dispersion. They also claim that public transport systems require enormous subsidies and so are not efficient,³⁸ which may be persuasive in the US context where investment costs for public transport are immense, due to the suburbanised urban form. Levinson and Kumar (1994) show that travel times are stable, which may also be a factor making it plausible to assume 'rational locators'. Ferreira and Batey (2011), having carried out

³⁸ Research shows that it is difficult to support efficient public transport in cities where densities are lower than 30 persons per hectare (UN-Habitat, 2009).

simulations of large cities, conclude that the compact city approach increases travel times by aggravating urban congestion, arguing that time is more valuable than distance nowadays (Levinson and Kanchi, 2002).

Compactionists need to answer the concerns of their opponents on congestion, pollution, and damage to urban green space which may cause environmental loss and a lower quality of life. Melia et al. (2011) point to 'the paradox of intensification', which means that urban densification may contribute to the global environment but may, at the same time, exacerbate problems in the local environment by concentrating traffic in smaller areas and causing congestion.

To sum up, the causal relationship between higher density and reduced automobile travel is still inconclusive (Williams et al., 2000). In fact, travel demands are affected by many factors besides density, such as socio-economic variables and individual lifestyle preferences. In order to determine policies, the expected environmental benefits should be compared with other effects on quality of life, as well as economic costs, caused by the restrictions involved in a compact city approach. Breheny (1995) and O'Toole (2009) anticipate that there will remain no net environmental benefits when setting small savings in energy consumption against the immense discomfort caused by the compact policy.

In addition, Neuman (2005) points out that other sectors may be more significant than the transport sector for energy savings. The transport sector accounted for 27% of total energy consumption in the US in 2000, an increase of 3% from 1950, while the building sector consumed 38% of total energy, a percentage that had risen by 29% during the

same period (US Energy Information Agency, 2002). As regards building form, it was reported that detached houses require as much as three times the energy which was used in equivalent sized flats (Owens, 1992).

3.5.2 Economic Effects

Urban compaction has two types of effect from an economic perspective: cost saving in public services; and the provision of a milieu for economic activities, for which the argument was found in Jane Jacobs (1969). The maintenance and improvement costs of public facilities and services per resident decrease, in general, when population density increases, as explained by the economies of scale (OECD, 2012).³⁹ Additionally, as for transport expenditure, urbanising the suburbs could noticeably lower the expenditures of households on transport, considering the fact that travel distances in the suburbs are double the average for the US⁴⁰ (Dunham-Jones and Williamson, 2008). Also, considerable gains from Urban Growth Management in the US context are generated from land that is less exploited, as well as from more efficiently built and operated infrastructure (Burchell et al., 1998). In general, sprawl is evaluated to cost more than compact development in terms of its capital costs and operating costs (Burchell and Adelaja, 1992; Burchell et al., 2002).

In relation to the effect of a dense city on economic prosperity, which is frequently called economies of agglomeration, recent research has focused on the service economy,

³⁹ For example, decentralised energy sources such as ‘combined heat and power (CHP) plants’ are thought to reduce transmission losses and raise energy conversion efficiency; but they are also viable when they are operated in high density areas (Kellett, 2007).

⁴⁰ Residents in Atlanta spent 29% of their income on ‘housing’ and 32% on ‘transport’ in 2005 (Dunham-Jones and Williamson, 2008).

which has greater importance in the developed countries. As the service industry is characterised by no inventory and the concurrency of production and consumption, density of demand plays a crucially positive role in its productivity, which is called ‘economies of density’ (Morikawa, 2011).⁴¹

On the other hand, free-marketeters claim that compaction policies stem the natural decentralisation trends through which market forces seek solutions (Gordon and Richardson, 1989). Breheny et al. (1996) explain that the private sector, including property owners and developers, opposes compaction policies, and thus local authorities cannot, therefore, maintain such policies. Free-market economics, furthermore, argues that policy interventions simply increase the price of land and housing, including rents, and therefore deprive low-income earners of the opportunity to enter new communities and to build up their assets. We shall return to the social implications of compact policies in the next sub-section.

3.5.3 Social Equity Issues

Social sustainability is divided into two categories: ‘social equity’ and ‘sustainability of community’ (Bramley et al., 2009).

‘Social equity’ includes access to services and opportunities, while ‘sustainability of communities’ includes various sub-dimensions such as attachment to the neighbourhood, social interaction and safety within the neighbourhood, perceived quality of the local environment, satisfaction with the home, stability, and participation in collective civic activities (Dave, 2011: 190).

⁴¹ Morikawa’s study (2011) on the productivity of selected service industries shows that this rises by 7-15% when population density is doubled.

Access to Facilities and Services

Social equity issues are examined in this section, while sustainability of communities is addressed in the next section with regard to quality of life. Bramley and Power's study (2009) shows that access to local services⁴² is positively related to density and associated housing types, even when socio-demographic factors are controlled. Thus, better access to local facilities and services is raised as another merit of the compact city. Further, it is pointed out that lack of access to public services isolates poor, disabled and aged people to whom private cars are not available. Older women in suburban and rural areas whose children have left home are a case in point (Haughton and Hunter, 1994).⁴³ Cullingworth and Nadin (2006) show that out-of-town retail parks have not only undermined the vitality of city centres, but are also socially unjust in that they advantage car owners. In this sense, the compact city is seen to improve the livelihoods of the urban poor and reduce social segregation (UN-Habitat, 2009).

However, this argument is not always supported. Burton (2002) concludes that social equity, as measured by 44 indicators, has a limited relationship with urban compactness. Further, Rérat (2012) shows that real regeneration projects for the compact city are frequently seen to be socially selective in that they hinder affordability through gentrification.

⁴² Among local services, they focus on access to shops and health care services rather than jobs and affordable housing (Bramley and Power, 2009).

⁴³ This will deepen with urban dispersion and 'no kids' in outer urban areas. For example, two-thirds of households in suburbia did not have children in the US in 2000 and the figure is rapidly increasing (Dunham-Jones and Williamson, 2008).

Social Implications of the Compact City Approach

Conserving the open countryside may be associated with improvement in the quality of life of suburban and rural residents and a decline in the quality of life of urban residents (Breheny, 1996), which may deepen distributional inequity, given existing disparities between the two in income and wealth. The Council for the Protection of Rural England (CPRE; the Campaign to Protect Rural England since 2003), one of the most solid supporters of the compact city, has claimed that greenfield development for new housings will result in an environmental tragedy (1992; 1993).⁴⁴

Breheny (1996) cynically mentions that if densification were achievable under the condition of low car ownership, measures for it would result in higher densities in poor areas, even though they might contribute to providing less expensive dwellings. Sudjic (1992) anticipates that any policy to contain suburban development which neglects the fact that suburban life has already been made a dominant trend by people who can afford it would just raise the price of suburban houses. This would increase the profits of suburban residents, who are already comparatively richer than the residents left in urban centres.

A mix of households by income is regarded as a condition for enlarging advantages from the compact city, along with efficient public transport (Urban Task Force, 1999). However, O'Toole claims that in the US compaction policies are used as a hidden tool for purposes that are the opposite of these (2009):

⁴⁴ In this regard, Llewelyn-Davies (1994) recommends urban intensification in order to protect precious countryside from new housing.

No one complained about sprawl when suburbs were occupied solely by upper and middle classes. It was only when working-class families moved to the suburbs that critics proposed to force them into compact developments.

These arguments suggest that the social implications of the compact city should be considered more carefully.

3.5.4 Quality of Life Perspective

In contemporary debates on the compact city, compactionists have argued that it can contribute to the improvement of individual lifestyle and quality of life, even through the prevention of obesity, and, further, through safety and reduced crime rates. The EC CEC paper (1990) declares that containment policies will produce a high quality of life as well as environmental benefits. Though such a Jane Jacobs-type argument is occasionally disparaged as being too 'romantic and naive' (Breheny, 1996), cultural diversity in cities and the aesthetics of urbanity have become an important issue in academia and policy-making (Haughton and Hunter, 1994).⁴⁵ Urban villages and free-standing new settlements in the UK, and the New Urbanism in the US, have emphasised quality of life and social interaction in a community. These requisites of urban diversity and vitality have been regarded as achievable in the mixed use of urban areas.

⁴⁵ The quality of life and cultural aspects of a compact city are expressed in various figurative forms: Yanarella and Levine's aspirations for the 'Italian hill town' (1992); Richard Rogers' 'pavement-cafe' view of urban life (1997); and Thomas and Cousins' 'dense medieval city image in the hubbub of daily activities' (1996).

Dispersionists' Views: Individual Lifestyles, Privacy, and Mobility

However, this argument has been called into question by dispersion-liberalists, who are called good-lifers. Some of these have an anarchist tendency that can be traced to Kropotkin; but the majority lay stress on traditional 'rural values' (Breheny, 1996). They dislike planned cities and favour dispersed communities as retaining these values. Breheny (1996) and Hall (2001) explain that the majority of people in the UK would be satisfied with the lifestyle of low density areas, though some people would choose high-density living for some reasons such as income restraints or job opportunities in urban centres. These explanations have factual backing, but they tend to be blamed as having shrunk a structural problem to one of individual selection. However, these aspirations of residents, dispersion of work, and market forces towards sprawl have made a strong counter-argument against the compact city (UN-Habitat, 2009; Dubois and van Criekingen, 2005 in Rérat, 2012).

The demerits of the compact city in relation to the quality of life have been explained from diverse aspects. A survey by Garcia and Riera (2003) shows that residents perceive well-being as increasing with low densities and more open space. Further, Neuman (2005) reminds us that modern planning started as an effort to overcome the overcrowding of the compact urban form in industrial cities through providing more light and fresh air. Research by Lindsay et al. (2010) on privacy by housing types shows that flats are inferior to houses on larger plots in terms of noise from neighbours and being overlooked.

Another argument against the compact city is the reinterpretation of mobility. Recent researchers have regarded mobility as a valuable aspect of improved quality of life in contemporary times, because of its association with access to opportunities (Hanson, 2006). From this point of view, it is difficult to find a consensus on the compact city's approach to minimising travel distances (Ferreira and Batey, 2011).⁴⁶

Suggestions for Designing a Preferred Compact Urban Form

Scoffham and Vale (1996) suggest that the overcrowding which people feel in a city refers to intensity, such as built-up urbanity, rather than to a quantitative density itself. Howley et al.'s study (2009) on liveability also shows that high density per se is not the cause of neighbourhood dissatisfaction, but other factors, such as pollution and congestion, affected this. These studies indicate the importance of built form design.

In the UK, it has been accepted that a compact city can be achieved through traditional street patterns and housing forms, providing 'each dwelling with its own front door onto a public street and a garden' (Burton, 2002: Urban Task Force, 1999). Elkin et al. (1991) advocate pedestrian compact cities, emphasising the values of traditional streets as meeting places and children's play spaces. Traditional street patterns and urban villages are recognised as delivering conditions for social interaction and community activities (Burton, 2002).

⁴⁶ O'Toole (2009) claims that mobility is a fundamental component of the American Dream, and a proposal to suggest mobility reduction is recognised as the same as a proposal to suggest restrictions on freedom of speech or freedom of religion.

The importance of incorporating better design into compact urban development has been repeatedly emphasised in relevant literature, such as Raman's study (2010) on design for social interaction in a neighbourhood and Lindsay et al.'s study (2010) on design for privacy at the individual dwelling scale.

Compact Urban Form and Neighbourhood Relationships

Raman (2010) shows that high density promotes strong relationships with a few neighbours, while low density is connected to weak relationships but a wider social network, because residents in high-density areas are inclined to strong associations in compensation for their spatial segregation. The findings by Bramley and Power (2009) show that density and associated housing types have negative effects on the sustainability of community measured by area dissatisfaction and neighbourhood problems such as crime.⁴⁷ This result contrasts with the view of the compact city as a 'community-oriented social pattern' (Katz, 1994).

Foord (2010) points out, as a result of a case study, that compact mixed-use urban locations favour transient residents with high consumption lifestyles rather than long-term residents, and most residents of these locations have to tolerate negative features such as uncertain street life, limited open space, and low levels of community cohesion. Contrarily, the CEC *Green Paper* (1990) cites social cohesion as another merit of the compact city. In this connection, Welbank (1996) interprets the considerable migrations from cities into smaller towns and rural areas in the UK as meaning that the merits of social cohesion do not surpass the advantage of living in low-density areas.

⁴⁷ However, the effects of socio-demographic variables such as the concentration of poverty and social renting are larger than those of the above variables (Bramley and Power, 2009).

To conclude, although compactionists have argued that the compact city is compatible with a high quality of urban life, and is socially sustainable, they have still not explained fully the inclination of the majority of people to choose suburban life. To deal with this, much of the literature has advocated better design in high-density residential development.

3.5.5 Participatory Process in the Compact City Approach

The proponents of the compact city have rarely described in detail the participatory process of transformation into compact urban form, while its opponents have pointed out its undemocratic nature. Landecker (1996) raises a question concerning the new urbanists' claim about the creation of a sense of community, and points out that they believe that new design can change human behaviours, as the modernists did. Sieverts (2003) affirms that the compact city can be promoted only in undemocratic countries. Lombardi et al. (2011) point out that the proposals so far put forward in favour of the compact urban form are limited to staying within the status quo or technical fix approach of neo-liberal governance, ignoring the political and socio-cultural contexts.

Homogeneity in new urbanist towns is also criticised by Pyatok (2002). Durack (2001) opposes the inflexibility of completely planned regulations, asserting the advantages of indeterminate planning which retains cultural diversity, wider and continuous citizen participation, and resilient adaptation. These are tasks to be solved by the compact city approach.

3.5.6 The Feasibility and Acceptability of the Compact City

Another task for the compact city is the feasibility of the compact city in practice and its acceptability to participants. The problem of feasibility is about the real possibility of reversing the current trend towards suburbanisation which has been selected by people voting with their feet. The greatest independent variable of the trend has been structural economic change, which has coincided with this trend in many Western countries over decades (Cullingworth and Nadin, 2006). Therefore, if it is impractical to return to industries and jobs in the middle of cities, it may be impossible to reverse the urban dispersion (Breheny, 1997). UN-Habitat (2009) points out that it is difficult to deliver greater compaction in low-density cities because cities are ‘path dependent’ in their urban forms and land uses. In the UK context, compact brownfield development has met with technical, legal and financial difficulties in the majority of cases, with suitable locations being difficult to find and enormous subsidies being required from government; and, therefore, greenfield development has been inevitable (Hall, 2001; Breheny, 1997).⁴⁸ Thus, the difficulties became political issues requiring financial assistance from central government, but there is scepticism in many Western countries, considering the current financial limits and policy priorities.

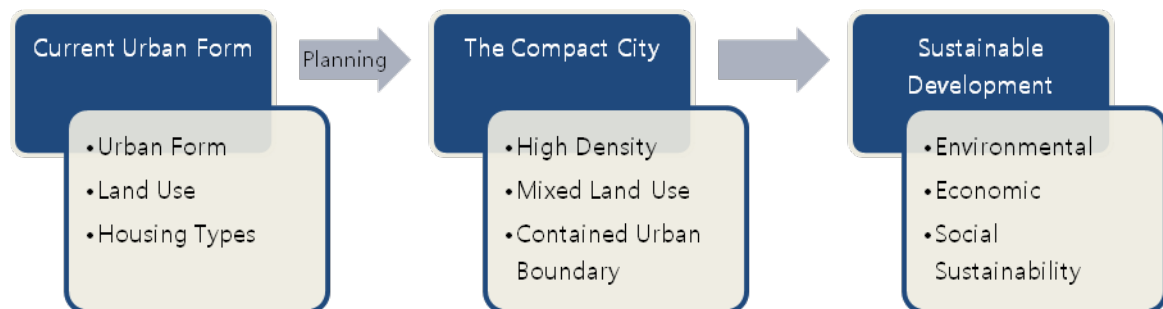
The next question is whether local government and residents will accept urban compaction. A survey shows an order in residential preferences, going from rural as most-preferred, to suburban, and to urban areas as least-preferred (Hedges and Clemens, 1994). Though compactionists admit the push effects of deteriorating and poorly

⁴⁸ The 60% target for new dwellings built on brownfield land was maintained by Planning Policy Statement (PPS) 3 in 2006. However, the stance of the present Coalition Government on it in the National Planning Policy Framework (NPPF) in 2012 (replacing PPSs and PPGs) was criticised almost as the abandonment of the policy by many environmental groups such as CPRE.

managed cities, they underrate the pull of employment and quality of life in the outer urban areas (Breheny, 1997; Williams et al., 2010). In order to reverse people's preferences, attractions such as better job opportunities, schools, hospitals, leisure facilities, and, most importantly, people with positive externalities, should be provided and brought back into inner cities. If it is difficult to induce local communities and residents to choose urban compaction, it may be impossible to make local authorities accept active policy measures to promote the compact city (Breheny, 1997).

3.5.7 Overall Appraisal of the Compact City

Figure 3.3 The Compact City and the Goals of Sustainable Development



The aspiration of the compact city to provide sustainable development is illustrated in Figure 3.3. However, measuring the full impact of the various elements of the compact city on sustainability is extremely difficult (Dempsey and Jenks, 2010). Particularly, the compact city has stimulated many criticisms which have still not been answered, such as the problems of liveability and participatory governance. Wiersinga (1997) points out 'the compact city paradox' between urban desirability and suburban liveability. Though the compact city has been claimed as a more sustainable urban form (Jenks and Burgess, 2000; Beatley, 1995), urban functions and populations have clearly been dispersed to

create low density areas in order to achieve liveability in the US⁴⁹ (Neuman, 2005). Further, a question is raised as to whether the compact city is a healthy city. Neuman (2005) asserts that many high-density urban centres, once they go beyond optimal densities, cause diseconomies of scale, excessive consumption of materials, diseases, and pollution. Some are concerned about lack of green space in the compact city (Burton, 2000), calling such cities ‘the antithesis of a green city’ (Jim, 2004: 312). In this regard, detailed issues of land use will be addressed in the next chapter.

In addition, Neuman (2005), emphasising the importance of a place-specific approach, critically points out that neo-traditional planning is based on a master designer approach which is far from that of the old European cities which featured context-specific design and technology and has gone through evolutionary processes. Thus, Neuman claims, neo-traditional planning tends to bring about segregation in social groups and their land use in reality.

Recent literature on the compact city has repeatedly emphasised the importance of the context-specific approach (UN-Habitat, 2009), which will be examined in detail in the next chapter along with land use issues. Preferences on liveability vary according to regional contexts. In this connection, Rérat (2012) suggests a situation in which the compact city approach is feasible and acceptable: a growing population whose residential aspirations are oriented towards centrality and proximity. The next section will address urban form and land use in the context of developing countries, which will be more relevant to the Korean context.

⁴⁹ Also, there have existed similar preferences and migrations for low-density semi-rural lifestyle in the UK (Dempsey, 2010; Hall, 2001).

3.6 Urban Form and Land Use in Developing Countries

3.6.1 The Importance of Urban Form and Land Use in Developing Countries

This section starts with the question of why urban form and land use in developing countries are important. First, they are important for the conservation of the global environment. In developing countries, contrary to developed countries, growth of population and migration into urban areas are continuing at a high rate in the 21th century.⁵⁰ In the circumstances, if developing countries follow the patterns of urban form and land use found in developed countries, this will produce enormous disasters of the global ecosystem. For example, the population densities of 21 out of 28 large metropolitan areas in the US were below 15 people per hectare in 2009 (OECD, 2012). There has been a consensus that such an urban pattern should not be globalised (UN-Habitat, 2009). As more than two-thirds of the world's population live in developing countries, the worldwide success of policies for sustainable development rely on their applicability to developing countries (Dave, 2010).

The second reason is that today's environmental problems should be considered from a global perspective, due to recent globalisation trends as well as global environmental changes (Burgess, 2000). Furthermore, global environmental cooperation is moving towards positive consideration of international and inter-regional equity, for example, on the issue of uncompensated displacement of environmental burdens onto other countries (Haughton and Hunter, 1994).

⁵⁰ Urban populations in developing countries were expected to increase five times during 50 years, from 809 million in 1975 to four billion in 2025, so the urban populations of them would four times of the one of developed countries in 2025, though the latter was more than the former in 1975 (UNCHS, 1996).

The third reason is that large-scale physical developments such as new settlements are being actively pursued in those countries, including Korea. This situation can be a significant opportunity for the compact city, in comparison with in developed countries, where only piecemeal improvement is possible. However, as developing countries are experiencing rapid socio-economic changes causing enormous economic imbalances and social conflicts, and lack of institutional capacity to tackle such changes, they have many difficulties in promoting sustainable goals.

The following sub-sections will look at the features of urban form and land use in developing countries and examine the applicability of the compact city approach.

3.6.2 Urban Form and Land Use in Developing Countries

This section reviews the features and trends of urban form and land use in developing countries, selectively focusing on Asian cities, and examines relevant policies and development strategies.

General Features

Many large cities, particularly developing Asian cities, display mixed rural-urban characteristics (McGee, 1991). Although suburbanisation differs from country to country; generally there is less of this than in developed countries (Richardson et al., 2000), whilst urban centres still remain compact and vibrant with continuing urbanisation (Douglass, 2000); and the suburbanisation has been associated with low-income groups rather than high income ones (Laquian, 2005). Urban lands are mixed-

use, and city centre densities in developing countries are much higher than their counterparts in developed countries (Richardson et al., 2000).⁵¹

Urban Density

In general, urban densities in developing countries are higher than those in developed countries, particularly in urban centres. Moreover, in spite of diminishing population growth and partial decentralisation, they are not becoming significantly less compact, so density gradients have risen over time (Richardson et al., 2000).⁵² Such density differences between developing and developed countries are affected by a combination of differences in incomes, physical and human resources, urban design, and institutional capacity.⁵³ As for housing forms, it is frequently observed that high-rise apartments are preferred to single family houses (ibid).

Residential densities differ considerably depending on policies. For example, the green belt policy introduced in Korea in 1971 has caused high land prices and high densities in Seoul by reducing urban land (Kim, 1994; Bae, 1998). Cultural factors also affect the amounts of space used and proximity (Burgess, 2000). Roughly, urban densities are

⁵¹ The ratios of city centre densities to suburban densities in developing countries are more than three times those of developed countries, which implies the compactness or slow rate of suburbanisation of developing countries (Richardson et al., 2000).

⁵² Empirically, the density gradient has levelled off with increases in income, population, and the growth of car ownership (Richardson et al., 2000). Cities with dispersed populations are efficient in cases where there is dispersed employment. Whether employment in developing countries is dispersing, as it is in Western countries, differs from country to country (ibid).

⁵³ Among them, the effect of income may be significant (UN-Habitat, 2009), as, by definition, developing and developed countries are divided by it. Malpezzi (1999) shows that the correlation between income (GNP per capita) and house size (floor area per capita) is strongly positive. Meanwhile, the correlation between density and overcrowding is quite weak (the correlation coefficient in core cities is 0.18), and density and household size are not correlated.

highest in Asia, middle-level in Europe, and lowest in North America (Acioly and Davidson, 1996). Environmental factors influencing densities include: the availability of urbanisable land, the fertility of agricultural land, and the availability of water (Burgess, 2000). High densities combined with underdevelopment obviously result in congestion, pollution and unsanitary living conditions.⁵⁴ It has been claimed that densification policies are no longer adequate in cases where high densities are already associated with overcrowding, scarce open green space and environmental degradation (ibid); but UN-Habitat (2009) suggests that densification policies still have benefits in selective locations where housing costs are high and job opportunities are available even in inner cities.

Land Use and Intensification Policy

Urban areas in developing countries already feature: mixed use, easy access to a variety of services, and an abundance and vitality of street life (Burgess, 2000). However, the mixed use of land frequently results from ambiguous land regulations and their weak implementation, shortage of infrastructure, and rapidly increasing car use (Richardson et al., 2000). These characteristics are associated with areas where the informal sector forms a large proportion of the urban economy, and they are commonly combined with overcrowding, congestion, and air and water pollution (UN-Habitat, 2009; Hall and Pfeiffer, 2000).

⁵⁴ High densities on limited land without proper purification systems beyond environmental capacity generate squalor. Dave's studies (2010; 2011) in India show that high density is negatively correlated with mental and physical health, and satisfaction with neighborhood, even if overall appraisal of an area is positive.

Though some compactionists have much appreciated the high-density, mixed-use urban features and the low energy consumption lifestyles of developing countries, these lifestyles and urban activities are mainly caused by a low-income lifestyle (UN-Habitat, 2009; Richardson et al., 2000). What such situations need are not intensification policies, but, rather, policies that re-regulate and formalise them (de Soto, 1992). Intensification policies are, however, relevant in the case of higher income cities in developing countries where dispersion trends have already appeared (Burgess, 2000).

Urban Size and Regional Strategy

Urban size in developing countries has been looked at to analyse the benefits and costs accruing from different sizes (Richardson et al., 2000). Urban size also affects urban structure (Dempsey and Jenks, 2010). Urban populations in developing countries are growing rapidly, particularly in large cities. The number of megacities (with more than 10 million people) is predicted to increase to 26 across the world by 2015, and 22 of these will be in developing countries (Burgess, 2000). The concept of efficient urban size was addressed in the debate on optimum city size in the 1970s, with the concept of agglomeration economies at its centre (Richardson, 1993). At a later point, environmentalists claimed that such large cities were not environmentally sustainable, pointing out the damages in terms of resource use and waste generation, quality of water and air, ecological systems, and human health and safety (Burgess, 2000). As the larger cities are, the larger their ecological footprints are, many megacities have already exhausted the capacity of their environments to support them (Atkinson, 1993).⁵⁵ The

⁵⁵ The OECD report, *Competitive Cities in the Global Economy* (2006), shows that diseconomies of agglomeration emerge when the population of a city exceeds 7.35 million, as a result of comparing 78 cities in OECD nations.

shortage of access to green spaces and decline of agriculture are two other problems, but the impacts on energy consumption and carbon emissions have not been empirically clear (Burgess, 2000). On the other hand, Haughton and Hunter (1994) argue that the growth of cities in itself is not a problem in developing countries: the real problem is a lack of corresponding infrastructure.

It is widely accepted that the most suitable spatial scale for addressing sustainability in terms of urban compaction is at regional and metropolitan region level, beyond that of the individual city, and this has been suggested in regional planning or 'beaded linear cities' (Ziegler, 2009; Hall, 2005). Regional-scale strategy is justified in considering the following: settlements balanced with the natural environment; the correction of spatial distortion from environmental externalities; access to greenery; intra-regional equity in the supply of infrastructure and services; and protection of rural land (Atkinson, 1992). However, recently regional spatial strategy has been difficult to promote, due to neo-liberalism, which emphasises the competitiveness of individual cities in the globalised economy (Burgess, 2000).

Urban Structure and Development Methods

Urban structure is important to attain sustainable results. Burgess (2000) puts urban restructuring strategies into four categories: high-rise high-density redevelopment; concentrated decentralisation; transit-oriented development; and infill redevelopment. The first – modernist high-rise high-density redevelopment – has been in fashion in East and Southeast Asia. The second and third models focus on connection by public transport through polycentric or linear structures. In promoting these strategies, it is

recommended that urban compaction measures should be combined with transport planning and regional environmental policies (Williams et al., 2000).

Among these strategies, infill development has clear limits in developing countries, because urban centres are overcrowded in many cases. And, in developing countries, high-income groups also live in the centre. This makes infill development requiring large public investment socially unacceptable (Burgess, 2000). On the other hand, providing both high density and plentiful open space at the same time is also difficult (Richardson et al., 2000). For this, a solution of high-rise high-density development is suggested. However, such a radical approach is socially and culturally – and thus, politically – unacceptable in many developing countries (ibid). Though the preference of people for high-density living is commonly higher in developing countries, developed country urban lifestyles based on individualism and a low-density housing ideology are quickly spreading into the middle class in developing countries, following globalisation (Burgess, 2000). Also, these restructuring strategies need large financial inputs, but available resources are constrained.

3.6.3 Implications for Sustainable Urban Form and Land Use

Environmental Issues

The transport systems of developing countries' cities are characterised by more various transport modes, high dependence on public transport, and high congestion (Richardson et al., 2000). Motor vehicle ownership is strongly correlated with income (GDP per capita) rather than population density (Dargay and Gately, 1997; Ingram and Liu, 1999).

Dependence on public transport is more closely related to income than density. Thus, low car ownership linked to low income generates high use of transit and non-motorised modes (Richardson et al., 2000). However, high congestion is also frequently observed in developing countries, due to the shortage of road capacity and poor traffic management (Ingram and Liu, 1999). Burgess (2000) emphasises the importance of effective demands for better public transport supported by higher income, and advocates the improvement of public transport systems and road capacity, and economic and social policies to control the demand for cars.

Traffic congestion is aggravated in dense areas. And it pollutes air and damages human health, though the quality of the environment is affected by other factors such as industrial structure and environmental regulations as well as by density. Dave (2010; 2011), in empirical studies in India, has shown that high density has positive relationships with recycling and non-motorised transport, and argues that a high density approach contributes to sustainability in rapidly growing urban areas only if other urban policies, such as proper built form and layout and minimum living space standards, are combined with it. There are still merits in high density: cost reductions in infrastructure and services; economies in waste management (Hardoy and Satterthwaite, 1992); and protection of water resources (Richards et al., 2003). However, these scholars admit that institutional capacity is a primary requirement for these sustainable performances.

Certainly, personal material consumption in developing countries is substantially lower than in developed countries. Roughly, the former is about five per cent of the latter (Richardson et al., 2000). Satterthwaite (1997) appreciates this behaviour, calling it

‘sustainable consumption’. However, this behaviour does not result from compactness, but is caused mainly by low incomes (Richardson et al., 2000).

Economic and Social Issues

The failure of economic development causes deterioration in every aspect of sustainability in developing countries (UNDP, 1992; Satterthwaite, 1999). Therefore, economic and social development and coping with population change are critical issues for achieving sustainable goals. While consumption behaviour in developing countries does not threaten the environment, poverty may be a cause of irremediable damage to the global environment on the supply side, as poor people seek to serve the demands of the world economy.

The concept of sustainable development requires meeting the needs of existing people and those added by population growth and, further, their rising aspirations (Burgess, 2000). In order to allocate more to existing poor people and provide for increases for future generations in developing countries, continuous economic development is essential. Existing poverty hinders careful consideration for the future, and thus hinders sustainability. Sustainability issues in terms of the built environment in developing countries are also different from ones in developed countries (Dave, 2010). In developed countries transport-associated energy consumption has dominated the debates, while in developing countries the following concerns have been discussed as the most important: income-boosting programmes; the availability and affordability of housing; the size of dwellings; the establishment of environmental infrastructure; and

economic and social equity (Satterthwaite, 1998). Equity is also crucial for motivation through equal opportunity.

On the other hand, in some developing countries in the semi-periphery, new 'global settlements' are being promoted with the aim of global competitiveness against the backdrop of neo-liberalism. These implement loose sustainability standards with a deregulation strategy, in order to attract capital (Burgess, 2000).

Another important consideration in urban development is rapidly increasing land prices. Urban densification particularly raises land prices. These work both as an incentive for, and obstacle to, development. Capital gains from rises in land prices become a social issue from the perspective of social equity, particularly in rapidly changing economies. To tackle this problem, various restitution schemes for development gains have been implemented, such as: land sharing, public-private partnership, and the transfer of development rights (Levy, 2003).

In conclusion, Dave (2010) argues that compact development has the potential to deliver sustainable development in fast-growing cities in developing countries if it is combined with: carefully designed built form and an acceptable mix of uses. For this, the following considerations are prioritised: enhancement of institutional capacity to manage such development; upgrading programmes for existing poverty and squalor; and improvement of infrastructure. Also, in developing countries, policies for sustainable urban form depend much on their socio-cultural contexts, and they should consider the preferences of residents for delivering a viable quality of life and responding to the differentiated needs of social groups (UN-Habitat, 2009; Dave, 2010).

3.7 Conclusion

The problem of urban compaction is, ultimately, a problem of degree, and feasibility and acceptability in making the changes needed for sustainability. These requirements will differ from country to country. Haughton and Hunter (1994) suggest that a desirable urban form contributing to the principles for sustainable development should be established, taking into consideration the uniqueness of the society, community, and natural environment. Also, as the conditions of the urban environment continuously change over time, cities are required to be resilient in the face of changing circumstances. This point is more crucial for cities in developing countries, which are experiencing rapid demographic and socio-economic changes (Dave, 2010). The next chapter will look at various policies for sustainable development and planning schemes for achieving compact urban form, along with diverse land use issues.

CHAPTER 4

PLANNING FOR SUSTAINABLE URBAN FORM AND LAND USE

4.1 Introduction

Chapter 3 reviewed urban form which could deliver sustainable development, with the compact city as its focus. This chapter will review planning as a governing instrument for sustainable development. As planning was designed to bring long-term vision to bear on complex and interrelated urban problems, it should be expected to address the issues of sustainability. For this, planning tools which directly regulate urban form and land use will be compared with other policy tools such as economic measures on price and supply. Then, diverse planning issues around land use will be addressed in relation to the compact city. From this review, it will be presented that, in explaining the shaping of an urban form and land use, its cultural context is crucial.

4.2 The Role of Planning

This section examines the role of planning from the perspective of the nature of land, particularly in terms of ‘land use planning’.

The Nature of Land

Planning is generally based on the philosophy that land is different from any other commodity and should be protected (Breheny, 1996). Land differs from other commodities and factors of production in that it is immobile and impossible to produce, and, thus, irreplaceable (O’Sullivan, 2003; Harvey, 2000). Land has a fixed location,

and each area of land is treated quite differently, according to its location (Lee, 2006a). Also, due to its inelasticity of supply, land is vulnerable to the expectations and rent-seeking behaviours of market participants (O'Sullivan, 2003). Speculative demand alone would affect the market, even if there were no substantive demand, in common with other assets. The irreversibility and path-dependence of urban land requires a cautious approach in its development. This nature of land makes it subject to public intervention, not to pure market mechanisms.

The Role of Planning

Institutional and legal system shaping physical urban form and land use (planning system in a broad sense) can be classified as: land system, planning system in a narrow sense, and development management system (Kim, 2008a). Issues associated with land system include: land ownership, real estate prices and development gains.

A strong argument for the role of planning is that it makes possible the provision of public goods and merit goods, such as parks, schools, and social housing, of which market forces do not produce a sufficient number (Galbraith, 1999). However, against this argument some economists suggest that the excessive provision of public goods should be guarded against, because the public sector tends to expand by itself (Samuelson and Nordhaus, 2009). These people argue that urban planning should confine its role to correcting externalities that distort the price mechanism, for example, providing environmental protection by zoning. Furthermore, there is a question as to whether planning should intervene positively in markets in a paternalistic way, against the wishes of stakeholders (Gayer and Rosen, 2010). A similar question is raised as to

whether the compact city should be promoted against the aspirations of the majority of people for suburban life, even though compact city proponents suggest these people would favour compact urban life once they experienced it. At first glance, this approach would seem not to be in accordance with contemporary fragmented democratic society. However, if there is a fallacy of composition in markets (Walker, 1981), in other words, if a sustainable compact city is not delivered through market mechanism, even though many residents want to live in such a city, policy intervention by planning which directly affects urban form and land use is supported.

Planning is also required for social equity. For example, Henry George (1879) argued that as land was not made by humans, but was given by nature, it should be used equitably, and private gains from it should be given back to society. Moreover, he claimed that this measure would be not only equitable but also generate the most efficient results by facilitating productive economic activities.

4.3 Policies for Urban Sustainability

Urban planning is, by definition, a forward-looking activity (planning) based on a place (urban), and, thus, pursues a combination of objectives based in space and time. Therefore, planning fundamentally cannot help considering sustainability on a time axis, along with spatial objects and tools. However, planning as a policy should be compared with other policies with respect to the appropriateness and effects of them on the market and society.

4.3.1 The Classification of Policies for Urban Sustainability

Policies for sustainability include not only planning policies, but also other policies. Nor is the division between such policies absolute, especially after the establishment of a spatial planning system in the UK Planning and Compulsory Purchase Act of 2004⁵⁶, which embraces a much broader range of issues, such as energy policy (Morphet, 2011). However, for the purposes of comparison, policies here are divided into two: traditional land use planning policies, which affect urban form and land use directly⁵⁷; and other economic and social policies.

In addition, the achievement of urban sustainability requires a supplementary approach in terms of the consumer behaviour of households, which pursues energy-saving and the minimising of environmental damages through daily practices such as those related to heating, transport, and laundering (Jensen et al., 2011). Thus, practices for urban sustainability are covered by: planning policies influencing physical urban form; other relevant policies; and lifestyle approach.

Governance for Sustainable Planning

Planning is a process which involves diverse participants and integrates the three perspectives of sustainable development (Jepson, 2001). Therefore, a planning system is

⁵⁶ The PCPA of 2004 is seen to be a paradigm shift in the UK planning system in that it heralded the beginning of a 'sustainable revolution', launched the spatial planning scheme, and enhanced community involvement in planning (Morphet, 2011).

⁵⁷ Welbank (1996) mentions that the reason why the compact city is important for planning is that the most important role of planning is to establish a desirable and achievable urban form for the future, while many other aspects of the principles of sustainable development, excluding urban form and land use, belong to the realm of nature and society, and other disciplines.

believed to have sufficient capacity to implement the principles of sustainable development (Selman, 1996). However, planning for sustainable development needs vertical and horizontal integration in its implementation (McDonald, 1996): on a spatial scale, through integrating global agreements, national laws, regional policies and local plans; and horizontally, through integrating ecological, economic and social concerns. Contemporary planning systems share the features of governance in that they use participative approaches (Jepson, 2001; Selman, 1996). A planning system should be able to build up a consensus, tackle complex issues and implement the principles of sustainable development, because its governance features encourage various stakeholders to participate in open debates (Healey, 2006; Innes and Booher, 2004). By contrast, traditional planning systems simply focused on scientific rationalism based on assumed public interest. This thesis also regards urban planning as a procedural instrument for sustainable urban development.

4.3.2 Comparison between Compact City Policy and Other Policies⁵⁸

Newman and Kenworthy (1992) claim that land use planning is a crucial tool for reducing energy consumption by reducing travel distances, while economic policy measures in this area are difficult to implement, particularly, because of the political burden of price policy. However, in general, a policy is appraised to be the most efficient when it intervenes in the very sector where the problem occurs (Krugman et al., 2010). For controlling energy consumption, energy price policy, which fine-tunes the

⁵⁸ In fact, spatial planning encompasses a policy set and process to address complex issues and, thus, to affect diverse sectors. Therefore, it can employ a combination of diverse types of policies beyond land use as planning tools. However, with spatial planning, it is also necessary to determine whether to employ a strategy of policy mix, and to what degree. This section is applied in this context.

use of energy directly, is more efficient in that it minimises side effects which might spill over into other sectors (Neuman, 2005). For example, O'Toole (2009) argues that if the reduction of carbon emissions is the policy objective, compact development should be rejected and carbon taxes should be prioritised, because the latter have 'greater, more immediate, and more easily monitored effects' on greenhouse gas emissions. And, secondly, a quantitative policy in the energy sector might be considered.

Compact city planning is a policy tool affecting indirectly human behaviour (energy consumption) through affecting directly urban form,⁵⁹ and therefore other effects from changes in urban form should be considered, including convenience, aesthetics, and social implications. In this connection, Hall (2001) points out that car travel in the UK is more strongly related to fuel prices and income level than to urban form. However, the compact city proponents go further and claim that a compact city has many other social merits, such as more social interaction, as well as environmental benefits including the protection of green spaces.

4.3.3 Strategies for the Compact City

This sub-section will review how the compact city has been accommodated in planning policies, focusing on UK and US policies. The compact city has come to be accepted or, indeed, actively promoted in many countries (Burton, 2000) and by international bodies such as the EU, UN, and OECD (Jensen et al., 2011).

⁵⁹ In a broad sense, planning policies can also employ direct policies for achieving the goals of energy policy, such as applying energy-saving technologies to residential developments.

Compact City Strategies before the 1990s

The compact city strategies adopted in planning policies originated in the green belt plan for London in 1935 and the UK Town and Country Planning Act (TCPA) in 1947 (OECD, 2012). O'Toole (2009) called the 1947 Act 'the first modern compact-city law', as it mandated the construction of high-density high-rise dwellings within existing cities along with strong containment policies. The compact city evolved into the concept of Urban Growth Management in the US in the 1970s (OECD, 2012), and this will be reviewed in the later part of the sub-section.

Compact City Strategies since the 1990s

The EC CEC *Green Paper* in 1990, published before the Rio Conference in 1992, made the compact city a popular topic in debates on sustainable development (ibid). The paper suggests that compact urban form contributes to social integration as well as environmental sustainability (CEC, 1990). The compact city policy was also adopted in the UK government's planning strategy, when the UK Government made urban compactness a central element of its sustainable development strategy (Vella and Morad, 2011) in the PPG 13 on Transport in 1994 (DoE and DoT), which called for higher urban density around transport nodes and development plans to reduce the need to travel by car.⁶⁰ The PPG 1 (DoE, 1997) demanded that local authorities should promote mixed land use through planning, particularly in transport-accessible town centres. These

⁶⁰ Breheny (1997) calls it 'remarkably radical' considering the market-friendly ideology of the government in those days, while Welbank (1996) denigrates it, along with the UK Strategy for Sustainable Development in 1994, pointing out that these merely suggested a 'wish list' and lacked any coordinated strategies and policies for implementation.

strategies were then confirmed in the Planning Policy Strategy (PPS) documents.⁶¹ Although the present Coalition Government is considered to have retreated from that stance, NPPF (DCLG, 2012) still counts the promotion of mixed use development as one of core planning principles. Compact city policies in the UK include: the revitalisation and regeneration of city centres; containment in the countryside; higher-density, mixed-use development; promotion of public transport; and concentration of urban development at transport nodes.

In the US, the federal government has encouraged Smart Growth Management to cope with urban sprawl, as a practical version of the compact city, since the mid-1990s (Daniels, 2001) and this strategy, which encompasses diverse policy tools besides physical planning, will be reviewed later in this sub-section. The present Obama administration has endorsed these policies, warning metropolitan areas to adopt compact development strategies or risk losing federal funds (O'Toole, 2009).⁶² Recently, the compact city has been expected to contribute to achieving the OECD aim of Green Growth,⁶³ which focuses on the concurrent pursuit of economic growth and environmental conservation (OECD, 2012).

⁶¹ The PPS 1 (DCLG, 2005: 12) states that planning authorities should seek to: 'promote the more efficient use of land through higher density, mixed use development and the use of suitably located previously developed land and buildings'.

⁶² The Secretary of Transport stated that the goal of the programme was to 'coerce people out of their cars' (O'Toole, 2009).

⁶³ In 2009, ministers from 34 countries including some non-OECD ones adopted a declaration on Green Growth which pursues economic growth with minimizing environmental damage and enhancing quality of life (OECD, 2011a). It mandated the OECD to establish a Green Growth strategy. The OECD *Compact City Policies* in 2012 is an outcome of the activities for Green Growth.

Urban Growth Management

The concept of Urban Growth Management (UGM) emerged to control urban sprawl and to overcome the limits of the zoning system and plot-unit regulation in the US in the late 1960s (Landis, 2006). The existing zoning system was judged to lack of overall consideration of urban infrastructure, the environment, aesthetics, and social equity. UGM was initially introduced by Ramapo town in the suburbs of New York to permit development projects based on evaluation of the level of infrastructure services.⁶⁴ As this was approved as constitutional by the Supreme Court in 1972, it was judged to have extended US land use planning from a two-dimensional scheme involving use and density to a three-dimensional scheme adding a time axis (Freilich, 1999).

Though the content of UGM programmes differs from one local government to another, these generally contain both an Urban Growth Boundary (UGB) and infill development strategies (Landis, 2006). The UGB strategy is a tool of land use regulation which designates a boundary for urban expansion.⁶⁵ As this is based on the idea that the improvement of public facilities should coincide with urban development, it is called a code of ‘concurrency of infrastructure’. On the other hand, as economic growth caused environmental and social costs as well as development gains, ‘development impact fees’ were imposed on developers to cover the costs of infrastructure expansion.⁶⁶ The UGM

⁶⁴ Petaluma, near San Francisco, permitted development projects within an estimated development capacity cap, and made it mandatory to build affordable housing to around 10% of the cap for low and middle earners to accommodate people excluded by zoning (Cullingworth and Caves, 2008).

⁶⁵ Portland in Oregon amends the UGB periodically through monitoring urban growth (Landis, 2006).

⁶⁶ The logic of the restitution for development gains is theoretically differentiated from the logic of covering infrastructure costs. The former is a tax imposed on increased land values for social equity, while the latter is a charge levied on development activities for securing economic efficiency by correcting external effects.

strategy also pursues high densities within cities. The infill development strategy gives priority to inner-city redevelopments, and increases the efficiency of land use by high-density development on existing developed sites.

As the effects of UGM vary in different municipalities, it has been argued that only strong and clear policies are effective in controlling urban expansion and achieving high densities (Howell-Moroney, 2007; Landis, 2006). On the other hand, liberalists who oppose the UGM claim that people have chosen to live in automobile-oriented suburbs, and suggest evidences for market efficiency: for example, supposedly sprawling cities such as Los Angeles actually have higher residential densities than growth management models such as Portland⁶⁷ (Gordon and Richardson, 1997).

Smart Growth Management

The UGM strategy to control sprawl caused side effects such as a shortage of affordable housing and ‘contained sprawl’, as it lacked appropriate designs which would have prioritised pedestrians, transport, and open spaces within designated UGB areas. Therefore, a new version of UGM, Smart Growth Management (SGM) has emerged in the US since the mid-1990s.⁶⁸ SGM, puts more emphasis on housing and transport issues, and provides regional coordination to deliver sustainable urban development (Landis,

⁶⁷ Population densities in metropolitan areas were 21 persons/ha in Los Angeles and 10 persons/ha in Portland in 2009 (OECD, 2012).

⁶⁸ The idea of SGM emerged from meetings held by the US Environmental Protection Agency in 1996. Then, Smart Growth America (SGA) was organised, which was composed of various associations such as federal government organisations, interest groups and the Congress of New Urbanism, and this has been supporting the SGM movement (SGA, 2011).

2006; Tregoning et al., 2002).⁶⁹ SGM adopts the compact city approach for achieving sustainable objectives (Neuman, 2005). As both New Urbanism and SGM share the common goal of sustainable cities, the former is suitable for a neighbourhood or district unit, while the latter focuses more on metropolitan and medium-sized cities.

SGM, as it has been implemented in many local governments in many countries, has developed various managerial methods and financial tools. The initial SGM strategy enacted in Maryland in 1997 included the following five elements (Daniels, 2001): funding for 'priority growth areas'; financial support for landowners for brownfield redevelopment; tax credits for job creation; 'live near your work programmes' subsidising house buyers; and a 'rural legacy programme' purchasing rural lands and development rights to protect them.⁷⁰ SGM policies frequently depend on market-friendly measures such as: the removal of obstacles to development for developers, development impact fees, and the provision of affordable housing (Alexander and Tomalty, 2002; Downs, 2005).

However, SGM has been judged to be below expectations because of the opposition, caused by the redistribution of gains and costs (Downs, 2005), of people such as: detached house owners in the suburbs who dislike decreases in their property prices; middle and low income groups who have to pay higher housing costs in the inner cities; and local governments who have to surrender powers to regional governments.

⁶⁹ The concurrence of public services and developments is also a significant consideration for the compact city in SGM as well as in UGM (Park et al., 2001).

⁷⁰ The Maryland SGM strategy depended on economic policy tools rather than physical land use planning.

4.3.4 Land Use Planning Tools

In the above sub-section the compact city strategy has been reviewed as a policy direction. This sub-section will confine itself to looking at traditional land use planning tools in relation to the compact city, focusing on those of the UK and US and using a comparative perspective.

The US Constitution rigorously protects property rights;⁷¹ and, in the governing structure, the division of powers is strictly adhered to. Land is regarded as a replicable commodity (Levy, 2003). By contrast, the UK planning system has been formed against a background of no written constitution, an integrated governing structure, and a strong land preservation ethic (Cullingworth and Nadin, 2006). Therefore, the following characteristics have been embodied by the UK: a broad discretion and flexibility in the planning system; and strong supervision by the central government (ibid). Korea shares the characteristics of the US in governing structure. However, some characteristics are similar to the UK's such as a strong instinct for land preservation and wide intervention by the central government, and these will be detailed in the next chapter.

Table 4.1 Basic Land Use Planning Tools

Land use planning tools	Origin and enactment	Corresponding Korean system
Urban master plan and Planning permission	UK TCPA in 1947	Urban master plan and Development permission by District unit planning
Green belt	UK TCPA in 1947	Green belt
New town development	UK 13 new towns during 1946-1970	Various development methods: New city, Housing site, and Urban development
Zoning system	US SZA in 1926	Zoning system applied to small development

⁷¹ Private property cannot be expropriated without the 'due process of law' and 'just compensation' (Levy, 2003).

Urban Master Plan and Planning Permission

The UK planning and development management system, with its urban master plan (Development Plan) and planning permission, was established by the TCPA in 1947. The 1947 planning system was operated under the following scheme (Ward, 2007): firstly, local authorities were obliged to establish development plans as a ‘planning system’; secondly, in planning permission, as a ‘development management system’, decisions were made based on development plans and other ‘material considerations’, with a wide range of discretion; thirdly, as a ‘land system’, the ‘nationalisation of development rights and future development gains’ was instituted, which meant that compensation was not required for additional control of land. Also, the concept of a comprehensive plan and a planning process of ‘survey-analysis-plan’ devised by Patrick Geddes were introduced in the 1947 Act (Morris, 1997). At that time, efforts for narrowing the gap between regions and for promoting the planned location of industries had been started in earnest, for example, with ‘industrial development certificates’, by the Distribution of Industry Act in 1945 (Cullingworth and Nadin, 2006).

Since then, the framework of development plans and planning permission has continued, although there has been a pendulum movement between left and right, according to the political situation (Ward, 2007). The main features of operating the system in the UK are summarised as follows, in comparison with the Korean context. Firstly, the provision of decent housing has continued to be a main task. Secondly, issues related to development gains and compensation have persistently been controversial. These two features cause similar controversy in the current Korean context. Thirdly, the UK government switched policy paradigm from the development-oriented system of the

Thatcher government to sustainable development in the Command Paper, *This Common Inheritance: Britain's Environmental Strategy*, in 1990 (DoE).⁷² Fourthly, delay in establishing plans and deciding planning permissions by local authorities has been considered a chronic problem (DETR, 2001), and this delay is attributed to the long tradition of discussion and agreement on community issues which has involved a wide range of stakeholders (Kim, 2008a). This is a quite different situation from planning practice in Korea, where rapid processing of applications is prioritised; and this rapid Korean practice is partially ascribable to decision-making based on zoning, along with a cultural difference which regards delay as hindering equity (ibid).

The UK Planning and Compulsory Purchase Act (PCPA) in 2004 enlarged the participation of residents through the Statement of Community Involvement in the Local Development Framework.⁷³ These processes in planning are judged to have contributed to the present pastoral landscapes harmonised with historical architecture, even though slow responsiveness is sometimes criticised as 'planning bureaucracy' (DETR, 2001). The scheme of development plan and planning permission was basically similarly institutionalised in the Korean planning and development management system, though there are many differences in practice.⁷⁴

⁷² It kept step with changes in international strategies on global environmental issues such as the European Community Directive 337 in 1985 and the WCED Brundtland report in 1987. Environment Impact Assessment was also introduced by Directive 337 to the planning schemes of EC member countries, including the UK, in the late 1980s (Pinder and Usherwood, 2007).

⁷³ Community involvement in planning has been continuously reinforced through the 1968 Town and Country Planning Act and the 'plan-led' 1991 Planning and Compensation Act, though it was temporarily discouraged by the 'market-led' 1980 Local Government, Planning and Land Act (Ward, 2007).

⁷⁴ The contemporary Korean planning system encounters simultaneous challenges, as will be seen in the next chapter, from requests for housing provision, urban dispersion, environmental deterioration, desire for participation, and so on, which the UK has addressed in phrases since the 19th century.

Green Belt Policy

The 'green belt' in the UK is a policy for protecting rural land surrounding conurbations with permanent open spaces by preventing development (Levy, 2003).⁷⁵ It originated when the 'green girdle' around London was introduced in 1935. Then, the TCPA in 1947 ruled that local authorities had the power to designate green belts in their development plans (Ward, 2007). In 2010, the green belts around 14 conurbations in England covered a total of 16,396 square kilometres (DCLG, 2010a).

However, there are some critics of the policy. Some people suggest that green belt areas have not been well managed. The Town and Country Planning Association (TCPA), a significant initiator of the policy, proposed more flexible policies, including 'green wedge' and 'strategic gap' policies (TCPA, 2002). Lewis (2002) pointed out that green belts hindered the provision of affordable housing and failed to achieve their objective of saving open space because they allowed 'leap-frog development' with lower density and heavy car dependence, and caused new housing to be crammed into existing conurbations. Similar criticisms are found about the Korean green belt system. Nonetheless, the green belt is generally judged to be an effective policy tool for achieving an urban growth boundary. Hall (2002) states that green belts in the UK have contributed to the concentration of developments within urban boundaries and the conservation of the natural environment.

⁷⁵ Levy (2003) points out that the discontinuous pattern of dispersion in the UK is quite different from the continuous one in the US, and this are partly caused by the existence of green belts.

New Town Development

The thirteen first-generation New Town projects in the UK were designed to resolve the problem of a shortage of housing after the Second World War. These new towns, near London, accommodated 400,000 people (Hall, 2002). Taken together, the new towns housed 1.4 million people, from the first to third generation⁷⁶, although the population planned was 2 million (DCLG, 2006), which was only a fraction of the increase in population in the Greater London area during that period (Hall, 2002).

As for the economic effects of the projects, the increase in employment in manufacturing industry up until 1966 was larger than the increase in population, and so the projects were judged to be self-contained and successful (Thomas, 1969). In general, although the growth in manufacturing employment in new towns between 1960 and 1978 was higher than the national average, half of it was provided by the public sector, and the other half was caused by general trends in the UK at the time, with a movement of occupations from metropolitan areas to small cities (DCLG, 2006). This implies that the impacts of new towns on the local economy itself were less than expected.

Alfred Marshall anticipated that Howard's Garden City idea would benefit people in both the sending and the receiving areas (Hall, 2002). Overpopulation might be eased in the sending area; and, in the case of migrants into new towns, migration itself revealed their preferences.⁷⁷ Howard thought that development gains from increases in land

⁷⁶ A total of 33 new towns were constructed in the UK. Among them, 21 were located in England: 11, including Basildon, during 1946-1951 (first generation); 5, including Redditch, during 1961-1964 (second generation); and 5, including Milton Keynes, during 1966-1970 (third generation) (DCLG, 2006).

⁷⁷ Remaining residents in the sending area may benefit from the project if their property prices do not decrease and industries do not move out. Migrants are able to have cheaper housing near their workplaces,

prices should be shared by residents or the garden city union. This idea has important implications from the perspectives of economic and social sustainability, as the financial and distributive scheme is crucial to the success of a large-scale project (ibid). The finance for new town construction, in reality, was provided by public finance. However, the first-generation new town projects were financially successful, which proved Howard's basic idea: full-scale urban development could contribute to public wealth (DCLG, 2006).

As for urban form and land use, master plans for new towns generally chose wide open spaces, low densities, and divisions between land uses (ibid). This low-density development was controversially judged to be environmentally unsustainable (ibid).⁷⁸ Residential development essentially has to meet the preferences of new residents, for example, for low density, which also corresponds to the quality of life aspect and financial soundness of projects. On the other hand, the construction of new towns reinforced the centralisation of power over planning in the UK, as 'urban development corporations' did in development planning in the 1980s.⁷⁹ To conclude, new town developments in the UK were regarded as a measure of decentrists (Breheny, 1996), but these could be judged to constitute compact policies, being combined with other containment policies such as green belt, by preventing continuous suburban development.

if sufficient jobs are created in the new towns. In that case, they also may gain appreciation benefits from their new real estate.

⁷⁸ However, Pharoah (1996) points out that theoretical approaches to reducing travel distance and car dependence have been already practiced in some cases by post-war new town planners.

⁷⁹ The following measures of the Thatcher government had the same effect in the 1980s: Urban Development Areas, to which Special Development Orders applied; Enterprise Zones; and Simplified Planning Zones (Ward, 2007).

Currently, diverse types of urban development, such as the Eco-towns proposed by the UK government in 2007, are continuously evolving, as planners search for sustainable urban form and reflect on the various academic proposals examined in the above chapter. This thesis through case studies will investigate diverse types of urban development in Korea.

Zoning System

The zoning system of the US is a tool to regulate the use, size, shape and position of land and buildings, according to the zone, to which these belong, after an area has been divided into zones (Levy, 2003). Thus, a particular set of regulations applies across a zone. Traditional zoning has the effect of blocking out negative externalities. After New York City introduced a comprehensive zoning ordinance in 1916, the US federal government enacted the Standard State Zoning Enabling Act (SZEA) in 1926 to support the use of zoning systems for public welfare. Also, in the same year, when the Supreme Court ruled that the zoning ordinance of Euclid Village in Ohio was constitutional, as a just exercise of police authority, zoning system started to grow in popularity (Cullingworth and Caves, 2008; Levy, 2003).⁸⁰

The initial zoning ordinances, being combined with an absence of master plans, pursued the maintenance of the status quo rather than rationalising land use and preparing a development plan for the future (Kaiser and Godschalk, 1995). Levy (2003) points out that American land use planning was originally a feature of 'exclusive zoning' by

⁸⁰ Afterwards, though the Standard State City Planning Enabling Act (SPEA) was enacted in 1928 to encourage local governments to establish comprehensive 'master plans', this was not as popular as zoning (Cullingworth and Caves, 2008; Levy, 2003).

present residents, which was intended to prohibit the entry of unwanted people and to increase the value of their own real estate. The features of traditional Euclidean zoning included (Cullingworth and Caves, 2008; Levy, 2003): ex ante determination of zones; cumulative or exclusive zoning; containment policies; regulations on specification; and plot-unit regulation.⁸¹

However, since the Second World War, these features, in accordance with social changes, have turned into (Cullingworth and Caves, 2008; Levy, 2003): resilient responses to admit exceptions in cases of unnecessary hardship; special exceptions for public interest; floating zoning to suspend locational decisions on zones; inclusive zoning for mixed land use or social mix; incentive zoning, which is applicable, for example, for the gentrification of decayed inner cities; performance zoning, which uses the result indicators of economic activities for regulation; and project reviews for planned district-unit development.

Generally, local government does not have discretionary powers to review development project applications, which is also the case in the Korean system, where discretion is frequently seen as related to corruption and inequity (Cho, 2004). As the same regulations are applied equally to every lot within a zone, developers can implement their projects in a timely and stable manner. Power to approve exceptions lies with the Zoning Board of Adjustment. However, in order to achieve the objectives of the new zoning, negotiation and partnership with developers have been used, and in this, cost

⁸¹ Exclusive zoning can result in one-purpose land use in extreme cases, and this is called the purification of land use (Levy, 2003).

sharing for securing urban infrastructure and open spaces is one of the important issues (Levy, 2003).⁸²

On the other hand, the number of states which compel local governments to prepare a master plan has increased, and the master plan has come to have constitutional status in urban planning, controlling and promoting growth (Cullingworth and Caves, 2008). Therefore, a zoning ordinance should now be in accordance with a master plan.⁸³ The trends that have developed so far in US zoning are generally applied to the Korean zoning system and practices.

4.4 Planning and Land Use

Dempsey and Jenks (2010), in their review article suggesting future research themes for the compact city, put at the top of their list the question: 'Is the compact city a healthy and green city?' It is common knowledge that less access to green space generates more diseases (Mitchell and Popham, 2008). In this connection, Dempsey and Jenks (2010) suggest the following research topics: the relationship between urban density and open space, particularly in the context of developing countries; and the incorporation of outdoor open space in residential sites. This section looks at the relationships between density and diverse land uses, and their implications for sustainable urban development.

⁸² Also in 'subdivision control', cost-sharing, particularly for securing land for public facilities, has become an important planning objective (Cullingworth and Caves, 2008). Subdivision control, along with master plans, official mapping and growth management, is enacted in a planning ordinance by the SPEA, whilst zoning is enacted in a separated zoning ordinance by the SZE. 'Transfer of development rights' was also designed to bring market-friendly resolution to the problems of development gains, compensation, and development control (ibid).

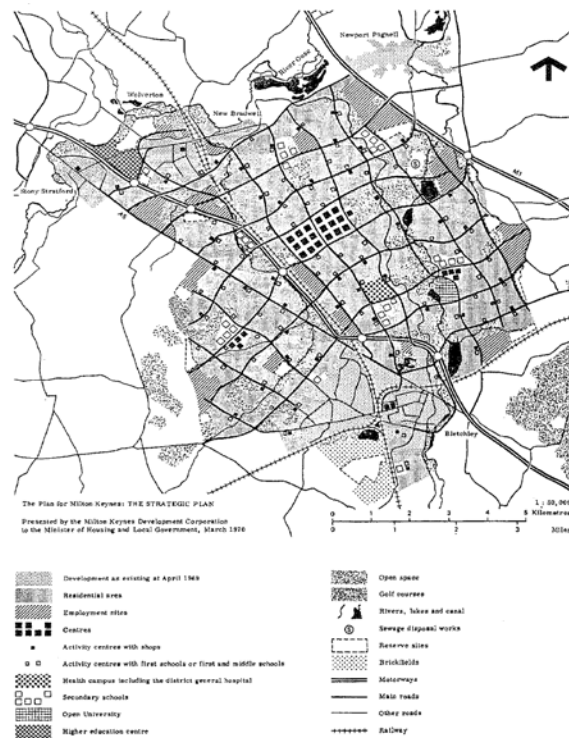
⁸³ But there still remains the possibility of inequality through such tools as 'the Covenant', a type of civil contract among real estate owners, which can be used as an entry barrier (Cho, 2004).

4.4.1 Land Use Plan

Figure 4.1 Milton Keynes New Town in the UK

Source: Llewelyn-Davies (1972), <http://statsuk.com/Towns/>

The Strategic Plan of Milton Keynes in 1970



Aerial Picture



Figure 4.1 shows a land use plan for Milton Keynes, which in 1967 was designated one of the UK's new towns. As seen on the map, land use in a land use plan can be classified into three types: land for residential, commercial and industrial purposes; public open space, including parks and green space; and land for public facilities and infrastructure, such as public offices, schools, hospitals, and roads. The open space provides social and environmental benefits, as well as amenities for residents; and public facilities and infrastructure are the necessities to support urban living.⁸⁴ On the other hand, in the

⁸⁴ These two categories are divided by relative differences in openness to the sky in shape, and necessity in urban function.

case of the first category, land for residential and commercial purposes, developments for these functions depend mainly on private businesses. However, the latter two categories provide for more public use, so these developments are usually implemented by the public sector. One of the strong reasons for introducing an instrument of land use planning in urban space is to provide these local public goods, such as parks and roads, preventing free-riding (O'Sullivan, 2009).

The majority of land use for private purposes is residential, and in the case of public land, use of open spaces shows more deviations between different cities and more important implications for the healthy and green city. Therefore, this section focuses mainly on sustainable land use in residential land and open space.

4.4.2 Residential Density

Density is a key parameter in the compact city proposal. This sub-section addresses the conceptual difference between 'density' and 'crowding', and the relationships between density and other parameters in urban form.

Density and Crowding

Many opponents of the compact city tend to perceive compactness as overcrowding. Neuman (2005) traces the origin of modern planning to efforts to make less compact urban form to overcome overcrowding, which had brought insufficient light, polluted air, psychological stress, and, thus, disease and crime-ridden urban environments. Also, he accounts for sprawl as a process to depopulate overcrowded and congested industrial

cities. However, advocates for the compact city emphasise that density should be differentiated from crowding, arguing that density is measured by population per unit area, whilst crowding means residential floor area per capita, and that the above urban ills are caused by overcrowding, not by high density (Jenks et al., 1996). Crowding is defined as: ‘to make someone feel uncomfortable by standing too close to them or by watching them all the time’ (Cambridge Dictionaries, 2012). Thus, the concept implies feelings related to physical closeness and privacy. It is said that securing adequate space in both the private and public areas contributes to the enhancement of quality of life (Lindsay et al., 2010), though the degree of space needed depends on cultural contexts and individual preferences. The following paragraphs examine the relationships between density and land use.

Relationships between Density, Land Use and Building Types (Heights)

Patel (2011), through a simulation of relationships between parameters of urban form, shows that small accommodation is inevitable in cases of high density and low rise. The accommodation in his study is interpreted as a parameter to represent crowdedness. Also, he demonstrates that higher density is not necessarily combined with small accommodation and insufficient public space, if it is accompanied by high rise. This relationship can be illustrated in Figure 4.2. For convenience of analysis, it is assumed that lands for public facilities and infrastructure are fixed. The vertical lines of the quadrangles stand for the heights of buildings. If the built space (2) for residence is transferred to (2)’ by intensification policy, open space is secured twice. Contrarily, if built area (1) expands to (1)+(2) for a low-density lifestyle, it will decrease the open

space within a confined urban area, or will spread over to rural and forest area beyond the urban boundary.

Figure 4.2 An Exemplification of Relationships between Density and Land Uses

Source: the author

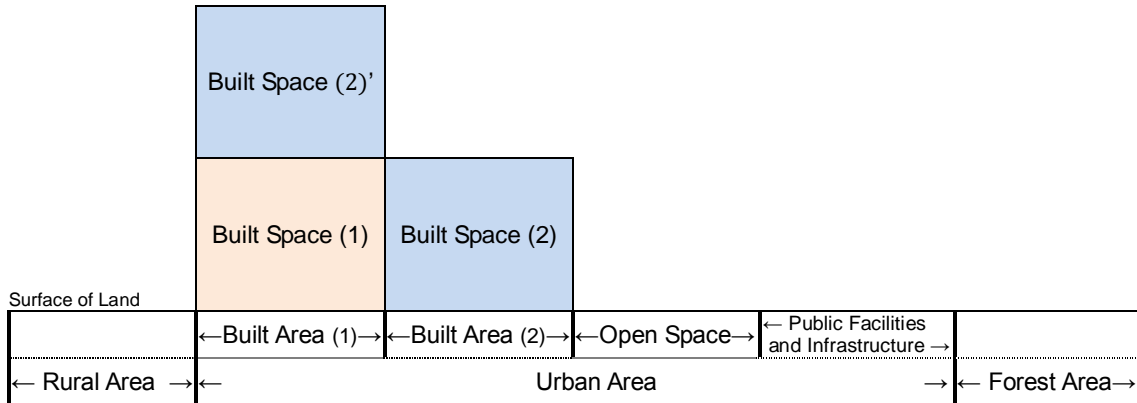
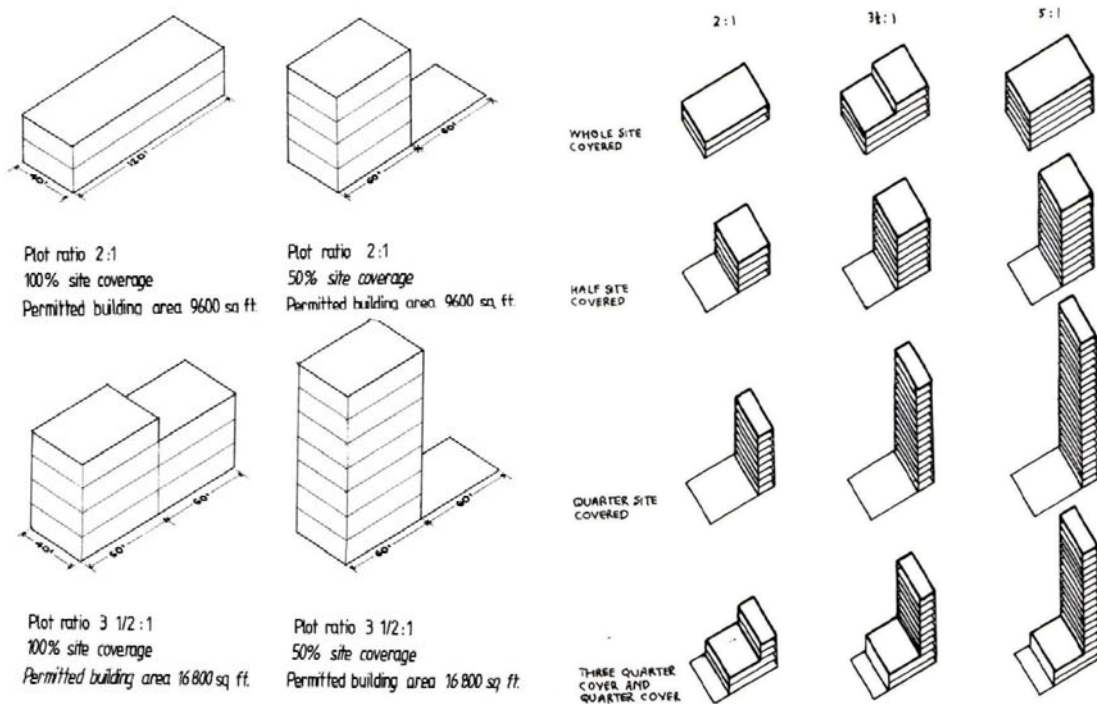


Figure 4.3 Various Compositions of Land Coverage, Floor Space Index (FSI), and Heights of Buildings. Source: Morris (1997)



Further, high density can be achieved with low rise to a certain extent. Many people associate high-rise buildings with the compact city, but there are development options besides high-rise buildings (OECD, 2012). Jacquet et al. (2010 in OECD, 2012) indicate from investigations in low-rise Paris and in high-rise Chinese cities that high-rise developments are not always denser than low-rise developments. In another example, a study based in Toronto shows that low to medium-rise buildings can generate high densities, where net densities of 120-230 dwellings per hectare are achieved in areas of buildings with up to five storeys (Churchman, 1999). Therefore, compactness can be combined with diverse types of buildings. This has great importance for the acceptability and feasibility of the compact city approach (OECD, 2012).

4.4.3 Open Space

Securing adequate open space within an urban area has been highly regarded in traditional urban planning. Even today, policy directions lay stress on green spaces in cities to improve residential conditions (Fuller and Gaston, 2009). This sub-section will look at open space in a city from the perspectives of sustainable development and the compact city.

The idea that a compact city is just a dense city lacking of open space is a misconception (OECD, 2012). Whitford et al. (2001: 102), criticising the compact city of the Urban Task Force, claim that ‘such a compact city may have a poorer environment ecologically because it will tend to have lower vegetation cover.’ However, the current compact city regards open space as an indispensable element of a compact city, because the goal of the compact city is to deliver urban sustainability, including

environmental quality (OECD, 2012). High density combined with containment policy contributes to securing wider open space and preserving natural areas (Arnold and Gibbons, 1996), as simplified in Figure 4.2.

The Scope of Open Space

Madanipour (1999) defines public space in urban and rural areas as ‘physically accessible to everyone with few restrictions’, whilst Shonfield (1998) uses the term widely to indicate ‘any place that people use when not at work or at home’. Table 4.2 presents a range of open spaces.

Table 4.2 The Typology of Open Spaces

Source: UK PPG 17 on Planning for open space, sport and recreation (ODPM, 2002: Annex)

<p>Open space should be taken to mean all open space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport and recreation and can also act as a visual amenity.</p>
<ul style="list-style-type: none"> i. parks and gardens - including urban parks, country parks and formal gardens ii. natural and semi-natural urban greenspaces - including woodlands, urban forestry scrub, grasslands (e.g. downlands, commons and meadows) wetlands, open and running water, wastelands and derelict open land and rock areas (e.g. cliffs, quarries and pits) iii. green corridors - including river and canal banks, cycleways, and rights of way iv. outdoor sports facilities (with natural or artificial surfaces and either publicly or privately owned) - including tennis courts, bowling greens, sports pitches, golf courses, athletics tracks, school and other institutional playing fields, and other outdoor sports areas v. amenity greenspace (most commonly, but not exclusively in housing areas) - including informal recreation spaces, greenspaces in and around housing, domestic gardens and village greens vi. provision for children and teenagers - including play areas, skateboard parks, outdoor basketball hoops, and other more informal areas (e.g. 'hanging out' areas, teenage shelters) vii. allotments, community gardens, and city (urban) farms viii. cemeteries and churchyards ix. accessible countryside in urban fringe areas x. civic spaces - including civic and market squares, and other hard surfaced areas designed for pedestrians

The above open spaces include domestic gardens, and Dehring and Dunse (2006) also point out that private gardens are not completely private because they also provide amenity benefits to neighbours, even though these are not ‘public’ open space. However, this research mainly focuses on open space in a narrow sense, which means public spaces such as parks and green spaces within an urban boundary.

The Benefits of Open Space

This paragraph reviews the benefits of open space using the framework of the three pillars of sustainable development. Access to the natural environment is regarded as a fundamental factor of human well-being (Miller, 2005). However, as contacts with the ecosystem are restricted in urban living, the provision of open and green spaces within a city is significant in urban planning. The benefits from access to open and green spaces, as is well reasoned in many articles, include physical health (Maas et al., 2006), psychological well-being (Fuller et al., 2007), recovery from the stress of urban living (Van den Berg et al., 2007); enhanced social interaction and cohesion (Coley et al., 1997); provision of ecosystem services such as temperature management and carbon dioxide assimilation (Bolund and Hunhammar, 1999); and conservation of biodiversity (Gilbert, 1989). Frey (1999) and the Urban Task Force (1999) claim that raising the environmental value of urban open space is crucial in making more liveable cities. Along with this, recently the concept of ‘green infrastructure’ has begun to be used in both the academic and policy areas: this has three core ideas of ‘connectivity, multifunctionality and green’, with an emphasis on their socio-economic benefits (Wright, 2011).

Table 4.3 The Benefits of Open Space

Perspectives	Benefits
Environmental benefits	provision of ecosystem services such as temperature management and the improvement of air quality through carbon dioxide assimilation ¹⁾ (Bolund and Hunhammar, 1999)
	conservation of biodiversity and wildlife habitat (Gilbert, 1989)
	water management gains through green drainage (DTLR, 2002)
Social benefits	encouragement of social interaction and cohesion, and educational opportunities (Coley et al., 1997)
Economic benefits	attraction of inward investment and catalysts for urban regeneration (Council of Europe 1986), business retention and performance improvement, creation of employment opportunities, and support for tourism (DTLR, 2002; CABE 2004; 2007)
	increases in property value and marketability by proximity to well-designed green spaces (CABE 2004; 2007; Trust for Public Land, 1999), and the amplification of local finance through tax base enlargement (Vandegrift and Lahr, 2011)
Quality of life benefits²⁾	provision of contact with nature (Miller, 2005), recreational opportunities ³⁾ and scenery benefits (Kovacs and Larson, 2007; Nicol and Blake 2000), and involvement in social, cultural and community activities (DTLR, 2002)
	physical health (Maas et al., 2006), psychological well-being (Fuller et al., 2007; Nicol and Blake 2000), recovery from the stress generated by urban living (Van den Berg et al., 2007) through the above exercises and activities
<p>Notes: 1) Broadleaf woodland can reduce air pollution by 17% and urban green space decreases negative climatic effects such as heat and wind anomalies caused by buildings and hard surfaces (DTLR, 2002).</p> <p>2) The concept of 'green infrastructure' is argued for diverse sustainable benefits including for quality of life. The term 'green infrastructure' is defined by DCLG (2010c: 25) as 'a network of multifunctional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities', though the concept is contested by diverse interpretations.</p> <p>3) A survey in 2000 showed that most people in the US engaged in outdoor recreation activities and the numbers were increasing: 82% walked for pleasure, which had risen by 40 million people for the 5 years since 1995; and 73% had outdoor family gatherings, which had grown by 36 million (National Survey on Recreation and the Environment 2000).</p>	

Burgess et al. (1988: 471) as a result of in-depth discussion study in London, make the following statement on the potential of urban green space to enhance the quality of life:

Open spaces serve as gateways: to a high quality sensory and natural world; to a non-commercialised world where children can explore, learn and play together in safety; to a good city in which people can come together and share their experiences and responsibilities.

As regards the economic effect of open space, Dehring and Dunse’s empirical findings (2006) strongly suggest that people consider local public goods such as parks alongside housing prices when making decisions on house purchase.⁸⁵ CABE (2004; 2007) also claims that spatially and visually good open spaces generate higher property values and better business performance and investment. For example, Lee and Linneman (1998) found that proximity to the green belt surrounding Seoul in Korea had positive effects on nearby properties.⁸⁶

Table 4.4 summarises studies on density, housing types, and land use including open space. The findings and implications of these studies will be addressed in detail in the paragraphs following the table.

Table 4.4 Empirical Studies on Urban Density, Land Use and Open Space⁸⁷

Researchers (year)	Main topics, research methods and regions
Burgess, Harrison and Limb (1988)	Qualitative research on the value of open space in London, UK
Loukaitou-Sideris (1995)	Study by observation and survey of cultural differentiation in the uses of urban open space in Los Angeles, UK
Williams and Green (2001)	Reviewing the literature of public space in the UK from the viewpoint of sustainability
Acharya and Bennett (2001)	Hedonic analysis of diverse land uses in Connecticut, US
Garcia and Riera (2003)	Contingent valuation with survey results of residents’ perceptions of density and open space in Barcelona, Spain
CABE (2004; 2007)	Benefits of well-designed open spaces in the UK
Dehring and Dunse (2006)	Quantitative research on the relationship between housing density and the effects of proximity to public open spaces in Aberdeen, UK

⁸⁵ Though Dehring and Dunse (2006) maintain that only economic benefits revealed by house prices can be measured, and social and environmental benefits cannot be quantified, to be exact, market prices reflect only private benefits, including social and environmental ones, and do not reflect public benefits, even though these are economic ones.

⁸⁶ In another example, Vandegrift and Lahr (2011) showed that increases in public expenditure for open space acquisition brought about an increase in house prices in New Jersey, US.

⁸⁷ The economic benefits from open space are mainly measured by price impacts on properties near open space, using ‘contingent valuation’ or ‘hedonic pricing’.

Kovacs and Larson (2007)	Simulation of the influence of open space on residential development patterns
Poudyal, Hodges, Tonn and Cho (2009)	Quantitative research valuing diversity and spatial patterns of open space in Virginia, US
Steelman and Hess (2009)	The importance of policy process and management for protecting open space
Schmidt and Paulsen (2009)	Exclusionary zoning effects in efforts to preserve open space in New Jersey, US
Raman (2010)	Case study of the relationships between urban form and social and communal life in six UK neighborhoods
Cho, Lambert, Kim, Roberts and Park (2011)	Hedonic regression analysis of relationship between value of open space and distance from housing locations
Vandegrift and Lahr (2011)	Quantitative research on the effect of open space on house prices and the tax base in New Jersey, US.
Brander and Koetse (2011)	Meta-analysis of contingent valuation and hedonic pricing results on the value of urban open space
Patel (2011)	Simulation of relationships between density and other living conditions such as built form and public space

Open Space and Social Issues

Raman (2010) argues that well-connected open spaces promote social interaction. This paragraph reviews other aspects which have social implications: open space allocations within an urban area, their relationship with income groups, quality of open space, and associated considerations for urban development. Poudyal et al.'s (2009) research finds that the preference of high-income groups for a low or medium-density residential area surrounded by open space brings about a concentration of low-income areas, and suggests a revitalisation policy for this. Similarly, Kovacs and Larson (2007) describe the tendency towards geographical division between different income groups, with high-income groups gathering in neighbourhoods with ample open space because of their high recreational benefits and costs, while low-income groups are displaced from those areas into downtown. They point out, however, that those on low incomes can benefit from the division, because it lowers their housing and commuting costs.

Williams and Green's report (2001) shows that public spaces and housing conditions in deprived areas are worse than in more prosperous areas, and in these deprived areas, environmental degradation, poor public spaces and anti-social behaviours are closely correlated with each other⁸⁸ and these are directly related with income level. On the other hand, Schmidt and Paulsen (2009) show that municipal authorities in the US are neglecting their obligation to provide affordable housing by designating open spaces in urban areas where high-density developments can be accommodated, and they interpret this as having the effect of exclusionary zoning.

Loukaitou-Sideris and Banerjee (1998) argue that many US commercial developments pursue only economic profits without adequate consideration of social implications, resulting in unconnected and socially exclusive public spaces. Williams and Green (2001) emphasise that privatised public space may improve the well-being of residents in the area, but at the same time it may harm the public life of other people, particularly, those excluded.

Implications and Strategies for Better Urban Open Spaces

Kovacs and Larson (2007) point out that the number, locations, and types of open spaces interactively influence the features of a city. Dering and Dunse's analysis (2006) suggests that open space is valued according to: its type and characteristics; its accessibility and proximity; and the housing densities and types surrounding it.

⁸⁸ For example, the DETR (1998e) reports that the ratio of dwellings suffering from poor air quality in deprived areas (32.3%) is nearly twice that in other areas (16.3%).

Cho et al. (2011) note that ‘developed open spaces’ affect property values the most positively, with ‘forest-land open spaces’ coming second, while ‘agricultural-wetland open spaces’ have a negative effect. According to Brander and Koetse (2011), among various types of urban open spaces, parks are the most highly valued by residents.

Poudyal et al. (2009), through their study in Virginia, US, suggest that open spaces with square shapes and smooth edges are more favoured than ones with complex shapes and irregular edges, and a few large open spaces are preferred to scattered smaller pieces of open land. However, many advocates claim that having a number of small open spaces near homes improves residential quality (Thompson, 2002). They also argue that diverse types of open spaces not only contribute to biodiversity but also raise house and land values and thus increase the local tax base. Furthermore, Burgess et al. (1988) claim that open space should offer harmonious multiple uses to fulfill the diverse recreational needs of residents, including diverse social and cultural uses, and suggested that 68 per cent of visits to such land are made on foot.⁸⁹

In addition, the following findings have significant implications for designing public open spaces. Firstly, in high-density residential areas, public open spaces may be substitutes for insufficient private gardens (Dehring and Dunse, 2006). Secondly, even open space that is not accessible to the public can sometimes improve a community’s

⁸⁹ In the UK context the following strategies have been suggested. The Urban Task Force (1999), pointing out demerits of SLOAP (space left over after planning), asserted that local authorities should establish strategies for the whole public realm and develop a distinct network of public spaces. The Commission for Architecture and the Built Environment (CABE) and DETR (2001), reviewing literature on the value of urban design, stated that consideration of social and environmental benefits as well as economic viability is important, partly because it is unclear whether economic benefits surpass the costs of improvement of public spaces. The DoE and Association of Town Centre Management (ATCM) (1997), after reviewing the economic benefits of urban improvement, identified a positive impact on trading performance in most improved inner cities, and concluded that modest increases in trading performance are sufficient, considering other benefits such as safe streets and the facilitating of private investment.

welfare (Kovacs and Larson, 2007), though, at the same time, privatised open space may cause social exclusion (Williams and Green, 2001). Thirdly, as open space is a normal goods for which demand increases with income, people (or high income groups) may prefer private open spaces such as private gardens to public open spaces as their incomes increase (Brander and Koetse, 2011; Kovacs and Larson, 2007).

4.4.4 Relationships between Density, Housing Types and Open Space

Based on a survey in Barcelona, Garcia and Riera (2003) argue that less compact development improves the welfare of residents, and that low density and more open space within and around a city increase the perceived welfare of individuals. However, as densities and land use in a city are associated with diverse factors, such as housing types and socio-economic features, more detailed review is required. Santerre (1985) concludes that less residential land might be made up for by more public space, such as parks, because both public space and private gardens provide people with recreational and social benefits.

Dehring and Dunse (2006) expanded this analysis to relationships with housing types in Scotland. They found that the price effect on property of being located within a distance of 800 metres of open space is positive for high-density flats, but not for low-rise detached or semi-detached houses, which implies that open spaces may be a substitute for private gardens in high-density housing areas that do not have such private open spaces. The meta-analysis of Brander and Koetse (2011) also demonstrates a significantly positive relationship between the value of open space and population density, while income level was not significant for the value of open space, though its

relationship was positive. Further, Kovacs and Larson (2007) found through simulation that the provision of public open space within an urban area promotes high-density development by affecting people's choice of location, and has the effect of constraining sprawling development.

Regional Differences in Preferences

Loukaitou-Sideris (1995), in her study performed in parks in Los Angeles, notes that different ethnic groups (whites, Hispanics, African-Americans and Asians) have different use patterns in public space. Brander and Koetse (2011) show in their meta-analysis that there exist significant regional differences in the values attributed to urban open space. When the effects of other explanatory variables such as density and income were controlled in their model, more than three quarters (76%) of the total unexplained variance in the value placed on open space was attributed to regional differences, which included: different historical and cultural backgrounds to the role of open space; and different perceptions and attitudes of people to open space.

Therefore, Brander and Koetse (2011) suggest that the transference of valuations for different land uses between regions should be restricted. Different preferences for density, land use, and housing types, as well as differences in socio-economic features, between regions and countries should be taken into account in analysis and policy-making (Patel, 2011).

4.4.5 The Planning Process in Creating Better Public Space

This sub-section addresses the role of planning in making better public space and improving stakeholder involvement in the planning process. Adequate urban open spaces contribute to delivering environmental and social sustainability and to improving the quality of urban life. Thus the provision of open space in urban development offers a basis for planning, because local public goods such as open space are likely to be completely inadequate if there is no planning intervention (Galbraith, 1999; O’Sullivan, 2009). Further, in cases where people’s concerns about the quality of the urban environment are increasing, an urban form which is not in accord with the changing demands of residents may be not sustainable, in that they will not want to live there in the future, and this situation is more relevant to rapidly changing developing countries.

As repeatedly seen in the above sections, the conditions of good public space depend on the preferences of people and the cultural context of the society (Brander and Koetse, 2011; Williams and Green, 2001; Dehring and Dunse, 2006; Patel, 2011). Thompson (2002: 59) advocates an important role for urban public space in delivering ‘expression of diversity, both personal and cultural’ and, thus suggests it requires ‘democratic provision’. As public space must integrate public and private interests along with diverse economic, social and environmental perspectives, its provision needs public discussion and consensus and the private sector’s support (Williams and Green, 2001). The UK DoE’s guidebook, *Greening the city* (1996), emphasises that partnerships between local authorities, communities and the private sector are crucial for delivering urban greening. For this, community involvement should be secured through all the stages of projects: planning, design, implementation, and management. Also, it requires

the participation of local professionals to inspire those projects with a local character. At the same time, disadvantages accompanied by wider participation also need to be noted: for example, strategic disregard for public opinion, extra costs, and delay (DoE, 1996). The empirical study of Steelman and Hess (2009) performed in North Carolina, US, indicates that attaining planning goals depends on the timing and methods of stakeholder involvement rather than the quality of plans per se. These results imply the importance of long-term relationships and trust between stakeholders in the whole process: consensus-building, implementation, maintenance and management.

Lynch and Hack (1984: 330) recommend planners to regard urban open space as ‘an occasion for enhancing the meaning of place’ and a ‘place for developing our human capabilities’. A sense of locality provided through public open space with social and cultural diversity is particularly important for improvised and monotonous cities in rapidly changing developing countries.

The Role of Planning Revisited

As for the role of planning, this is required to be a continuous process aiming at a better community, not a one-shot policy. Anthony Downs (2001) points out that the content of Smart Growth Management should be determined through discussion and agreement among stakeholders. In this context, planning is understood as a process to build a consensus and to improve the institutional capacity of a municipality. However, excessive emphasis on autonomous and participatory communities may be empty, as neo-liberalism favours shifting social issues which require the role of government onto the task list of a society or community (Chang, 2003), just as the present UK Coalition

Government is downsizing the intervention of government in the name of ‘the Big Society’ (Conservatives, 2010). As Breheny (1996) points out, free-marketeers have a tendency to neglect the potential costs of keeping to the status quo without positive planning, as in the trend towards suburbanisation. The next chapter will look at the content and implications of the South Korean planning system.

4.5 Conclusion

The compact city approach has been proposed primarily to generate environmental benefits by reducing car travel and saving energy consumption. At the same time, it is pointed out that traditional planning tools may not be the most efficient and effective tools for achieving the environmental goal in comparison with direct energy price and supply policies (Hall, 2001; Gomez-Ibanez, 1991). However, it is argued that planning for sustainable urban form can generate diverse sustainable benefits, such as the improvement of social equity and quality of life, as well as a wider range of environmental benefits.

Despite a tendency towards ‘urban convergence’ following the trends of globalisation (Cohen, 1996; Sassen, 1991), the recent approach understands cities as places, emphasising local knowledge and cultural diversity (Haughton and Hunter, 1994). From this point of view, recent research, being cautious about theoretical oversimplification, is focusing on context-dependent empirical studies (OECD, 2012). In this connection, the next chapter will look at the context of South Korean urban development, in advance of the empirical study of this thesis.

CHAPTER 5

URBAN FORM AND LAND USE IN SOUTH KOREA

5.1 Introduction

From the previous chapters, it was found that urban forms and land uses should be understood in their own local contexts. This chapter addresses the historical context and characteristics of urban form and land use in Korea. Firstly, the general features of the land and urbanisation will be introduced. Then, urban development in Korea will be presented in detail: development history, planning system, and development methods. And, finally, the characteristics of urban form will be drawn. From these reviews, the character of contemporary Korea as a developing country experiencing rapid urban development will be demonstrated.

5.2 An Introduction to South Korea

5.2.1 An Overview of the Land and Urbanisation

Over the past half century, South Korean has experienced dramatic modernisation and urbanisation. The urban population had increased from 39.1% in 1960 to 90.9% in 2010 (MLTM, 2011a). During the same period, the country's total population doubled from 25.0 million to 50.5 million.⁹⁰ Thus, during the past 50 years, a total of 36.1 million people have been added to urban and newly urbanised areas (ibid).

⁹⁰ The total population of North Korea was estimated to be around 23.0 million in 2010 (NSA, 2012a).

South Korea's territory is 100,000 square kilometres,⁹¹ so population density per square kilometre was 505 in 2010,⁹² which made this the third most populated country in the world, excluding city states such as Singapore (ibid). However, total urban land is just 6.6% of the national territory, whilst forest land is 64.5% and agricultural land is 20.3% (MLTM, 2010a). Consequently, a shortage of urban land combined with rapid urbanisation has exacerbated the problem of overcrowding and caused the densification of available urban land to accommodate new urban entries, as detailed later.

On the other hand, the urbanisation trend has been slowing recently. The urban population increased by just 2.6%, from 88.3% to 90.9%, between 2000 and 2010 (MLTM, 2011a). The annual growth in the population was also only 0.23% in 2010. Finally, the elderly population (65 and over) has increased from 3.1% of the population in 1970 to 11.0% in 2010 (ibid), which means that Korea already has an aging society. However, despite the slowdown in urbanisation and population growth, urban development is continuing on a national scale to cope with urgent urban problems and changing residential demands.

5.2.2 Concentration of Population in Large Cities

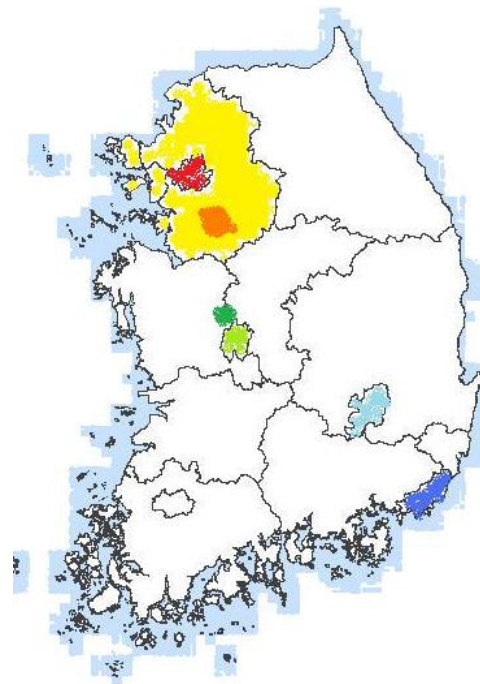
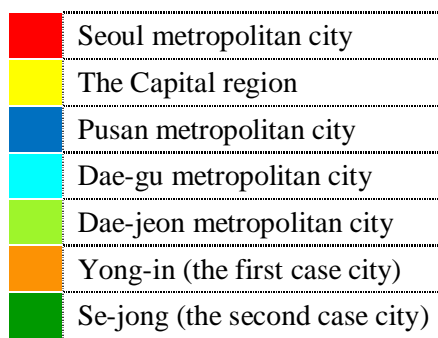
This sub-section examines a feature of Korean urbanisation, the emergence of large metropolitan cities and consequential changes in the urban environment, and looks at the supply and demand sides of urban land. In the processes of urbanisation and migration of population for jobs in Korea, metropolitan-level cities have continuously

⁹¹ The North Korean territory is 123.4 thousand square kilometres (ibid).

⁹² For comparison, population density per square kilometre was: 254 persons in the UK, and 336 persons in Japan in 2008 (UN, 2011).

grown. Particularly, huge megacities have emerged. Meanwhile, medium and small-sized cities in non-capital provinces have stopped growing, and the population of rural areas has sharply decreased. By contrast, in the case of the UK, medium and small-sized towns and rural areas have experienced a steady influx of population, while the population of metropolitan cities has constantly declined (Breheny, 1997).

Figure 5.1 Major Cities in South Korea



Note: 1) South Korea consists of 17 provincial-level municipalities.

2) Seoul (provincial-level) and Yong-in cities belong to the Capital Region.

As for the emergence of megacities, the population of the Capital region, including Seoul, had risen from 5.2 million, or 20.8% of the national population, in 1960, to 24.9 million, or 49.3% of the national population, in 2009 (MLTM, 2010a). Thus, during this period, 19.7 million people arrived in the Capital region, a region that occupies 11.7% of national territory. If cities adjacent to the Capital region are added into the calculation,⁹³ the total population of the expanded area reaches 29.3 million. As another megacity area, Pusan and adjoining cities,⁹⁴ which is located along a section of the

⁹³ Twelve cities, including Dae-jeon and Se-jong (Yeon-gi county until June 2012)

⁹⁴ Twelve cities, including Dae-gu

south east coast, has a population of 10.7 million. The sum of the populations of the two megacities, the expanded Capital area and the south eastern conurbation, came to 40.0 million, or 79.1% of the national total population, in 2009 (NSA, 2012a).⁹⁵ So, Korea's population and industry are concentrated on the Seoul-Pusan axis, passing from the north west to the south east, and taking in Dae-jeon and Dae-gu.

Current Challenges Facing Korean Cities

This rapid urban concentration of population has caused many problems, such as congestion, pollution, substandard transport and housing, and an urban poor. In the late 20th century, when 'surplus rural labourers' migrated to urban areas, they provided the labour necessary for industrialisation (Lewis, 2003), but they also formed poor urban settlements. Such rapid transition from a community-based steady-state agricultural society, where productivity was low, to the current urbanised society was accompanied by tremendous social conflicts and a confusion of values (KDI, 2010).

Both a result and a source of these problems is the continuously increasing price of land and the buildings on it. Urbanisation in Korea since the 1960s has needed an enormous amount of urban land for new settlements; but the transformation of non-urban land into urban land has been strongly restricted by laws. Consequently, only 6.6% of the Korea's territory was urban land in 2009, whilst the figure in the UK was 13% (MLTM, 2010a). So, one of the most serious urban problems on the supply side is insufficient urban land; and existing high population densities and rapid migration exacerbate the problem. A

⁹⁵ Thus, the proportion of the population living in 'large metropolitan areas' (OECD criterion: population above 1.5 million) in 2008 was 65%, which was the largest among 28 OECD member countries. The OECD average was 48% (OECD, 2012).

crucial issue around land use on the demand side is how to cope with the complicated demands of people for a better urban environment.⁹⁶ Thus, one of the important urban issues in Korea has been to provide sufficient urban land⁹⁷ and to meet people's changing needs.

5.3 Urban Development in South Korea

This section reviews the following topics: the history of urban development in Korea, focusing on changes in policy paradigms; the development process and associated land system; the planning and development management system; and the development methods and policy directions devised for sustainable urban form and land use.

5.3.1 The History of Urban Development

Korean governments from the 1960s on can be divided into before and after the 1987 Democracy Movement. During the first period, planning was an instrument for economic development. The central government established Five-year Plans for Economic Development and implemented them with action programmes and budgets. On a national scale, the National Land Development Master Plan⁹⁸ was drawn up to support economic development from 1972 on.

⁹⁶ For example, demand for amenities is rapidly growing following increases in income per capita, from USD 79 in 1960 to around 30,000 (at purchasing power parity) in 2010 (Bank of Korea, 2011). Income is generally treated as one of the most influential independent variables in these demands.

⁹⁷ Urban land means the land equipped with urban infrastructure and basic public facilities.

⁹⁸ This was transformed into the 20-year National Land Master Plan in 2000 to harmonise the development-oriented direction with the values of conservation (MLTM, 2010a).

Korean land and housing development has been characterised as ‘state-led development’ under the banner of a ‘developmental state’ (Bae and Sellers, 2007; Flynn, 1999). The promotion of industrialisation required huge amounts of urban land, and consequently the government enacted the Land Expropriation Act in 1962. Far from a market economy, the act empowered the government to secure land widely not only for industrial development, but also for residential and commercial development (Kim and Ahn, 2002), and this brought the monopolised public sector enormous development gains (Grange and Jung, 2004). Since the government could not afford to pay sufficient compensation for expropriation, in 1972 it introduced the ‘basic land price system’ by enacting the National Land Use and Management Act (NLUMA) and paid compensation at much lower than market price (Kim and Ahn, 2002). Kim and Ahn (2002) point out that this land allocation system has served to sustain two state-owned companies: the Korea Housing Corporation (KHC) and Korea Land Corporation (KLC).⁹⁹

The public management system for residential land development was established by enacting the Housing Site Development Promotion Act (HSDPA) in 1980 (MLTM, 2010d). In addition, development by the private sector in the Capital region was severely restricted by enacting the Capital Region Management Act in 1984. This was aimed at controlling population growth in the region (MLTM, 2010a).

These policies need to be considered in the context of those times. As the Korean economy was underdeveloped until the early 1970s, policies to overcome absolute

⁹⁹ These two public enterprises were integrated into the Korea Land and Housing Corporation (KLHC) in 2009. The new KLHC was ranked third, on a gross assets basis, among South Korean companies (assets: 158.7 trillion won, liabilities: 130 trillion won) in 2012 (FTC, 2012).

poverty were given priority (Policy Briefing, 2007). Also, in common with other developing economies, enormous development gains were generated from real estate unevenly. So, there were strong policy demand for development gains to be subject to public restitution, which will be discussed in the following paragraphs.

Table 5.1 South Korean Governments and Major Policies since the 1960s

President (Initial)	Park, Chung-hee (Park CH)	Chun, Doo-hwan (Chun DH)	Roh, Tae-woo (Roh TW)	Kim, Young-sam (Kim YS)	Kim, Dae-jung (Kim DJ)	Roh, Moo-hyun (Roh MH)	Lee, Myung-bak (Lee MB)
Period	1962-1979	1980-1987	1988-1992	1993-1997	1998-2002	2003-2007	2008-2012
Political stance	Military Government	Military Government	Conservative	Conservative	Progressive	Progressive	Conservative
Usually called			The Sixth Republic	Civilian Government	People's Government	Participatory Government	Pragmatic Government
Major events, urban and regional policies, and features of the times	Economic development plans, Housing Construction Promotion Act (1972)	Strong promotion of price level stabilisation measures, Housing Site Development Promotion Act (1980)	Overheated real estate market, Acceptance of the public concept of land ownership, Construction of 2 million dwellings, Start of five first-stage NCDs, Enlargement of SOC investment	Stabilised real estate market, Devolution (election of municipal government heads in 1995), deregulation and globalisation, Disorderly development from 1993, Asian Financial Crisis (IMF relief loan in Dec. 1997)	Recession and upturn of real estate market, Efforts to accommodate global standards and help the economy to recover, Start of second-stage NCDs	Overheated real estate market, Strong promotion of balanced regional policy and real estate market stabilisation policy, Promotion of Se-jong city development	Recession in real estate market, Global Financial Crisis, Four large rivers refurbishment projects
Housing site provision ¹⁾ (km ²)	-	102.6	159.3	158.6	126.2	217.9	111.1 (2008-09)

Note: 1) The amount of residential land newly made available by Housing Site developments including new cities. Housing Sites started to be provided from 1981.

Changes in Policy Direction on Urban Development

From the late 1980s on, social pressures for equitable redistribution and conservation of the environment have increased against the background of the Democracy Movement. The Roh TW government¹⁰⁰ of 1988-1992 enacted laws based on the concept of public ownership of land and promoted the Two Million Dwellings Construction Project¹⁰¹ for five years, including the first five new cities in the Capital region. The Two Million Dwellings Project was one of the most striking projects in the history of urban development, and its targets were over-fulfilled (MLTM, 2010a). Since then, an annual supply of around 500,000 new dwellings has been maintained as a goal for national housing policy (MLTM, 2010c). These policies, which featured direct intervention in the housing market by the central government through mass production of dwellings and restrictions on transactions, have been supported by the mass of people, and the governments were able to appeal to people with these policies. The policies were seen as an effort by government to be more responsive to the needs of the people (Policy Briefing, 2007). However, in other aspect, Cullingworth and Nadin's (2007) point is applicable in this case: the dominance of housing policy over planning is frequently observed in countries which have governments lacking in democratic legitimacy.

The 1990s saw the start in earnest of a system of self-governing municipalities, and this also promoted democratic procedures in planning. Along with this, The Kim YS government of 1993-1997 changed direction towards deregulation under the name of

¹⁰⁰ The Roh TW government was established by direct election after the Democracy Movement in 1987. However, the key figures in the government, including President, were from the previous military government, even though the official name, the Sixth Republic, was given it in order to differentiate it from the previous military governments.

¹⁰¹ It included 190,000 Permanent Rental Housings for those on low-incomes (MLTM, 2010c).

‘global standards’, following the trend towards neo-liberalism. The relaxation of land regulation caused a tremendous amount of disorderly development, especially in the Capital region. Nevertheless, at the end of 1997, the Korean government had to request an IMF relief loan due to the Asian Finance Crisis. So, the Kim DJ government of 1998-2002 had to follow reinforced neo-liberal reforms, even though it was Korea’s first progressive government.

The next Roh MH government of 2003-2007 promoted more social housing policies, such as the One Million National Rental Housings (NRH) Construction Project to help low-income groups, and many regionally-balanced and multifunctional new city projects, and it made an effort to stimulate the participation of residents in developments (MLTM, 2010c), in line with its name, the Participatory Government.¹⁰²

Urban Development Process and Land System

The process of development is divided into four stages according to the transaction steps required for the land utilised: purchase, possession, development, and disposal. The scheme for restitution of development gains¹⁰³ corresponds to the transaction steps: acquisition and registration tax, property tax, development charge, and transfer income

¹⁰² Along with these policies, the Roh MH government reinforced property tax and capital gains tax against the background of an overheating real estate market. Moreover, this was accompanied by strong financial restrictions on mortgage loans. It was judged that this induced a soft landing for the real estate market when excessive financial loans based on overvalued real estate (‘bubble’) in the US triggered the global Financial Crisis in 2007 (Policy Briefing, 2007).

¹⁰³ As capital gains in development are increases in land prices, and these are usually generated from development activities on or near the land, the term ‘capital gains’ is used interchangeably with ‘development gains’.

tax.¹⁰⁴ The Development Charge for the restitution of development gains has been levied in Korea since the 1990s, while the general Infrastructure Charge, introduced in 2006, which is similar to the Development Impact Fee in the US, was abolished to boost housing provision in 2008 (MLTM, 2010b). On the other hand, ‘non-cash burdens’ on development projects are more popularly used for public needs through negotiations between planning authorities and developers. Various development methods employed in urban development will be reviewed in the later part of this section.

5.3.2 Urban Planning System and Tools

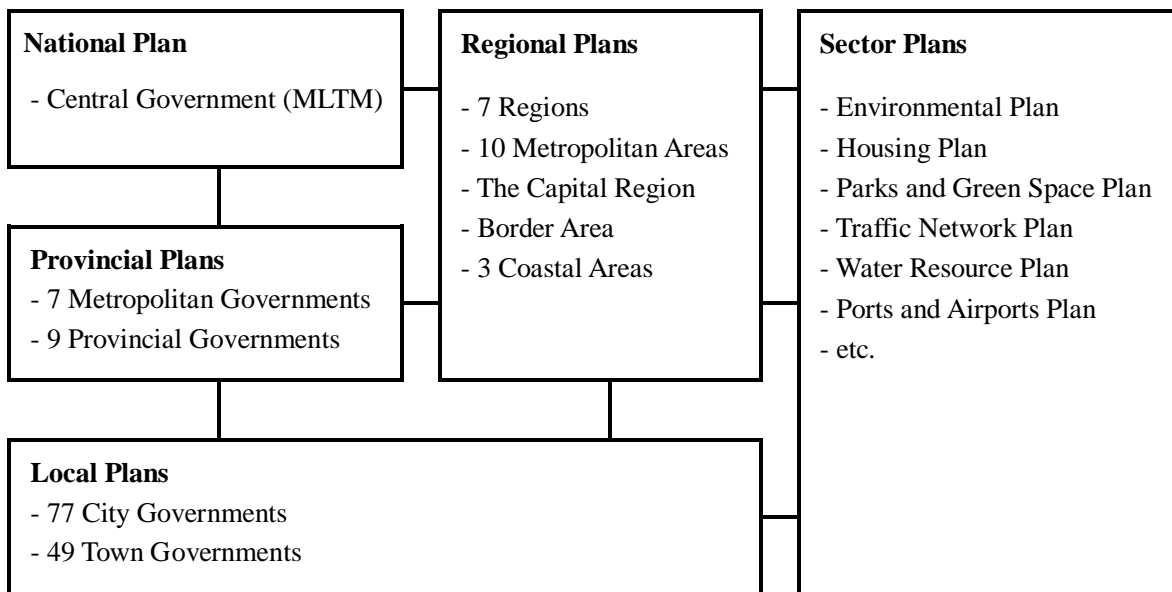
This paragraph looks at planning processes and tools in Korea and discusses them in a comparative way.

Urban Plans and Development Permission

Urban and regional plans in Korea are classified by their scale, as follows: the National Land Master Plan; Metropolitan City-Regional Plan; Urban Master Plan; and Urban Management Plan (MLTM, 2010a). These are illustrated in the Figure 5.2.

¹⁰⁴ Among these, whilst taxes exist in most capitalist countries, the adoption of a development charge is controversial and differs from country to country. For example, Cullingworth and Nadin (2006) point out that the flexible UK planning system was established in 1947, based on the nationalisation of development rights, and this enables planning authorities to levy a 100% development charge on betterment; but they suggest that it distorts the market and increases uncertainty in development. On the other hand, although the development charge is regarded as a planning tool, it also has a tax aspect, which differs from other taxes just in that it is imposed on expected gains before they are made.

Figure 5.2 The Structure of Plans and Planning Authorities in Korea



The National Land Master Plan presents the long-term development directions for national territory, including seven regions of the country, while the Urban Master Plan, introduced in 1981, is organized on a city and a county level¹⁰⁵ (MLTM, 2010b). These all have 20-year visions and proposals for their geographical areas. In addition, in the case where two or more municipalities share a geographically and economically connected ‘life zone’, a Metropolitan City-Region Plan is made collaboratively between the municipalities. A total of ten Metropolitan City-Region Plans have been made, including the Capital area and the Pusan area (ibid).¹⁰⁶ Green belts are coordinated through the Metropolitan City-Region Plans.

¹⁰⁵ The number of Korean cities and counties for which urban master plans and management plans are established totals 126, including 7 metropolitan cities (MLTM, 2010b).

¹⁰⁶ One of them was the Ma-Chang-Jin area, which included three cities beside Pusan. Those cities had created the Metropolitan City-Region Plan for 2020 in 2001, and through the planning process a consensus on the consolidation of the municipalities had been formed. Thus, finally, after an inhabitants’ poll, they were consolidated into the new Chang-won city in 2010.

The urban plans generally include: long-term prospects and visions; a land use plan; an infrastructure and public facilities plan; a housing provision plan; and various departmental plans for items such as education and health. The Urban Master Plan covers not only economic and industrial proposals, but also diverse social and cultural issues. The Urban Management Plan is made to directly regulate land use and put infrastructure¹⁰⁷ on the map. It has mandatory powers over residents and developers, and is implemented according to time schedules and budgets by local authorities (MLTM, 2010b).¹⁰⁸

A proposed development project is reviewed by the relevant local authorities and planning committees in conjunction with the urban plans, particularly the Urban Management Plan, and associated laws. This process is called Development Permission. When permission for a development project is applied for, a District Unit Plan may be requested for the purposes of systematic development management and integrated conservation (ibid). In this case, regulations are applied more flexibly in terms of the use and height of buildings, building-to-land ratio, and floor space index (FSI), which is meaningful in that zoning regulations are alleviated for mixed land use.

¹⁰⁷ There are 53 Urban Plan Facilities which have to be determined by the Urban Management Plan by law, and these include: roads, public car parks, parks, green fields, schools, land for government office buildings, and sewers (MLTM, 2010b).

¹⁰⁸ According to the devolution in urban planning by the 2004 Planning Act, urban master plans by local governments do not need to be approved by the central government and, moreover, urban management plans with substantive effects on local areas are not required to be submitted to the central government.

Green Belt Policy

Although the slogan ‘Green city’ started to spread in the field of urban policy in Korea from the mid-2000s, it is difficult to secure an ecological environment when urban land is overpopulated. The degradation of air and water are two of the problems of overpopulated conurbations.

The Park CH government designated 5,397 square kilometres surrounding major cities as green belts from 1971 to 1973, in order to preserve the natural environment and to control urban expansion. The designated extent (5.4% of the total territory) was larger than the total urban area at that time. Later, it was judged to be a remarkable measure, considering that at that time income level was very low¹⁰⁹ and the enlargement of urban land was urgently needed to support industrialisation (MLTM, 2010b). Since 2001, however, the green belts have been whittled down by 1,371 square kilometres in areas where urban development pressure has been high and environmental concerns comparatively low (ibid).¹¹⁰ Moreover, the Lee MB government of 2008-2012 established the Nest Home Supply Plan for non-homeowning low-income families, which would construct 1.5 million dwellings in the decade 2009-2018 (MLTM, 2008a). For this, green belts in areas where the conservation value is low are also being lifted.¹¹¹ However, opponents claim that this measure should be withdrawn in order to secure the remaining green spaces.

¹⁰⁹ At that time, in 1971, the UN designated South Korea as one of the world’s poorest countries – one requiring continuous international aid (Policy Briefing, 2007).

¹¹⁰ Ahead of the measure, an assessment by the UK TCPA was performed in 1999 (MLTM, 2010b).

¹¹¹ President Lee, calling for partial lifting of green belts, pointed out that ‘some green belts are not green belts, but just greenhouse belts.’

Housing Site Development and New City Development

The government enacted the HSDPA Act in 1980 to solve an urgent housing shortage by providing sufficient residential land rapidly, and it started to promote New City Development¹¹² projects from the late 1980s. The first-period new city projects built five new cities (total 50.1 km²), including Bun-dang, from 1989 to 1996, and the total population planned for these was 1,168,000. This was judged to have been effective in stabilising housing markets in the Capital area (MLTM, 2010c). After that, the provision of residential land decreased against the background of the consequential housing price stabilisation and the Economic Crisis that began in late 1997. Such a decrease in the supply of residential land again sharply increased housing prices. In response to this, in addition to ordinary Housing Site Developments, a second phase of 13 new city projects (total 164.0 km²), including Pan-gyo, have been planned and are being constructed.¹¹³

The periodical fluctuations in the real estate market have taught participants several lessons: there exists a time lag between policies and their effects; and if policies do not respond pre-emptively to changing circumstances, additional burdens will be placed on future generations (MLTM, 2008b). On the other hand, these types of urban land development have been criticized as urban surgery neutering existing plans, despite their contributions to the rapid mass provision of dwellings (Policy Briefing, 2007).

¹¹² This thesis distinguishes New City Development from New Town Development. The former, in Korea, is promoted by the central government, similarly to new town projects in the UK; while the latter is a brand name for large-scale inner-city residential redevelopment projects initiated by the Seoul metropolitan city government from 2002, which are now also popular in other metropolitan cities.

¹¹³ The amounts of housing sites newly provided, including new cities, are presented in Table 5.1.

Zoning System

Urban Management Plans made by local authorities determine where zones fall. Zoning is intended to make efficient use of land and to improve public welfare by regulating use of land, building-to-land ratio, FSI, and the heights of buildings by zones. Each zone is classified into four large parts and nine categories, as illustrated in Figure 5.3. These nine zones are again subdivided into 21 sub-zones, with the particular aim of bringing about mixed land use. For example, the Planned Management Zone in the Management Area is land which is expected to be developed in the future. The Figure shows that around three quarters of the Urban Area are designated as Green Space Zones.¹¹⁴

Figure 5.3 The Allocation of the Territory as a Whole by Zones in Korea

Data: MLTM (2010f)

Areas (total 100%)	Zones (total 100%)			
Urban Area ¹⁾ 16.6%	Residential Zone 2.4%	Commercial Zone 0.6%	Industrial Zone 1.0%	Green Space Zone 12.0%
Management Area 24.5%	Planned Management 11.4%		Production Management 4.2%	Conservation Management 8.9%
Agriculture and Forest Area 47.8%	Agriculture and Forest Zone 47.8%			
Nature Preservation Area 11.1%	Natural Environment Preservation Zone 11.1%			

Note: 1) The Urban Area additionally includes an 'undesigned area' of 0.6%.

¹¹⁴ The 'urban area' does not represent actual use of land at present, but a plan for controlling future use. So it is different from the actual 'urban land' (6.6% in 2009).

The Korean Planning System from a Comparative Perspective

Following reflection on the disorderly development that resulted from the relaxation of land use regulations in the mid-1990s, the government launched a new planning system, the NLPUA, in 2002 and this consolidated the previous two acts: the NLUMA in non-urban areas, and the Urban Planning Act (UPA) in urban areas. The new system reinforced the role of the planning system and extended its scope to cover non-urban areas. For planned development in non-urban areas, the principle of 'infrastructure concurrency' was introduced, and the review of the District Unit Plan was applied for specific projects also in non-urban areas (MLTM, 2010b).

Although the Urban Master Plan and Management Plan, and Development Permission in the Korean planning system have counterparts in the UK planning system, the operation of the system is more similar to that of the US zoning system, which denies wide discretion to local authorities. The majority of applications for development below a certain size are determined automatically by zoning, not by the planning (review) system. The principle of infrastructure concurrency is drawn from the systems of Subdivision Control and Development Fee in the US, and the District Unit Plan resembles the Detailed Plan in Germany (Kim, 2008a).

Though the hierarchies of urban plans are similar in most countries, actual operations depend on the countries' own institutional contexts. In the UK, there is no definite land use plan and infrastructure plan that designate compulsorily the uses of land and the location of prearranged facilities (Cullingworth and Nadin, 2006). This gives a municipality the flexibility to adapt to changing circumstances. Also, in reviewing

planning permission, it can provide the advantage of an in-depth consultation and consensus-building process in the local community. On the other hand, this system may increase uncertainty in economic activities and delay the implementation of development projects. However, many policy documents in Korea imply that, in the context of Korea, which does not have a long history of procedural democracy, clear criteria and rapid decision-making tends to be recognised as another important democratic value which ensures the transparency and responsiveness of public administration alongside economic efficiency.

5.3.3 Development Methods

Urban development methods in Korea are classified as follows, mainly by their ground acts and sizes, in order from the biggest to the smallest: New City Development (NCD), Housing Site Development (HSD), Urban Development (UD), Housing Renewal (HR), urban regeneration, and development management by planning and zoning system (MLTM, 2010b; 2010c). The conditions and characteristics for each category are summarised in Table 5.2. These development methods are largely divided into two categories: direct development projects,¹¹⁵ and indirect development management based on an urban master plan. The latter development is essentially initiated by the private sector,¹¹⁶ while the former requires wider intervention by the public sector, which frequently accompanies large-scale compulsory land purchase.

¹¹⁵ Strictly speaking, direct development projects are not included in the planning system as they represent a narrower concept.

¹¹⁶ As seen in the above sub-section and Table 5.2, the development by planning system is also divided into two: first, development automatically permitted by a local authority, under certain legal conditions

Table 5.2 Urban Development Methods in South Korea

Development method	Size ¹⁾			Initiators
	Area	Housings	Population	
New City Development (NCD)	330 ha or more	30,000-100,000	70,000-400,000	Central Government
Housing Site Development (HSD)	5-330 ha	500-20,000	2,000-60,000	Central or Provincial Governments
Urban Development (UD)	5-100 ha	500-6,000	2,000-16,000	Local Governments or Residents
Housing Renewal (HR)	1-6 ha	120-1,200	250-5,000	Local Governments or Residents
Urban Regeneration	Village-level	100-500	200-2,000	Local Governments or Residents
Development by District Unit Plan	3 ha or more	300-1,000	1,000-2,500	Developers
Development by Permission	Parcel-level	50 or less	250 or less	Developers

Development method	Policy Characteristics			Land Acquisition Methods
	Policy Department	Laws	Main Policy Objectives	
New City Development (NCD)	Housing and Land Policy	HSDPA	Housing Supply and Balanced City	Compulsory Purchase
Housing Site Development (HSD)	Housing and Land Policy	HSDPA	Housing Supply	Compulsory Purchase
Urban Development (UD)	Urban Planning	UDA	Planned Urban Development	Re-plotting or Compulsory Purchase
Housing Renewal (HR)	Housing and Land Policy	UHRA	Improvement of the Residential Environment	Re-plotting or Compulsory Purchase
Urban Regeneration	Urban Planning	(Various Acts)	Improvement of Urban Vitality	(No Acquisition)
Development by District Unit Plan	Urban Planning	NLPUA	Planned Development	Private Land
Development by Permission	Urban Planning	NLPUA	Planned Development	Private Land

Note: 1) The sizes given are normal ones taken from real projects.

and without an in-depth review; and, second, development on a larger scale, which requires a District Unit Plan reviewed by an urban planning committee. The former is similar to the zoning system in the US, while the latter resembles planning permission in the UK.

The Institutional Background of Large-scale Development Methods

Housing Site Development (HSD) and New City Development (NCD)

The HSDPA for HSD was enacted in 1980 to provide rapidly a large amount of residential land (MLTM, 2010c). It employed a ‘whole land purchase’ method and this shortened the development period significantly: only about five years were required for the whole process, from location to the completion of dwelling construction (MLTM, 2010d).¹¹⁷ Another critical reason why the new method was introduced was for public management, so that development gains could be vested in the public sector. Since then, the HSD has been a typical development method for the mass provision of residential land. NCD is a sort of HSD for when the sizes exceed 3.3 square kilometres (1 million pyeongs) (ibid). NC projects are intended to deliver self-contained city-level urban functions.

Urban Development (UD)

The provision of residential land by HSDs was not sufficient to meet the increasing need for dwellings, particularly in cities in the Capital region. Thus, another supplementary method, UD, which allowed for initiation by the private sector, was introduced. The Urban Development Act passed in 2000 was an improved version of the previous Land Readjustment Project Act, which had employed a ‘re-plotting’ method: a method of land acquisition by subdivision and combination of land. Thus, private developers and landowners could participate in residential land development

¹¹⁷ A representative residential land development method before the HSD was the Land Readjustment (compartmentalisation and rearrangement) Project undertaken by private landowners, but it took a long period of negotiation between landowners, and the sizes were not as large as the HSDs (MLTM, 2010d).

using a compulsory land purchase method¹¹⁸ alongside a re-plotting method. Through the UD method, the government can secure an additional provision of urban land with infrastructure developed at the expense of the landowners (developers).

Another merit of UD is that it can be used for developing multi-functional urban land by a planning review procedure. Therefore, its application is extended to industrial or commercial land development, as well as residential land development. Due to this feature, UD is classified among urban policies, whilst HSD belongs to housing and land policies.¹¹⁹ The reason why the UD method is included in urban planning tools is because this allows a re-plotting method as a land system and it can be promoted through a bottom-up process by a residents' association. Nevertheless, the UD method has mainly been employed for residential land development.

Other Development Methods: Management by Master Plan, Regeneration, and HR

The disorderly development that took place in the mid-1990s was concentrated in non-urban areas, which were not covered by an urban master plan at that time. After the new planning act of 2002, which confirmed the principle of 'no development without planning' (MLTM, 2010a), development management by urban master plan was enforced in non-urban areas too.

¹¹⁸ The compulsory land purchase method is allowed when a private developer (landowners' association) owns more than two-thirds of the total land and has the approval of more than two-thirds of the total landowners (MLTM, 2010b).

¹¹⁹ Relevant laws and divisions in local authorities also separate 'land management and housing policy' from 'urban planning'. Among the above development methods, NCD, HSD, and HR belong to housing policy instruments, whilst UD and urban regeneration are classified as urban planning tools.

Another development method actively utilised in Korean cities is urban regeneration. This concentrates on revitalising old decaying urban centres and may not even be accompanied by any physical development. By contrast, HR methods are used for improving areas of poor housing by physical redevelopment and reconstruction. As HR is frequently utilised as an instrument for urban regeneration, it emphasises physical redevelopment rather than a holistic approach.

5.3.4 Policy Objectives of Large-scale Development Methods

The HSDPA for HSD and NCD states that the aim of the Act is ‘to stabilise housing of people by providing lands required for dwelling construction in areas where there are seriously shortage of dwellings’ (1981 HSDPA: article 1); while the UDA for UD stipulates that the aim is ‘to improve public welfare by creating a pleasant urban environment through planned urban development’ (2000 UDA: article 1), which suggests that UD is more oriented to multi-urban functions. In addition, the Urban and Housing Renewal Act (UHRA) states that the aim of HR projects is ‘to improve the housing environment in areas where infrastructure is poor and buildings are dilapidated and crowded’ (2003 UHRA: article 1 and 2). These show that these urban development projects are oriented to the provision of dwellings for low and middle-income groups.

The Comprehensive Housing Plan of 2003-2012 provided for by the Housing Act indicated that 3.3 million households (23.4% of the whole) lived in poor dwellings below minimum housing standards in 2002, and it declared that 500,000 dwellings¹²⁰ should be constructed annually, of which 300,000 should be built for long-term public

¹²⁰ It included annual 270,000 dwellings in the Capital region (MOCT, 2002).

rental dwellings, mainly for homeless low-income groups (MOCT, 2002). These policy documents imply that core policy objectives in large-scale development projects are fulfilling urgent economic and social needs through mass provision of housing.

Recent Policy Moves towards the Conservation of the Environment

After the disorderly development of the mid-1990s, the Kim DJ government of 1998-2002 started to put an emphasis on conservation of the environment in urban development, as confirmed by the enactment of the NLPUA in 2002. Also, the Environmental Impact Assessment (EIA) system¹²¹ was reinforced and integrated into the Act dealing with the Assessment of the Impact of Works on the Environment, Traffic, Disasters, Population, etc. in 1999, along with the Prior Environmental Review system introduced in 2000. However, at that time, the Kim government had to focus on policies for economic recovery, after the Asian Economic Crisis exploded in December 1997. Concrete policy moves towards environmental conservation were implemented in earnest by the Roh MH government of 2003-2007, and the Framework Act on Sustainable Development was passed in 2007. In this period, many substantive standards and guides were established relating to sustainable development. The Sustainable New City Planning Standard in 2005 introduced the concepts of ‘sustainability’ into planning rules for the first time.¹²²

¹²¹ The EIA had been introduced by the Environmental Conservation Act in 1980, and it had been enforced in the promotion of district apartment development projects from then on (Kim and Yuh, 2009).

¹²² It was followed by: the Urban Planning Guide for Low-carbon Green Cities in 2009; the Framework Act on Sustainable Transport and Logistics in 2009; and the Low-Carbon Green Growth Act in 2011.

The Lee MB government of 2008-2012 was conservative, in contrast to the previous two governments, and laid stress on growth, which had to take place against the background of the Global Financial Crisis. Thus, the Lee government relied on market-oriented solutions and initiated Green Growth policies, putting emphasis on economic growth (PCGG, 2011).

Compact Development Policy

Though the concept of ‘compact development’ was introduced as a type of sustainable development in the above New City Planning Standard revised in 2007, it has not been supported by laws and relevant measures which can promote such a type of development. Rather, the Standard, in its section on planning for density, recommended low- and medium-density development rather than high-density development, in order to create a more pleasant residential environment. In the Standard, low-density was defined as 100 people per hectare or fewer; medium-density was 101-200 people; and high-density was more than 200 people. On the other hand, the Inter-ministry Comprehensive Measures for Real Estate Market Stabilisation, which were announced in late 2006, clarified that the policy direction for the supply-side lay in ‘providing more dwellings rapidly and cheaply’ (MOFE et al., 2006).¹²³ The reason why such a policy direction was determined was because there was a consensus that increased housing prices undermined the affordability of housing for low and middle-income groups, as indicated in the document.

¹²³ This type of mass provision of dwellings has resulted in high densities in the Korean context.

Recently, the conceptual elements of the compact city have been selectively reflected in laws. For example, the Enforcement Ordinance of the NLPUA was revised to encourage mixed-use land development (MLTM, 2012a). However, this does not imply that the compact city approach has gained a consensus in the policy field yet. Also, the above policy directions suggest that the priority was given to the mass provision of dwellings over a pleasant residential environment.¹²⁴ The former objective is related to economic and social needs,¹²⁵ while the latter is more linked with quality of life among sustainability principles.

To sum up, firstly, compact development has not been chosen as a policy direction in Korea. Secondly, housing policy and large-scale development projects for it have dominated the realm of urban planning and development in Korea. Against this background, the following questions are raised: how have these development methods impacted on urban land use; through which processes have these policies been pursued; and how are these policies judged from the diverse perspectives of sustainable development?

¹²⁴ The Standard is just a guide for implementation, while the Comprehensive Measure was promoted through the consequential revision of relevant laws, collaborative works between ministries and agencies, and budgeting.

¹²⁵ This does not mean that Korea has walked a welfare state path. Rather, it may be that due to the lack of an adequate welfare system, housing policy has inclined in a social direction in the process of rapid urbanisation and industrialisation.

5.4 The Characteristics of Urban Form and Land Use in South Korea

Korea today is faced with the complicated and overlapping planning challenges which the UK has been experiencing since the 19th century, which are presented in Jenks et al.'s (1996) description: from overcrowding in the 19th century to housing shortages in the 20th century, and current sustainability issues. In response to these challenges, caused by rapid urbanisation and compact growth processes, Korean cities have produced the following urban forms.

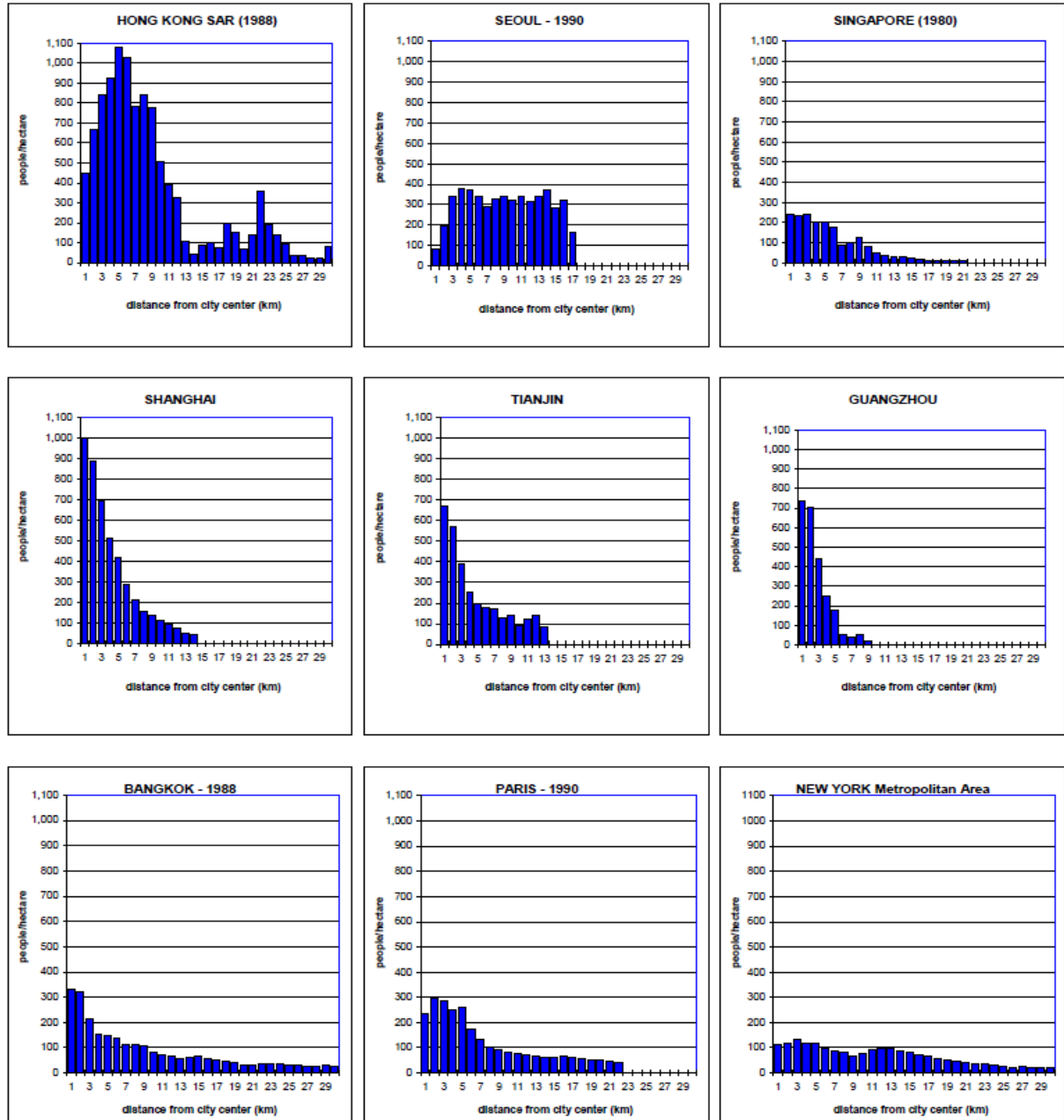
5.4.1 The Characteristics of Urban Form and Land Use

Figure 5.4 illustrates population densities varying according to distance from city centre in nine worldwide metropolitan areas. Among these, the population distribution of the Seoul area is unique, having consistently high densities across a confined area. This shape of distribution may have been caused by strong containment on surrounding land, high-density development from the supply side, and, more essentially, by the strong pressure for urbanisation and the preferences of residents for high-rise dwellings¹²⁶ on the demand side. This urban shape can be interpreted as follows: a conventional urban pattern in developing countries suffering from overcrowding and congestion; a failure to shape a better skyline; a result from high-density and contained developments; or arguably all of these.

¹²⁶ If other things are equal, such as dwelling sizes per capita and urban open space, the population densities in the figure may represent the heights of buildings in the area.

Figure 5.4 Population Densities in the Built-up Areas of Nine Metropolitan Cities

Source: Bertaud (1997)



Newman and Kenworthy (2000) conclude that density is the strongest explanatory variable for transport energy use, as shown in Figure 3.1, which presented relationships between the two variables and showed Seoul as having one of the extreme combinations of the two. The OECD (2012) analysed relationships between urban densities and three variables of environmental performances: carbon dioxide emissions, motor vehicles, and electricity consumption per capita.¹²⁷ In this analysis, Korean cities also showed extreme figures for urban density, though environmental performance did not correspond proportionately. This thesis, through case studies, will investigate how Korean cities have reached such unique and extreme urban forms and land uses.

On the other hand, Korean urban forms and development schemes share many of the features of developing countries, as we have already seen. UN-Habitat (2009) argued that the only one megacity in transitional countries in its analysis of spatial forms, Moscow, had delivered high levels of compactness and high densities combined with a functional public transport system, and these were attributed to its centralised decision-making structure and the immaturity of market in land use allocation. The case studies will examine whether these explanations can also be applied to Korean cities.

Empirical Research on Compactness

Empirical studies of Korean cities in terms of the compact city have also concentrated on the relationship between urban compactness and energy consumption by looking at car travel distances. As the results are mixed, the effects of compactness have been judged, in general, not to be very great (Choi et al., 2010). Woo's empirical study

¹²⁷ Graphs on the relationships are presented in Appendix 3-8.

(2003) on mode choice related to compact HR projects in Seoul found that high-density residential development had decreased journey-to-work and journey-to-shop distances, and had induced more sustainable mode changes. However, little empirical work on the other effects of the compact city has been done (Choi et al., 2010). This thesis does not calculate mode choices and car travel distances, but, rather, focuses on choosing between various land uses in diverse developments for new settlements, particularly with regard to housing types.

Figure 5.5 A Compact Development Model in Korea. Source: Kim et al. (2007; 64)

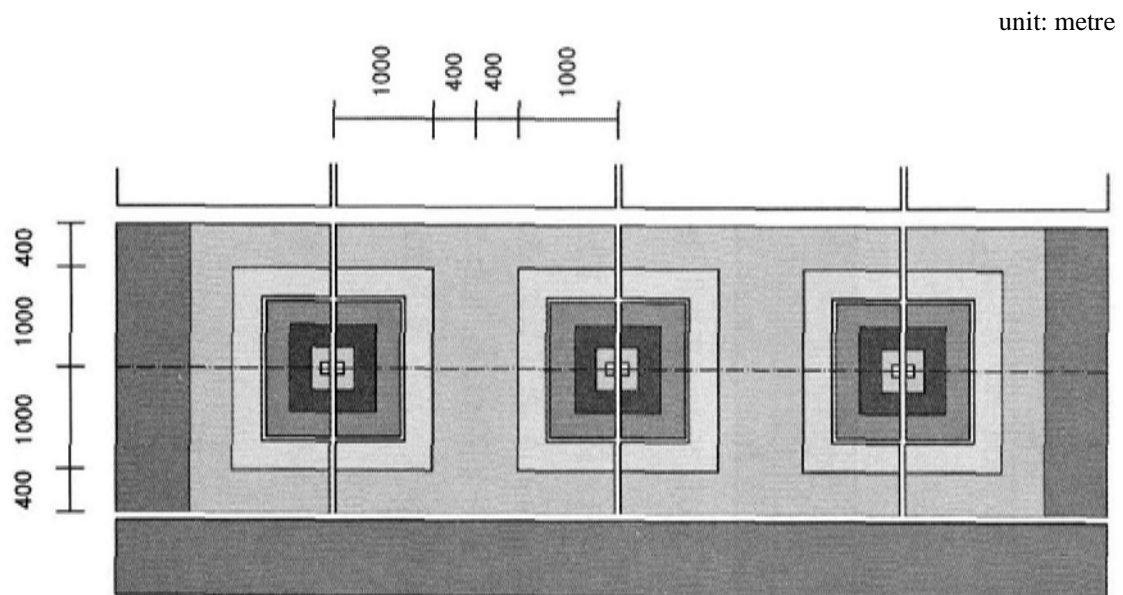


Figure 5.5 is a model of Korea's compact development suggested by Kim et al. (2007). This new city-level model consists of three towns, each with a population of 120,000, which are connected by public transport such as an urban railway system. A town has four neighbourhood units of 30,000 people each, and these are concentrated on a transport node. This research added journey-to-school patterns to its travel distance simulation, and analysed how much open space can be secured through diverse urban

structures, claiming that future development should secure more green spaces within and outside a city. However, this research excluded from its selection various development methods which affect land use, and ignored political interaction between various participants and the sociological context which underpins this.

5.4.2 Housing Types

Urban form and land use is closely related to housing types, as was seen in 4.4.2. High-rise apartments have been provided on a large scale, and are now a representative type of housing in Korea. People's preferences for it reflect the country's unique socio-cultural background, of which some has been reinforced in the modernisation process. However, few studies on this phenomenon have been performed in Korea (Jun, 2009). High-rise apartments directly account for high densities in newly developed housing sites and are, potentially, a success factor for the compact city in Korea. This subsection examines changes in housing types in Korea.

Changes in Housing Types: Nationwide Statistics

Housing types have changed dramatically in Korea over recent decades. In the 1970s, more than 95% of the total national dwelling stock consisted of detached houses (MLTM, 2010a). Since then, as the number of apartments has increased, the proportion of apartments has reached 58% in 2010, as shown in Figures 5.6 and 5.7. Figure 5.6 illustrates increases in the proportion of apartments among total dwellings over twenty years. In 2005, 90% of newly provided dwellings during that year were apartments

(MLTM, 2010c). Thus apartments now dominate the country as a housing type, and the stock of apartments is continuously increasing.

Figure 5.6 Changes in the Proportion of Apartments in Total Dwellings for Korea

Source: 2010 Population and Housing Census Report (NSO, 2011a)

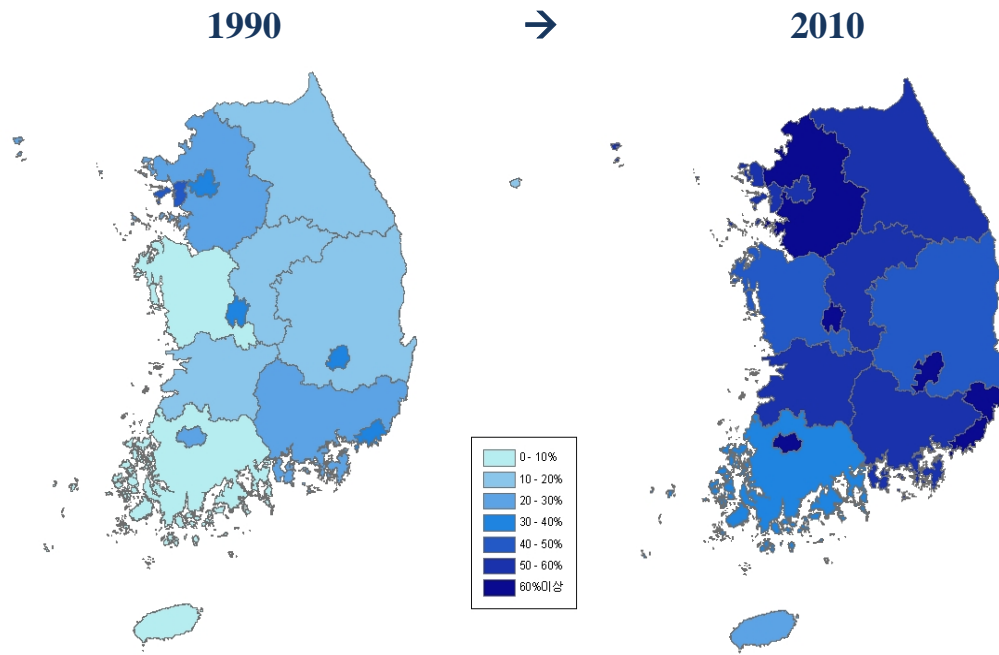
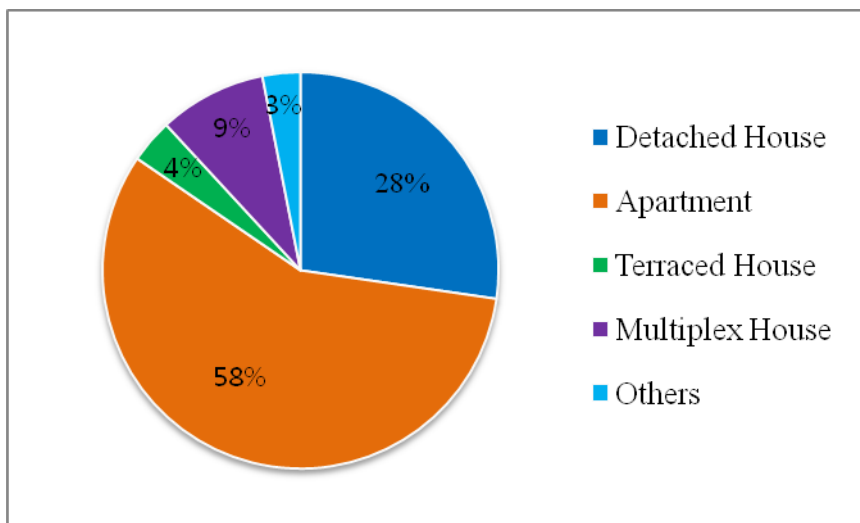


Figure 5.7 Proportions of Housing Types in Total Dwellings for 2010

Data source: 2010 Population and Housing Census Report (NSO, 2011a)



Detached House	Apartment	Terraced House	Multiplex House
One-family dwelling	Multi-family dwelling Storeys: five and over	Multi-family dwelling Storeys: below five Floor Space: over 660 m ²	Multi-family dwelling Storeys: below five Floor Space: 660m ² and less
			

(MLTM, 2010c; Photos: Doopedia, Daum Map (<http://map.daum.net>))

The History of the Apartment

Before looking at the history of the apartment in Korea, the experiences of the UK are briefly considered for reference. In the UK too, high-rise apartments were constructed on a large scale during the housing construction boom after the Second World War: high-rise public dwellings with five storeys and more constructed in England and Wales increased from 6.9% in the 1950s to their maximum 25.7% in 1966 within that total for the year (super high-rises with 15 storeys and more were 10.4%) and it decreased again to 9.8% in the early 1970s (Cooney, 1974). The negative image of the apartment as a housing type for the lower classes had gradually set in, as in other Western countries, and the apartment block was criticised as a huge and ugly monument, or a ‘new slum replacing old slums’ (Taylor, 1967). With the Ronan Point accident as a fatal trigger in 1968, the opinions of consumers came to be regarded as a more important consideration in dwelling construction, and, also, housing supply started to exceed demand around 1970, which eliminated the need of mass production of dwellings (Rowe, 1993).

After an apartment building was constructed for the first time in Korea in 1956, the Economic Development plans of the Park CH government of 1962-1979 were a milestone in apartment construction (Policy Briefing, 2007). The government started actively to promote housing policy in order to resolve a chronic shortage of dwellings. It was a turning point because, in previous periods, housing shortages had not yet been an urgent issue, but rather food shortages were the number one national concern (Jun, 2009). The Public Housing Act was enacted, and the KHC was reorganised to carry out housing construction projects initiated by the government as a commercial proposition. This provision scheme was the result of considering that social housing or permanent rental housing supported by governmental finance was difficult to promote under the fiscal situation at that time¹²⁸ (Policy Briefing, 2007). The military government completed the first apartment construction project, Ma-po apartments, in Seoul in 1962.

Figure 5.8 Apartment Complexes in Korea

Source: Daum image (<http://www.daum.net/>)

Ma-po apartments, Seoul, 1962



Eun-pyeong apartments, Seoul, 2010



¹²⁸ In the 1960s, about half of national finance in South Korea was covered by international aid (Policy Briefing, 2007).

In the 1980s, the age of the apartment began in earnest (Kang et al., 1997). In 1993, apartments surpassed houses as a consumer preference, and the preference for apartments has continuously increased (ibid). The housing supply ratio¹²⁹ exceeded 100 per cent in 2002, and it was appreciated that the supply of apartments had crucially contributed to achieving this (MLTM, 2010c). How and why apartments became the dominant housing type in such a short time can be explained by the following reasons: rapid urbanisation and urban development; limited land space for the population; social changes such as nuclearised families, the extension of women's rights, the growth of middle-income groups, and changes in perceptions between generations; housing policies oriented to apartment construction; and the profitability of the private apartment business (Kang et al., 1997; Cheon 2003).

However, such a predominance of apartments has not occurred in many Western countries; nor even in Japan, which have a similar ratio of national territory to population size.¹³⁰ Also, the above explanatory factors are difficult to differentiate from each other with causalities (Jun, 2009). To sum up simply, apartments have been constructed on a large scale by the supply side (Koh and Ahn, 2010), and attitudes to apartments as a housing type have changed from unfavourable to favourable (Jun, 2009). The case studies will investigate the factors which have generated these phenomena.

¹²⁹ 'Housing supply ratio' is the ratio of housing stock to total households (MLTM, 2010c).

¹³⁰ For example, even in Tokyo province, Japan, where topographic and demographic conditions are similar to those in Korea, the proportion of apartments is only about 20% (Jun, 2009).

5.5 Conclusion

This chapter has provided a brief history of Korean urban development and looked at its planning and development schemes. From this, the following features were highlighted: the cultural context as an oriental developing country; high dependence on a large-scale urban clearance development method; a shortage of urban land; a housing provision policy given priority over a planning system; dense urban form combined with a clear urban boundary; and the dominance of apartments as a housing type. However, the relationships of this Korean built form and development pattern to wider sustainability considerations have rarely been studied, particularly with regard to the social and quality of life aspects. This is a major gap which this study tries to fill. The next chapter on research methodology will establish a methodological framework and review the research methods implemented in the case studies.

CHAPTER 6

METHODOLOGY

6.1 Introduction

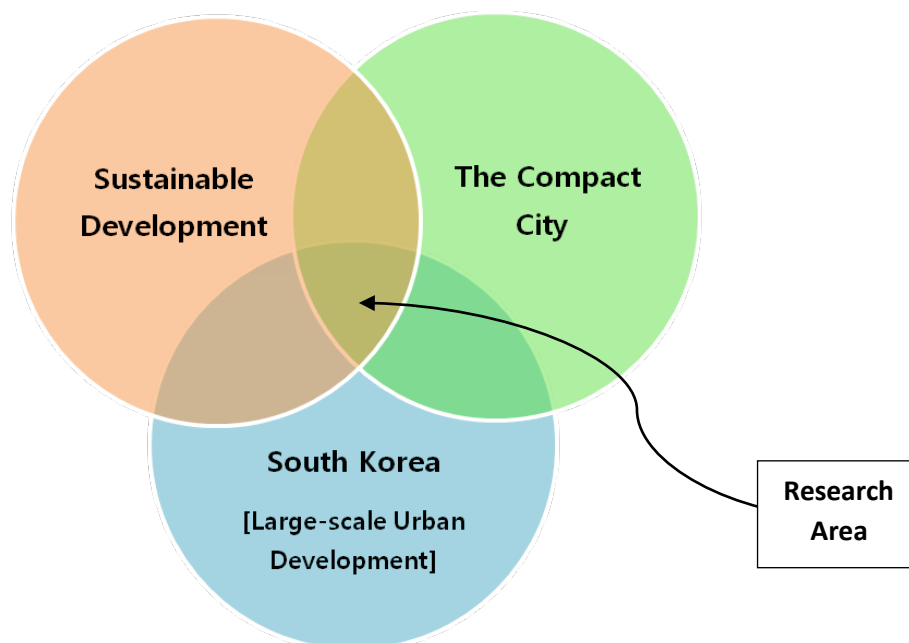
This chapter will set out the research questions which were formulated as a result of the literature review, and will elaborate on the methodology and research methods selected for solving the questions. Before the research objectives and questions are set out, key issues arising from the relevant literature are summarised below.

Key Issues from the Literature Review

Through a review of the relevant literature, firstly, it was confirmed that the concept of sustainable development had been generally accepted as a purpose and aim in the urban development field, as it had in other human activities. Thus, the principles of sustainable development were positioned as appraisal criteria for current urban development. Secondly, it was found that the compact city, with its features of dense and mixed land use, had been proposed for various principles of sustainable development as well as environmental benefits. Therefore, the elements of the compact city were postulated as an urban form delivering sustainable development. Thirdly, the literature showed that a planning system in a broader sense, which included a development method, could contribute to shaping compact urban form and land use. Though planning is not the only or the most efficient instrument for achieving sustainable goals in urban affairs, the research will focus on planning instruments because they directly affect urban form and land use. And, finally, as described in the previous chapter, it was found that, urban development in Korea had actively mobilised large-scale development methods with planning instruments, resulting in new urban forms and land uses.

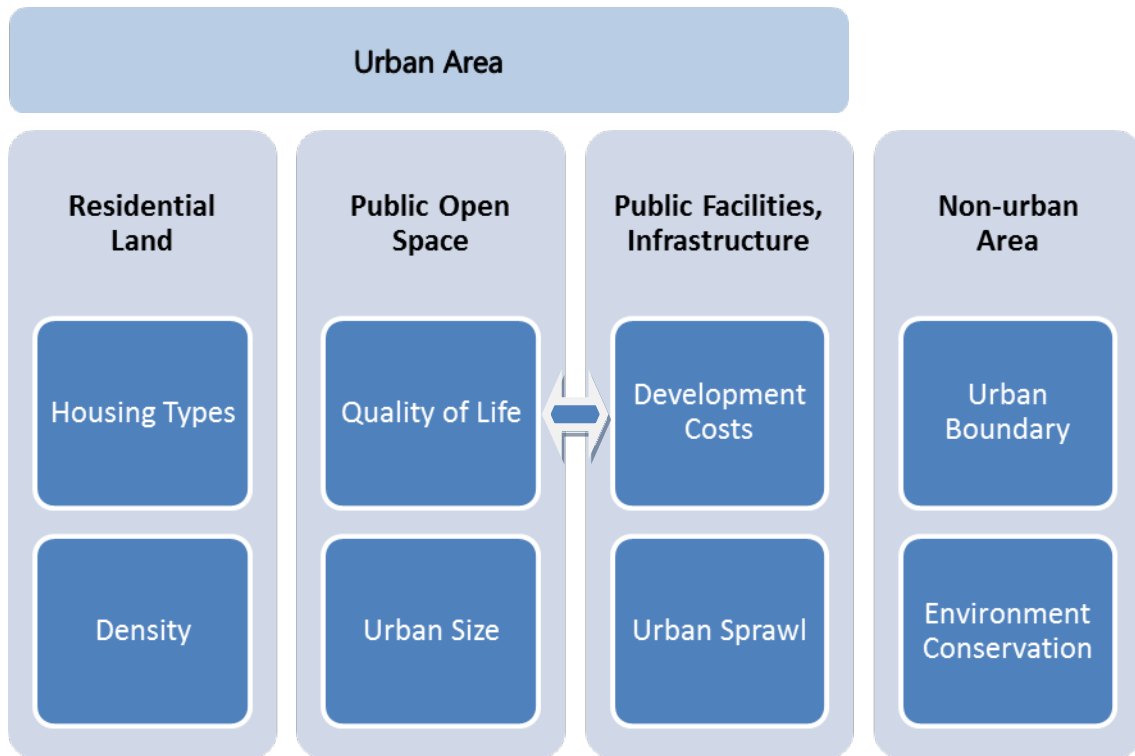
These points are more important in Korea, where physical developments are actively proceeding on a large scale, in comparison with Western countries, where the feasibility and acceptability of the compact city approach is the subject of scepticism (Breheny, 1997). However, although Korean cities display an obviously dense use of land, as is presented in the literature (OECD, 2012; Bertaud, 2010; Newman and Kenworthy, 1989a), the compact city in Korea has rarely been studied, particularly with regard to: the way development patterns shape urban form and land use, the underlying reasons for this, and the policy implications. Therefore, delving into the relationships between compact city characteristics and the principles of sustainable development in the Korean context, as illustrated in Figure 6.1, will have significant meaning for contemporary discussions surrounding the compact city.

Figure 6.1 The Research Area of the Thesis



From this review, the development pattern and planning system in Korea revealed the following key issues, of which the relationships are here looked at in the dimension of land use.

Figure 6.2 Key Variables in the Dimension of Land Use



Note: Particularly, the issues of quality of life and development costs are directly related to the areas of both public open space and public facilities and infrastructure.

Figure 6.2¹³¹ presents the issues associated with land use in the Korean urban context. Land in an urban area is divided into the above three categories, whilst a non-urban area includes rural and natural land. Housing types on residential land are directly related to the storeys of buildings and thus affect densities, other things being equal. Investment for public facilities and infrastructure in development projects raises development costs. The insufficient provision of these facilities, combined with urban dispersion, has been

¹³¹ This Figure was developed from Figure 4.2 on relationships between diverse land uses and densities.

called ‘urban sprawl’ in Korea. Setting up a clear boundary between urban and non-urban areas is emphasised in order to protect natural and rural areas from sprawl. Given that the amount of land needed for public facilities and infrastructure is comparatively stable in a development project, the total land for a project, that is, the size of a newly urbanised area, mainly depends on housing types, density, and the size of public open spaces, as explained in Chapter 4. In determining these housing types, density, and the size of public open spaces, one of the important factors to be considered is the development costs, that is, development gains, as well as the needs of residents. The research will address the relationships between these diverse variables. However, the above is a description based on a static dimension. By adding a time dimension, the research will investigate the dynamic processes of urban development.

Overarching Questions from the Key Issues

The research gaps and issues that will be dealt with in the investigation are articulated by the following overarching research objectives and research questions.

<p>Overarching Research Objectives</p>	<ul style="list-style-type: none"> • To investigate how urban developments in South Korea have been promoted within the theoretical framework of the compact city • To examine whether the development patterns can be sustained in the future
<p>Overarching Research Questions</p>	<ul style="list-style-type: none"> • How and why have urban developments in South Korea been accompanied by such compactness? • Which implications does this have in relation to the principles of sustainable development?

Thus, the thesis will analyse urban developments in Korean cities within the theoretical framework of sustainable development and the compact city.

6.2 The Research Questions

Against this background, four research objectives are set out.

- O1. To examine the relationships between the diverse development methods and land uses demonstrated in South Korean cities
- O2. To explore the processes by which development methods and land uses are determined in South Korean development projects
- O3. To investigate whether current development and housing patterns in South Korean cities will be maintained in the future
- O4. To establish the implications of South Korean large-scale development patterns for achieving urban sustainability

These research objectives will be pursued through the following research questions:

- Q1. To what extent do South Korean cities share the features of the compact city?
- Q2. What is the nature of the relationships between diverse development methods and land uses in South Korean cities?
- Q3. How have the development methods and land use plans been shaped in the negotiation processes of urban development projects?
- Q4. How have the principles of sustainable development been applied to shaping current development patterns?
- Q5. To what extent are current housing types (and associated residential features such as density and open space) acceptable to residents?
- Q6. What implications can be drawn from the case studies for the future development of South Korean cities?

The thesis will look at the extent to which the compact city features of Korean cities contribute to urban sustainability. It is about whether the current development patterns accorded with the principles of sustainable development. The term ‘development pattern’ includes both development method and subsequent land use. The research will not attempt to evaluate a development project directly. However, through the above series of questions, it will try to illuminate the diverse aspects of the compact city and sustainable development.

Firstly, in response to the first and second questions, the features of current development patterns in Korean cities will be examined. For this, relationships between diverse development methods and urban form and land use are to be investigated, focusing on the elements of the compact city. Then, in order to examine how these development patterns have been formed, the processes of large-scale development projects will be explored in the third question; and the contents of these – the arguments and disputes around urban sustainability generated by their implementation – will be looked into in the fourth question. The fifth question is about whether these development patterns can be maintained in the future, which is related to acceptability by residents. For this, key residential characteristics such as housing types and the provision of open space will be focused on. And, finally, the implications of these development patterns for urban sustainability will be discussed. This will contribute to establishing strategies for delivering sustainable development in the context of Korea. The research questions will be detailed in the next section, with the methodological framework.

Research Scope

The research questions focused on urban development practices in Korea, and their findings will be supported by two case studies undertaken as part of the research. The objective of the research does not lie in identifying the optimum level of residential density or open space in a development project. The research investigates how urban form and land use are shaped through the continual decision-making and consensus-building processes of diverse development methods.

Also, the research will not just focus on one site design or community involvement at a village or neighborhood level, but will address the issues of urban form and land use in both a city and a developing or transitional area where there are urgent urban problems such as environmental overload in a megacity and a massive demand for decent dwellings.

However, the research will not dig deeply into the socio-economic and cultural roots which have formed current development patterns, and these will be addressed only in a limited way in the pursuit of answers to the research questions. Rather, the research will investigate the policy-oriented practical implications of these patterns for the compact city in the context of an oriental country where large cities grow rapidly. However, it will not look for a comprehensive policy set, but rather focus on a planning and development management system which directly affects urban form and land use.

6.3 Methodology

In the previous section it was stated that the research would address a large number of variables which needed to be explained within the context of the whole, which is a situation in which a case-study design is the most appropriate (de Vaus, 2001). This section introduces the case study as a research design, and outlines the methodological framework for the research, following which it details the methodological issues thrown up by the research questions.

6.3.1 Case Study as a Research Design

A case study is the most favoured technique for studying in-depth and multifaceted phenomena in the context of real cases (Swanborn, 2010). A case study is designed when a large number of variables within a small number of cases have to be dealt with and the researcher is unlikely to be able to control events within the cases (Yin, 2009; de Vaus, 2001), as will be the situation with this research. The research will select two cases deliberately and analyse them intensively in order to understand the cases as a whole through investigation of their parts (Bryman, 2008). This approach will contribute to a comprehensive understanding of the characteristics and processes of urban developments in Korean cities.

Though the case is the unit of analysis in a case-study design, there can be further units embedded in the case for more intensive analysis, and this is called a ‘multiple case embedded design’ (Yin, 2009). An embedded design is required in this research in order

to analyse diverse elements within the two cases. Such a design will contribute to testing the suitability of the compact city in Korea and, further, to building a relevant model of the compact city, as a case study essentially enables theoretical work (de Vaus, 2001). In addition, as a case contains various elements, diverse methods in data collection may also be required for the various elements (ibid). This case study will employ diverse data collection methods, as will be detailed later.

6.3.2 Methodological Framework

Figure 6.3 The Methodological Framework

Promoting of Urban Development	Shaping of Urban Form and Land Use	Appraisal of Current Development Patterns
Development Methods <ul style="list-style-type: none"> - New City Development - Housing Site Development - Urban Development - Housing Renewal - Other Development Methods 	The Compact City <ul style="list-style-type: none"> - High Density - Mixed Land Use - Clear Urban Boundary - Public Transport - Self-Sufficiency 	Practical Criteria <ul style="list-style-type: none"> - Feasibility - Acceptability Residents' Preferences <ul style="list-style-type: none"> - Housing Types - Open Space - Other Urban Functions - Community Activities
Initiating of Large-scale Development Projects <ul style="list-style-type: none"> - Policy Objectives - Initiators - Institutions - Resources 	Factors and Processes in Development <ul style="list-style-type: none"> - Participants and their Incentives - Historical and Cultural Contexts - Institutional Capacities - Planning and Development System 	Principles of Sustainable Development <ul style="list-style-type: none"> - Environmental Conservation - Economic Development - Social Equity - Quality of Life - Participatory Democracy
↑		
Yong-in Case	<ul style="list-style-type: none"> - Diverse public development projects after a period of disorderly development - Residential-oriented developments in the Capital area 	
Se-jong Case	<ul style="list-style-type: none"> - A politically initiated single new city development project - Multi-functional development in a non-Capital area 	

The methodological framework established as a result of the literature review is presented in Figure 6.3. The case studies will examine the urban form and land use of development sites in the case-study cities as a whole, and, at the same time, select and delve into a number of project sites for intensive comparison. The details of the research questions with regard to methodological issues are as follows.

Research Questions 1 and 2: The Features of Urban Form and Land Use

The first and second questions seek to identify the features of urban form and land use resulting from diverse development methods. Analysis for the first question, about the features of the compact city, will be descriptive, using a sort of ‘ideal-type analysis’ (de Vaus, 2001), while analysis for the second question, dealing with the relationships between land use and diverse development methods, will be explanatory. For the first question, various types of data will be used, including planning documents and interview materials. A quantitative degree of compactness will be examined with density as the focus.¹³² And then, in the second question, the composition of land use will be analysed using a quantitative method.

Research Question 3: Processes Used in Shaping Current Development Patterns

This research question includes the following sub-questions: Who participates in an urban development project, and with what incentives and concerns? And through what processes are development patterns for the project formed? The first sub-question

¹³² Residential density is the most frequently used indicator for measuring urban compactness (Burton, 2002; Neuman, 2005).

explores the roles of individual participants and their relationships in determining a development method which presumably has significant impacts on urban form and land use on the site. These questions are also associated with an inquiry into how modern Korean cities have been created with such a high degree of compactness. In order to explore the negotiation processes in urban developments, diverse participants and stakeholders from various development projects will be interviewed.

Research Question 4: Considerations of Sustainability in Current Developments

This question was set up to explore actual considerations and arguments for sustainable development in development projects and to identify where these diverge from the general principles of sustainable development which were presented in Chapter 2. Although the research is not intended to appraise the sustainability of individual projects, it looks for the sustainability principles which are recognised and prioritised by the participants.

For this, it was considered that any evaluation of the sustainability of the compact city had methodological limitations, because of the broad concepts and the context-dependence of the compact city approach (Dempsey and Jenks, 2010), and that this research would be an initial one, providing a context-oriented and process-driven study of the application of the compact city concept for Korean cities. This will be conducted mainly by an interview method and supplemented with investigation of relevant documents.

Research Question 5: The Acceptability of Current Residential Features

This question examines whether such development patterns can be maintained in the long run. Thus, this is about feasibility and acceptability in the Korean context. As high-density and high-rise features are directly correlated with housing types (Bramley and Power, 2009; Dehring and Dunse, 2006), housing types in Korean urban development are to be examined at this stage. This study will draw on both interviews about people's aspirations for their residential circumstances and secondary quantitative data indicating residential preferences. Residential features to be considered will include: densities, heights of buildings, and accessibility to open spaces and public facilities. In studying the case-study cities, a small number of development projects and districts will be chosen for intensive investigation, because urban circumstances experienced by residents are mainly at a neighbourhood level (Jenks and Dempsey, 2007). For this, interviews with residents are expected to contribute to understanding their lives in the new settlements in terms of real experiences (Seidman, 2006).

Research Question 6: Implications and Policy Suggestions

The final question on implications and policy suggestions for sustainable development resulting from analysis of the compact city will be answered by the integration of findings from the case studies and discussion. It will compare approaches in the two case-study cities, and suggest a compact city model and strategies for its promotion in the Korean context.

6.4 The Case Studies

This section will introduce the selection of cases, present the research process and research methods, and give details of the interview method as the main research method.

6.4.1 The Selection of Cases: Yong-in and Se-jong Cities

For the case studies, two cities, Yong-in and Se-jong, are chosen. The reason why only two cities are selected is that the researcher wishes to concentrate on fuller explanations of developments and planning processes in these two cities. As theory-testing in a case study is done to examine whether a theory actually works in a complex of real situation (de Vaus, 2001), both inquiry into the whole case and its parts are required. Yin (2009) argues that cases should be selected by the logic of replication for theoretical generalisation, not by the logic of representative random sampling which is employed to explain a population by statistical inference.¹³³ Since the theory-testing depends on theoretical generalisation, not statistical generalisation, an increase in the number of cases may be not significant (ibid). Thus the two cities are selected with strategic intention, so as to represent the main characteristics of urban forms and development processes in Korean cities.

The two cities are comparable with each other in offering examples of urban form, planning schemes, development methods, and governance systems. Yong-in is located in the Capital region of South Korea and has experienced rapid urbanisation. At one

¹³³ Such screening to identify cases which provide challenging and valid tests of a theory is called 'theoretical sampling' by Glaser and Strauss (1967) and 'focused sampling' by Hakim (2000).

time, it has been regarded as a city of urban sprawl, due to its notorious ribbon developments begun in the mid-1990s (MOCT, 2006a). Also, it is still under the greatest pressure to continue developing. Thus, since the 1990s, more than 700,000 residents have moved into new settlements in Yong-in, and these settlements have been constructed in 27 large-scale projects and many other smaller private projects. By contrast, Se-jong is a newly designed city in a non-Capital province produced by a single project in the mid-2000s, and the project will provide new homes for 500,000 residents by 2030. It adopted a multifunctional city concept, rather than being merely a residential-purpose city, and it was planned as an administration-oriented city into which 40 main institutions of central government would be moved from the end of 2012 (MACCA, 2010).

In terms of urban development processes, the Yong-in case is similar to incrementalism, while that of Se-jong follows the rational model, although these terms originally belong to decision-making theories in planning (Levy, 2003). In the development process of Yong-in, a variety of development methods have been implemented, accompanied by fierce conflicts among diverse interested parties. The development of Se-jong has also been controversial, as it has been initiated by political will rather than by the market. It has been promoted by the national-balancing-development argument, which claims that development in the Capital region should be contained, and excessive intensification of population and industry should be avoided by moving both into non-Capital provinces.

Table 6.1 Main Features of the Two Cases

Key Features	Yong-in City	Se-jong City
Urban Plan (Act)	Common local urban master plan (NLPUA)	Special plan for the construction of the Administrative City (SAMACC)
Characteristics of the city	Urban-rural integration city (formed naturally, and by many residential development projects)	Multifunctional Administrative City (MAC; initiated by central government)
Location, Urban Size, and Population	Capital Area, 42 km from Seoul; 591.3 sq km; Around 900,000 population	Chung-nam Province, 120 km from Seoul; 295.9 sq km; 500,000 population (planned)
Recent History (Year)	Disorderly development (1993-99), Planning act revision (2000-03), Urban plan revision (2003)	Issue raising - Presidential election (2002), Location designation (2005), Urban plan (2006)
Initiator of Urban Plan	Yong-in city local government	The central government (MLTM and MACCA)
Committee for Review	City Committee on Urban Planning	Promotion Committee for MAC Construction (belongs to PMO)

As a large number of development projects have been implemented in Yong-in, three projects will be chosen for their development methods – taking account of their project periods, sizes, and locations – for more intensive examination as embedded cases. In the case of Se-jong, the only village which has started to accommodate new residents so far will be highlighted. As Yong-in has been developed through diverse types of development methods, in contrast with Se-jong’s development by a single project, the studies will expend a greater effort on Yong-in.

6.4.2 Research Methods and Process

A case study is commonly recognised as likely to be implemented by the interview method; but actually it frequently addresses embedded cases, and the study of these may depend on diverse research methods, including quantitative analysis, because a case

study is fundamentally theoretical and seeks to build up a fuller explanation of a case and its sub-cases (de Vaus, 2001). Thus, the case studies for this research will employ a mixed research method approach which encompasses a process-driven qualitative method and an outcome-driven quantitative one, though the division is not absolute (Yin, 2009). As both methods have merits and limitations, the mixed approach may be a more powerful device for research (Creswell, 2009). For data collection, the qualitative analysis will use an interview method and various sources of textual data, while the quantitative analysis will mainly rely on secondary numerical data. The research methods employed by the research questions are presented in Table 6.2.

Table 6.2 The Research Questions and Methods for the Research

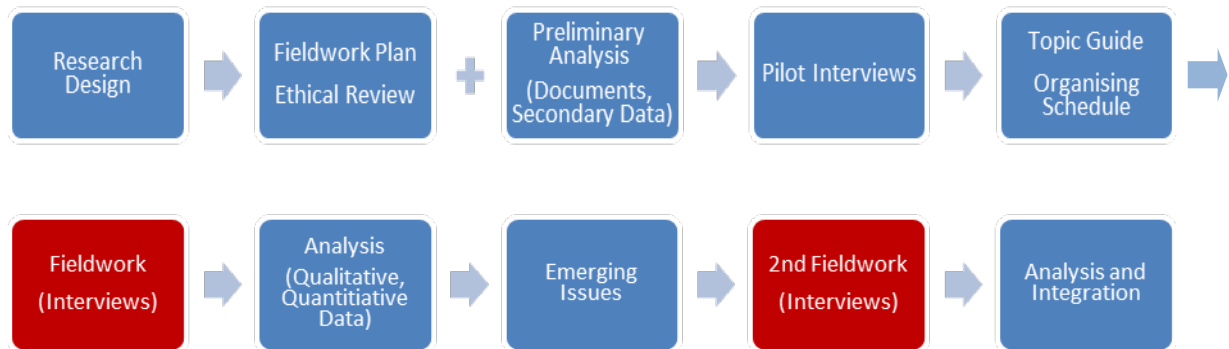
Research Questions \ Research Methods	Documentary Analysis	Interview	Quantitative Method	Site Visits / Observation ¹⁾
1. The Features of the Compact City	○	○		○
2. Relationships between Development Methods and Land Use	○		○	○
3. and 4. Processes and Considerations of Sustainability in Current Developments	○	○		○
5. Acceptability of Current Residential Features	○	○	○	○

Note: 1) Site visits and observation are not one of the major methods for the research, but will be employed on selected development sites.

2) The final research question, '6. Implications and Policy Suggestions', will be answered by the integration and discussion of findings from the above research questions.

Figure 6.4 illustrates the actual process of the research from preparation through two rounds of fieldwork to analysis and integration. This process will be detailed in the next sub-section, with the main research method, interview, as its centre. Before this, other sources of data which are used for a preliminary analysis are presented in the following paragraphs.

Figure 6.4 Research Process



Documents for Case Studies

Relevant documents used for the case studies include: urban planning documents, such as urban master plans, maps and annexed papers; individual project planning documents, such as development plans and implementation plans; relevant reports such as the EIA; and materials released through the media.

Since Yong-in has been developed through many projects initiated by both the public and private sectors, useful materials are scattered around relevant institutions. Thus, the researcher had to look for related websites, from government organisations to public institutes and public corporations, such as *Gyeong-gi Province Real Estate Portal* (<http://gris.gg.go.kr/>), and visit them to gain unofficial materials, for example, materials relating to private development companies. As Se-jong project has been promoted by a single project of the central government (MLTM and MACCA), in full public view, a comparatively high degree of transparency was secured for related documents, including many review reports.

Data from these documents will be provided not only for qualitative analysis but also for quantitative analysis. For instance, for analysing densities and land use by a quantitative method, the development plans of 43 projects were gathered to extract data.¹³⁴ A qualitative method produces non-numerical findings which may offer useful insights, while a quantitative method facilitates a practical study and the results can be useful for predicting future developments (Creswell, 2009).

Secondary Quantitative Data

The research uses two sorts of secondary data for quantitative analysis: the *Population and Housing Census* (NSA, 2011a) and the *Housing Status Survey* (MLTM, 2011b). These nation-wide data will be employed for analysing preferences relating to density, housing type and public space. Table 6.3 compares the characteristics of these data sets.

Table 6.3 The Characteristics of Secondary Quantitative Data Sources

	Population and Housing Census	Housing Status Survey
Organisation	National Statistics Agency (NSA)	Ministry of Land, Transport and Maritime Affairs (MLTM)
Objective	The provision of data on the socio-economic characteristics of the population for the establishment of national and regional policies	The provision of data for the establishment of housing policies such as a housing supply plan and housing welfare service policy
Period	Every 5 years	Every 2 years
Method	Complete enumeration census by internet or face-to-face	Probability sampling survey done face-to-face
Subject	Every person who lives in South Korea and their dwellings	33,000 households, by sampling
Items	50 items on population, households, and housing	Dwellings, housing environment, housing mobility, dwelling purchase plan, and preferences and demands for housing

¹³⁴ As data from all the large-scale development projects in the case-study cities are included in the analysis, this is not a sampling, but a total inspection of a population.

6.4.3 Interview

For a case study, qualitative methods such as interview are used more frequently than quantitative ones, especially in small-scale case studies (Swanborn, 2010). The qualitative method of semi-structured and unstructured interviews can provide more in-depth and complex explanations than a quantitative method can. These case studies employ interview as a main research method. This sub-section details the research process and addresses issues around this method.

Interview as a Data Collection Method

The research will draw on primary data collected by interview, along with the secondary data mentioned above. Data collection by a ‘survey’ method with a structured questionnaire allows the researcher to do quantitative analysis; but such data have a weakness in that answers may well be biased or given without serious consideration if the questionnaire that produces them is not carefully designed and communicated (Bryman, 2008). Having considered this problem and the research purpose, the researcher decided that the case studies for this research would employ a semi-structured and open-ended interview method. And, as secondary numerical data were available, no extra survey was required. In relation to this, it was considered that information on actual behaviours, for example, migration data about residents, would be a more direct way of explaining phenomena than a survey by questionnaire, for example, on residential preferences and satisfaction (Bryman, 2008).¹³⁵ The underlying reasons

¹³⁵ This is similarly applied in relation to a price variable. Property prices are broadly used for a value analysis, because property prices reflect future benefits from the properties, thus, residential preferences

and contexts of the behaviours will be explored through interpreting interview materials. Interviews will be performed in a semi-structured and unstructured style. Such face-to-face interviews are suitable for obtaining information in complex and dynamic circumstances (Arksey, 2004).

The Selection of Interviewees

For the selection of interviewees, purposive sampling was employed to establish a desirable correspondence between the research questions and the interviewees (Bryman, 2008). Interviewees are classified into three groups according to their major interests. The first group are chosen from public participants, including: government officials, local councillors, members of urban planning committees, staff from public corporations, public institute researchers, and professionals such as urban planners and designers. The second group are market-driven participants, including: landowners, developers, and market consultants. The third group are residents and members of civic and environmental groups. The residents interviewed include: existing residents, people planning to become residents (pre-residents), people moving out from sites (out-migrants), and their neighbourhood representatives. In order to interview a spread of participants from diverse groups, the research designated sub-categories and searched for participants who fitted the desired profile (Weiss, 1994).

(Brander and Koetse, 2011; Dehring and Dunse, 2006). However, real estate prices are also indirect indicators compared to behaviour, being influenced by various factors besides location and socio-economic factors, including speculative demands and psychological factors, substitute relationships between assets, shocks from international financial market, property tax and mortgage loan policy, and the land and housing provision system. Therefore, the study will focus on more direct data on the choice of population rather than prices. And, when the latter is needed, actual market prices will be compared directly rather than using contingent valuation by survey or hedonic pricing by revealed preference.

Designating categories of interviewees was facilitated by preliminary analysis, pilot interviews, and relevant literature, such as the publication of the CAGE and DETR (2001). When it came to finally choosing the interviewees, in some cases, interviewees recommended other suitable participants in these categories. This is a technique called ‘snowball sampling’. However, in most cases, the researcher searched for key participants according to these categories in official documents and on the websites of relevant institutions, and tried to directly contact them. Therefore, this is not random sampling.

The number of interviewees totalled 54: 34 from Yong-in and 20 from Se-jong. The reason why, comparatively, many central government officials were interviewed in Se-jong was because the central government (MACCA) was involved, directly and extensively, in many development matters, from land compensation to providing support for new communities. The small number of interviewees who were ordinary residents certainly has a limitation for a generalised explanation, but this was inevitable considering the constraints of time and budget for this research. The details of interviewees are listed in Appendix 1.

Table 6.4 The Classification of Interviewees

Case Areas		Number of interviewees	Central Government officials	Municipal Government officials	Staff of public corporations	Professional experts ¹⁾	Residents & members of civic groups	Market participants	Academic experts
1 st Field-work	Yong-in	22	3	3 ²⁾	3	3	4	3	3
	Se-jong	16	9 ³⁾	-	1	3	2	-	1
2 nd Field-work	Yong-in	12	3	1 ⁴⁾	2	-	5	1	-
	Se-jong	4	-	2	-	-	1	-	1
Total		54	15	6	6	6	12	4	5

Note: 1) Professional experts include members of planning committees and urban planners.

2) Municipal government officials in the Yong-in case comprised one from provincial and two from local government.

3) A group interview was held with 8 participants in the Urban Design Division of the MACCA.

4) This interviewee was a member of the local council.

Pilot Interviews

Prior to the above main interviews being carried out, pilot interviews were held with six Korean interviewees who were working towards doctoral or master's degrees at the University of Birmingham.¹³⁶ The interviewees consisted of: three central government officials, one municipal government official, and two public enterprise staff. Each of them specialized in different fields related to urban development. In addition, these interviewees had another advantage: all had lived in the Capital region, including in Yong-in; and five were residents in waiting of Se-jong or similar non-Capital Innovative Cities, who were set to move into these cities after their studies. This was significant in that their statements would not be based merely on superficial perceptions, but on real choices they had made or would make, for example, of housing types. The fact that they lived in the UK was also an advantage. They could compare their housing experiences in the UK with those in South Korea. Thus, the interviews with them gave the author plentiful inspiration for the research.

Conducting the First Round of Fieldwork

The first fieldwork was performed in the two case-study cities in May 2012 for 17 days. As the researcher had worked for the Korean central government for ten years, he was well acquainted with the possible relationships between participants, such as collaboration or conflict. Also, this enabled him to organise fieldwork efficiently. However, at the same time, it was a concern that some interviewees might give strategic

¹³⁶ The University of Birmingham was operating an education and training programme for South Korean government officials and staff of public corporations.

opinions, in pursuit of their own interests. Therefore, the researcher withheld information about his former occupation from private participants. In order to counteract possible distortions in the private individuals' statements, opinions from public participants were heard. As public participants might also be subject to bias, their statements were cross-checked with those of other participants and against other sources of data. The researcher tape-recorded most interviews and took notes. He also visited key sites, where he took photos, watched some presentations, and discussed some issues with participants. These fieldwork activities are listed in Appendix 1.

The interview topics were the experiences, perceptions, and understanding of participants in the urban development projects. However, those involved were not likely to be familiar with a fundamental style of questioning, and tended to accept current development patterns, including urban form and land use, as self-evident, or to consider them as already socially agreed in the deep-rooted socio-cultural context. Therefore, in order to draw out the underlying factors behind the more obvious data, the interviews dug into a deeper, more critical layer of understanding. For instance, the interviewer continually raised questions on potentially unsustainable aspects of the generally accepted development patterns. The interview topic guides are attached in Appendix 2. On the other hand, in the case of 'elite interviews' where interviewees were key figures in their fields who typically knew more than the researcher, such as the master planner of a project, the interview allowed interviewees more choice in the direction their answers took by using an open-ended style (Gillham, 2005).

It was eventually found that the greatest difficulty about interviewing was that many practitioners in the field, particularly government officials and public corporation staff,

were too busy to give sufficient time to the interviews. In some cases, they even had to rush out of meetings to deal with urgent matters on their sites. The situations observed by the researcher showed that matters in urban development projects were very complex and were considerably related to conflicts between the interested parties.

Analysing Transcripts, Identifying Emerging Issues, and Conducting the Second Round of Fieldwork

The coding and analysing process started with the transcripts, and with an open-mind. The researcher kept in mind that the research and conclusion should be useful and meaningful at a practical level, as suggested by Grounded Theory (Denscombe, 2003). Through exploring interview materials and relevant documents, the following issues emerged as important for the research questions:

1. Features of urban diffusion: Sprawl or compact development?
2. Changes in policy direction and decision-making structures
3. Social equity aspects of urban development projects
4. Conflicts between economic development and environmental conservation
5. The sharing of development gains and costs
6. Considerations in allocating diverse land uses
7. Urban self-sufficiency and regional strategy
8. Large-scale development by urban clearance: Will it be sustained?
9. High-rise apartments as a dominant housing type
10. Community activity in an apartment district

These issues will be addressed one by one in case-study chapters (sections 4 and 5), particularly related with research questions 3 to 5. The primary study suggested a need for a second round of fieldwork for additional investigations into these issues. For the second fieldwork, topic guides for interviews were reviewed and reformulated focusing on the above issues. In this regard, the research employs ‘open and emerging design’ (Creswell, 2009). The second fieldwork was expected to enhance validity through additional cross-checking and triangulation with other participants and sources of data (ibid). The second fieldwork was conducted from November to December in 2012, also for 17 days. As new residents were then being moved into new settlements in embedded sub-cases and were building new communities, progress in these activities needed to be followed up. Interviewees were more selected from resident communities and local interest groups. For these reasons, interviews were performed with new interviewees without overlapping with the first-fieldwork interviewees.

6.5 Conclusion

This chapter has outlined the methodological framework for the research; set out the research objectives and research questions which were raised by the literature review; introduced a case study design for the research; shown how two subjects were selected for case studies; looked at the methods considered for the case studies; and described details of the research process that was implemented. The next chapters will proceed with the two case studies: one of diverse development methods in Yong-in city; and the other of a single new city development project at Se-jong city.

CHAPTER 7

THE CASE STUDY OF YONG-IN CITY

7.1 Introduction

The first case study of Yong-in city starts by looking at the history and features of the Yong-in urban developments in the context of the expansion of the Korean Capital area as a whole, and in terms of the concept of the compact city. This was because the study took a holistic approach to the unit under investigation (Yin, 2009). Then, the following items will be investigated: the shaping of current development patterns; the principles of sustainable development acknowledged by participants in those processes; and the acceptability of current residential features. For this, several development projects are selected according to their development methods and intensively examined as embedded sub-cases.

7.2 The Context of the Yong-in Developments

This section will look at the history of the Yong-in developments, focusing on developments after the 1990s, and will introduce several projects as sub-cases.

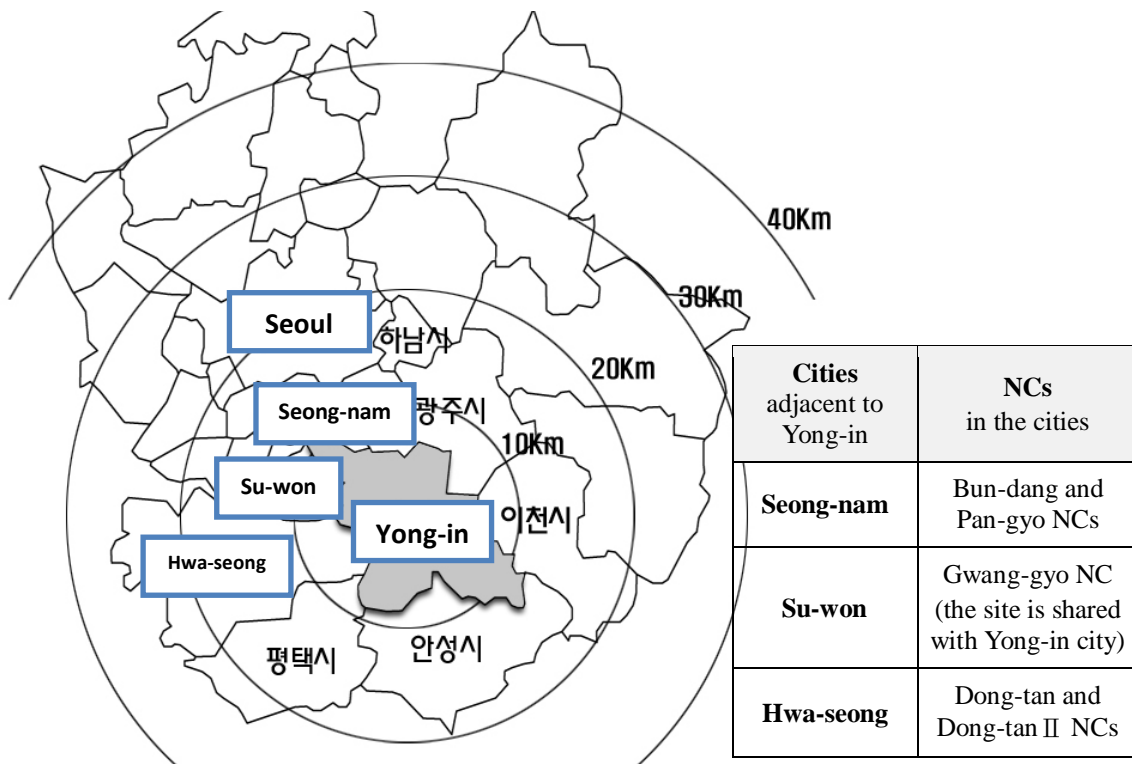
7.2.1 An Outline of the Yong-in Area

Yong-in city is located to the south of Seoul metropolitan city, on the Seoul-Busan (highway) line that passes first through Seong-nam city, where it takes in Bun-dang NC, which is one of first-stage NCs.¹³⁷ The northwest area of Yong-in, which has been

¹³⁷ The five first-stage NCs were constructed beyond the green belt area surrounding Seoul and were located between 10 and 20 kilometres from Seoul (MLTM, 2010a).

intensively urbanized, is adjacent to the Bun-dang NC. Yong-in depends heavily on Seoul and Bun-dang economically and politically (Kim et al., 2003). The total area of Yong-in is 591.5 square kilometres, which is slightly smaller than that of Seoul (605.2 km²) (Yong-in City, 2010a).

Figure 7.1 Cities near Yong-in in the Capital Region. Source: Yong-in City (2010a)

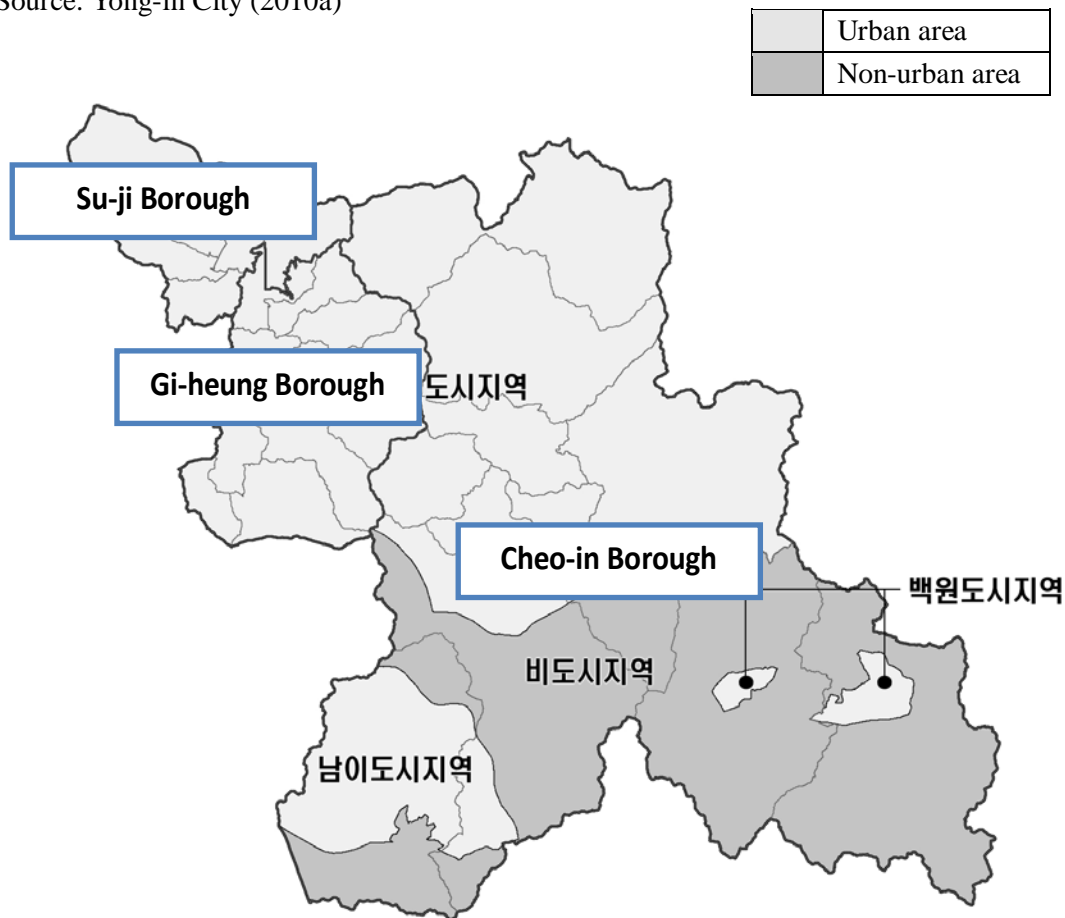


The population of Yong-in was just under 100,000 in 1970 and gradually increased to 188,000 by 1990. After that, as the population exploded, through housing developments concentrated to the northwest of Yong-in, in Su-ji and Gi-heung boroughs, it reached 395,000 in 2000 and 877,000 in 2010 (Yong-in City, 2010a).¹³⁸ During the past 20 years, the population has doubled twice, at ten-year intervals.

¹³⁸ Due to the increase in population, Yong-in was raised to a 'city' from a 'county' in 1996 (Yong-in City, 2010a). And now the population has passed 900,000 (913,000 in 2012) (NSA, 2012a). Yong-in is already

Figure 7.2 Boroughs and Urban/Non-urban areas in Yong-in City

Source: Yong-in City (2010a)



Yong-in is an urban-rural integration city which combines northwestern urban areas and southeastern rural areas. Figure 7.2 shows urban areas (387.2 km²) and non-urban areas (204.3 km²) on the urban master plan map. A large part of Cheo-in borough is rural in its lifestyle and occupational structure (ibid).

a 'metropolitan city' by the OECD classification, which defines an urban area as one with a population of more than 500,000 (OECD, 2012).

7.2.2 The History of the Yong-in Developments

Urban developments in Yong-in from the 1990s on are divided into two stages: ‘disorderly development’ in the 1990s; and ‘planned development’ by an urban master plan and a nation-wide housing plan after from 2000 on, although the term ‘planned’ has been criticised as inappropriate in many ways when applied to the following sections. Though the phrase ‘disorderly development’ is frequently translated as ‘sprawl development’ in Korea, and many scholars describe it as being similar to sprawl in Western countries (Kim, 2008a; Yun, 2002), their contexts and patterns differ from each other, as will be examined later. Therefore, this thesis uses the direct translation ‘disorderly development’, and this is defined as ‘unsustainable development accompanied by the destruction of surrounding green spaces without pre-establishing a proper infrastructure, which hence damages self-sufficient and safe urban functions and lowers the quality of life and social equity’ (Doopedia, 2011).

Disorderly Development in the 1990s

After 1980, when the HSDPA was enacted, many HSD projects were promoted around Seoul in the Capital region. Moreover, from the end of the 1980s, five NCD projects were implemented in the region. However, until the early 1990s, such large-scale public residential land development was not initiated in Yong-in because of the distance from Seoul. Rather, the Kim YS government of 1993-1997 promoted deregulation in land and planning policies against the backdrop of global neo-liberal trends. The critical measure for this was the introduction of a ‘Semi-agricultural Land and Semi-forest Zone’ in non-urban areas in 1993, which permitted private developers to promote residential land

development for apartment construction on urban fringes where an urban master plan was not established (MLTM, 2011a; Lee, 2000).

The government believed that expanding the supply of land through deregulation would stabilise land and housing prices and contribute to the affordability of housing. However, pressure for development was revealed to be much greater than expected, and small-scale developments sprang up like ‘bamboos after the rain’ (Seo, 2000).¹³⁹ In those days, the media reported day after day that, in northwestern Yong-in, ‘Children going to school are having to take long walks over unpaved land, due to the shortage of schools, roads, and public transport’ (<http://newslibrary.naver.com>). The dissatisfaction of new residents exploded, and many central government officials were disciplined for this policy failure. Also, many local government officials were punished for granting too many development permits. A director of a provincial public institute recalled that, ‘Since the enforcement ordinance allowed it, at that time the flow of applications for development was institutionally uncontrollable’ (interview in May 2012).

The disorderly development was a serious social problem, and served as a critical turning point in the history of Korean urban development. After that, a development project could only get permission after establishing an urban master plan, and the public sector started to directly promote a large number of public projects for multi-unit dwelling (apartment) construction (MLTM, 2010a). The former objective was accomplished by passing the NLPUA in 2002. As the developments in question were

¹³⁹ Multi-unit dwelling construction projects, which were permitted through transforming the use of Semi-agricultural Land and Semi-forest Zones in Gyeong-gi Province from 1994 to 1999, numbered 297 projects on a total of 12.5 km². Among them, 93 projects (31%) on 5.8 km² (47%) were located in Yong-in (Seo, 2000).

taking place in non-urban areas where an urban master plan was not established, for a stricter control on private developments in these areas the new act compelled local governments to establish a master plan for their whole area, under the principle of ‘planning-first and development-second’ (MLTM, 2011a).¹⁴⁰ The diverse development methods employed for the actual projects will be introduced in the next sub-section.

7.2.3 Development Methods in Yong-in City

Yong-in city has been developed by diverse development methods which range from large-scale urban land developments and small-sized housing renewals to private projects within the general planning scheme. As for large-scale developments, the public sector has mobilised HSDs and NCDs in order to improve the disorderly urban circumstances and to accommodate the continuous flow of new residents. UD has been employed for various urban functions, as well as for residential purposes. All the large-scale and public development projects implemented in the Yong-in city area are presented in Table 7.1.

Table 7.1 Large-scale and Public Development Projects in Yong-in

Data: MLTM (2010b; 2010c; 2010d), Gyeong-gi Province (2012), and Yong-in City (2012)

Development Methods	Main Purpose	Number of Projects	Name of Projects (Development Period) ¹⁾
New City Development (NCD)	Self-sufficient new settlement	1	Gwang-gyo (2005-13)

¹⁴⁰ It can be called a ‘plan-led system’.

Housing Site Development (HSD)	Mass provision of dwellings by constructing new settlement	16	Goo-gal (1988-91), Yeong-deok (1988-2000), Su-ji (1989-94), Yeok-buk (1993-98), Su-ji2 (1993-2002), Sang-gal (1994-2001), Dong-cheon (1995-2003), Sin-bong (1995-2004), Goo-gal3 (1996-2004), Dong-baek (1997-2008), Sin-gal (1998-2005), Juk-jeon (1998-2007), Bo-ra (1999-2007), Goo-seong (1999-2010), Heung-deok (2001-10), Seo-cheon (2001-11)	
Urban Development (UD)	Site-unit development by landowners	10	Sin-bong (2004), Dong-cheon (2004), Jung-dong (2007), Nam-sa (2008), Goo-gal station sphere (2008), Lee-dong (2008), Bo-ra (2009), Yeok-sam (2009), Nam-sa2 (2009), Mo-hyeon (2009)	
Housing Renewal (HR)	Improvement of the residential environment	11		
	Redevelopment (RD)	Focusing various use of land and buildings	4	Mo-hyeon1 (2010), Gim-ryang-jang (2011), Gim-ryang-jang2 (2011), Gim-ryang-jang3 (2011)
	Reconstruction (RC)	Focusing residential buildings	3	Sin-gal (2007), Gim-ryang-jang (2009), Yeok-buk (2011)
	Housing Environment Improvement (HEI)	Focusing poor residential conditions	4	Yang-ji (2009), Ma-pyeong (2009), Ma-pyeong2 (2009), Po-gok (2009)

Note: 1) As UD and HR projects are mainly promoted by the private sector, the completion (due) dates are unclear in many cases: thus, only the years of 'site designation' are indicated.

Table 7.2 Project Sizes on Average by Development Methods in Yong-in

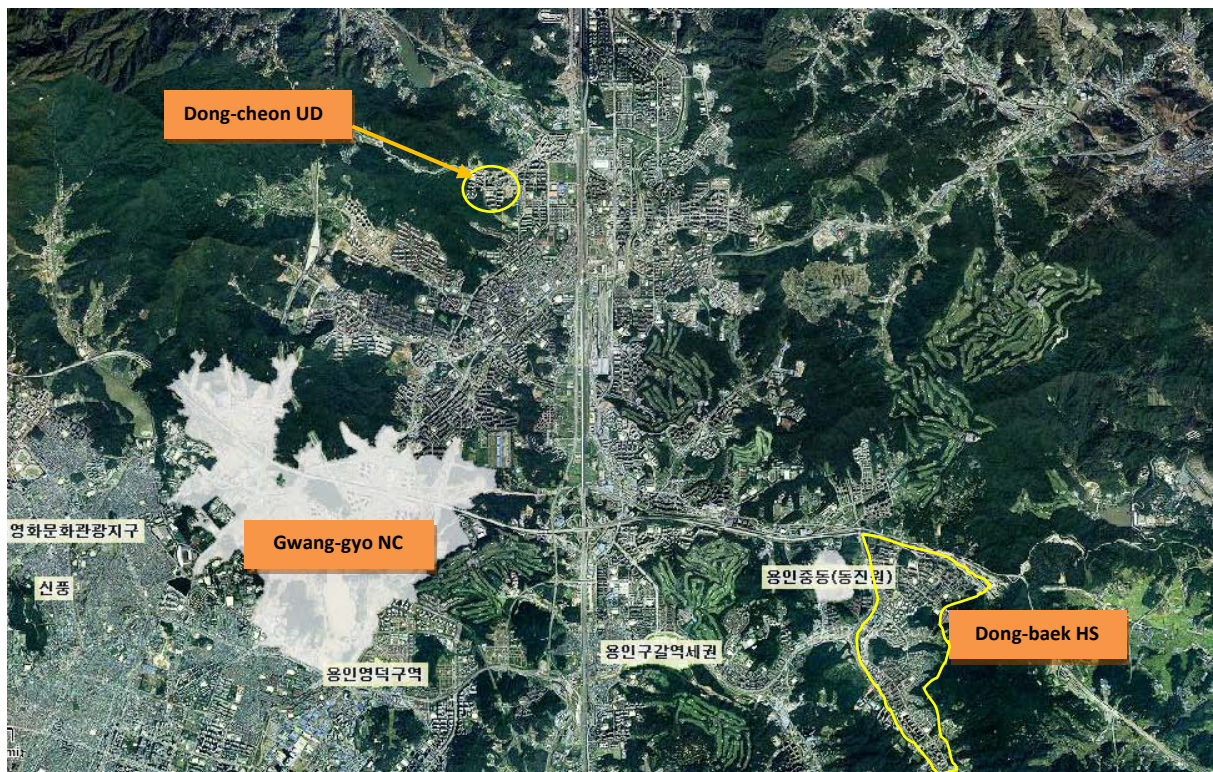
Unit: hectare

Development Methods	Number of Projects	Average Site Size	Average Households (planned)	Location	
New City Development (NCD)	1	1130.4	31,113	Yong-in and Su-won	
Housing Site Development (HSD)	16	100.9	5,528	Yong-in	
Urban Development (UD)	10	43.2	2,922	Yong-in	
Housing Renewal (HR)	11	2.7	453	Yong-in	
	Redevelopment (RD)	4	3.2	613	Yong-in
	Reconstruction (RC)	3	2.5	493	Yong-in
	Housing Environment Improvement (HEI)	4	2.4	262	Yong-in
Average	(total 38)	84.4	4,046		
Average except for NCD	(total 37)	56.1	3,315		

Table 7.2 shows that a total of 88,454 dwellings have been constructed by HSDs leaving aside Gwang-gyo NCD project (31,113 dwellings), whilst total 29,217 dwellings have been provided by UD.

Figure 7.3 Locations of Development Sites as Embedded Cases in Yong-in

Source of Aerial Picture: *Gyeong-gi Province Real Estate Portal* (<http://gris.gg.go.kr/>)



Dong-baek Housing Site Development

The Dong-baek HSD project was chosen for a closer investigation since it revealed the merits and demerits of the HSD method at the same time, being the largest HSD project, and being recommended by many participants. Table 7.3 shows the major contents of the development plans of HSD projects and the actual data for the Dong-baek project (MLTM, 2010d; 2009a).

Table 7.3 The Outline of Development Plan for Dong-baek HSD Project

Major Contents of Development Plan for an HSD Project		Dong-baek HSD Project
Outline of Development Plan	Name of Development Plan	Dong-baek HSD Project
	Project Operator	KLC
	Development Period	1999-2006 (planned)
Land Use Plan¹⁾	Plan of Land for Housing Construction	150.8 ha (46%)
	Plan of Land for Public Facilities	175.7 ha (54%)
Plan of Population and Dwellings	Accommodated Population and Dwellings	53,881 persons, 17,381 dwellings (1,069 houses, 16,312 multi-unit dwellings)
	Densities of Population and Households	FSI under 180 %
	FSIs, Number of Households, and Sizes of Dwellings by Residential Blocks	
Urban Planning Facilities²⁾ Building Plan	Transport Plan, Parks and Green Spaces Plan, Plan for Public and Convenience Facilities, Plan for Urban Supply Treatment Facilities, Energy Supply Plan	Total land for parks and green spaces was 88 ha (27%).
Other Contents	Stepwise Construction Schedule, Plan for Financing and Fund Investment, Opinions from the Organisations Concerned and Reflections on them	Total costs (estimated) were 1,100 billion won: 540 billion won for land acquisition and 560 billion won for construction.

Note: 1) Total size of the site was 326.5 ha.

2) 'Urban Planning Facilities' means urban infrastructure which should be secured by urban management plans in an urban area (2002 NLPUA in MLTM, 2012a).

Figure 7.4 Dong-baek HSD Project Area (November 2012)

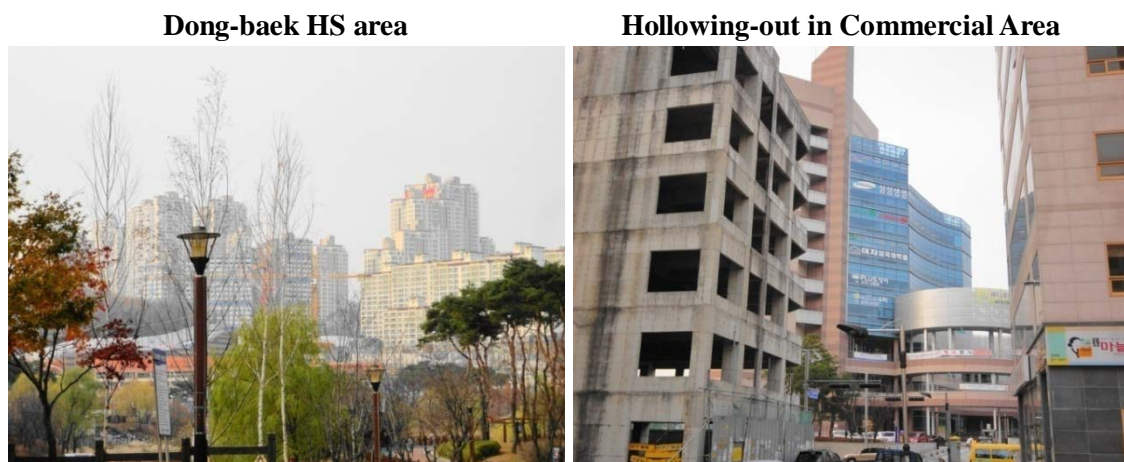


Figure 7.5 Map of Land Use Plan for Dong-baek HSD Project. Source: MLTM (2009a)



Note: This site is surrounded by green hills and mountains. Orange is ‘land for apartments’, whilst yellow is ‘land for detached and terraced houses’. Red in the centre denotes ‘land for central commercial functions’. Afterwards, a Light Rail Transit line was added from the west of the site, passing through the central commercial area and following the main road, to the south.

Dong-cheon Urban Development

Dong-cheon UD project was planned as one of the early stage UD projects in Yong-in. The original development plan was approved and the site was designated in 2004. Though the nominal operator of the project was the association of landowners, it was effectively promoted by a development company. The site is located in northern Yong-in, adjacent to southern Bun-dang NC, and the southwest of the site is contiguous to Sang-hyeon-dong (district), which was notorious for disorderly development, and the Gwang-gyo NC site. The Dong-cheon project's features were judged by many interviewed participants to be representative of those of UDs projects as a whole in Yong-in (May 2012). The final development plan for the project, which was approved by Yong-in city government (2010b), is outlined in Table 7.4.

Table 7.4 Outline of Development Plan for Dong-cheon UD Project

Name of Development Plan	Dong-cheon UD Project
Project Operator	Dong-cheon UD Project Association
Development Period (Schedule)	2004: designation of site 2006: permission of implementation plan 2009: disposition of re-plotting (land substitution) 2010: completion of construction
Land Uses	Total land: 474 thousand m ² (100%) Land for housing construction: 245,000 m ² (52%) Land for public facilities: 229,000 m ² (48%)
Land for Dwellings	Land for multi-unit dwellings: 218,000 m ² (45%) Land for houses: 11,000 m ² (2%) Number of dwellings: Apartments 2,616; Detached houses 48 (Population: 8,259 persons, 2,664 households)
Densities (FSI)	FSI in multi-unit dwelling blocks: 150%, 200%, and 250% FSI in house blocks: under 150%
Land for Parks and Green Spaces	115,000 m ² (24%)

Figure 7.6 Dong-cheon UD Project Area (November 2012)

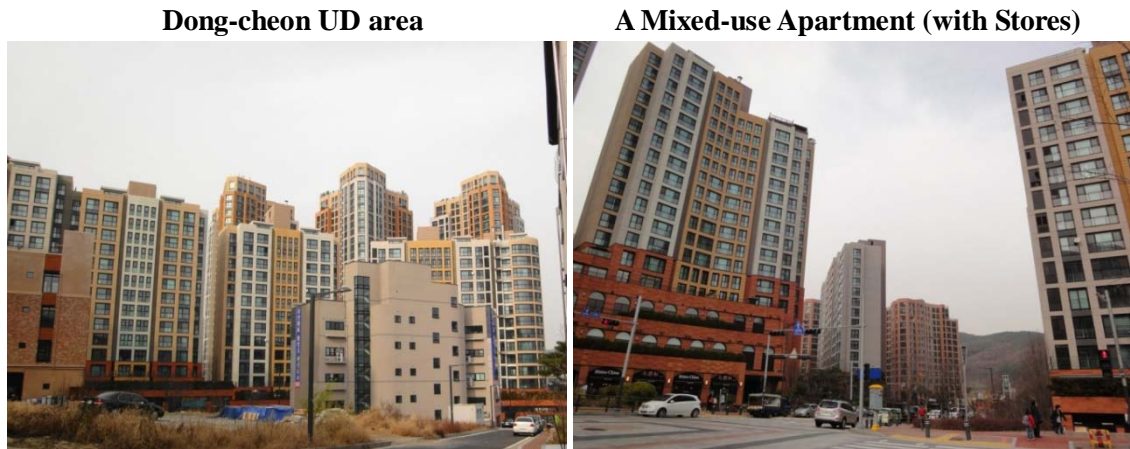
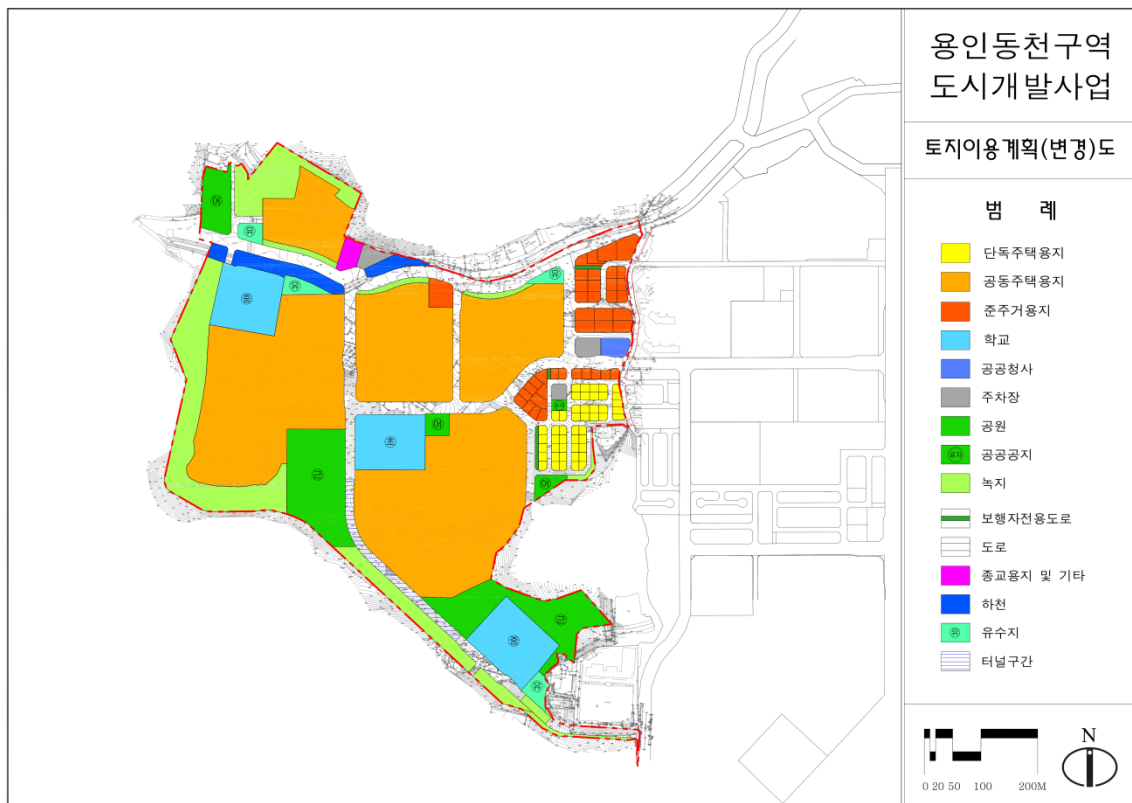


Figure 7.7 Map of Land Use Plan for Dong-cheon UD Project

Source: Yong-in City (2010b)



Note: This site is located between a mountain area to the west and other HSs to the east. Orange in the map shows 'land for apartments', whilst yellow is 'land for detached houses'. Red is residential areas mixed with commercial functions. Sky-blue is land for schools.

Gwang-gyo New City Development

Gwang-gyo development project is located across Yong-in and Su-won cities and is the sole NCD project in Yong-in. There have been sixteen NC projects in the Capital region since the end of the 1980s. Among them, Bun-dang NC (1989-96), adjacent to northern Yong-in, the largest among five first-stage NCs, has significantly influenced the current urban form of Yong-in. And several second-stage NCD projects have been implemented in cities adjacent to Yong-in: Pan-gyo (2003-10), beside Bun-dang in Seong-nam city; and Dong-tan (2001-10) and Dong-tan II (2008-15), in Hwa-seong city (MLTM, 2010c). These locations are illustrated in Figure 7.6. Gwang-gyo will be compared with these NCs to clarify its features. Another noticeable feature of Gwang-gyo NC is that it is the sole NC which has been initiated by municipal government, not by the central government (MLTM). The development plan for Gwang-gyo NC (MLTM, 2012b) is summarised in Table 7.8.

Figure 7.8 Locations of NCD projects in the Capital region. Source: Lee and Shin (2011)

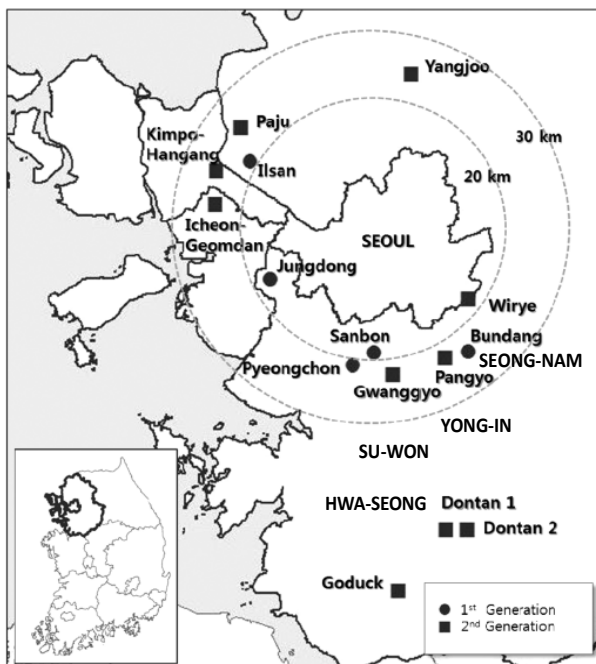


Table 7.5 Outline of Development Plan for Gwang-gyo NCD Project

Name of Development Plan	Gwang-gyo NCD Project
Project Operator	Gyeong-gi Province, Su-won Local City, Yong-in Local City, and GUIC
Development Period	2005-2013
Land Uses	Total land: 1,130.2 ha (100%) Land for housing construction: 211.9 ha (19%) Land for commercial and business facilities: 52.5 ha (4 %) Land for public facilities: 865.8 ha (77%)
Population and Dwellings	Accommodated population: 77,500 persons Dwellings: 31,000 (863 houses and 30,137 multi-unit dwellings)
Land for Dwellings	Land for multi-unit dwellings: 206.6 ha (18%) Land for houses: 26.5 ha (2%)
Land for Parks and Green Spaces	473.2 ha (42%)
Development Costs	Total costs (estimated): 9,397 billion won Land acquisition costs: 4,316 billion won Construction costs: 5,081 billion won

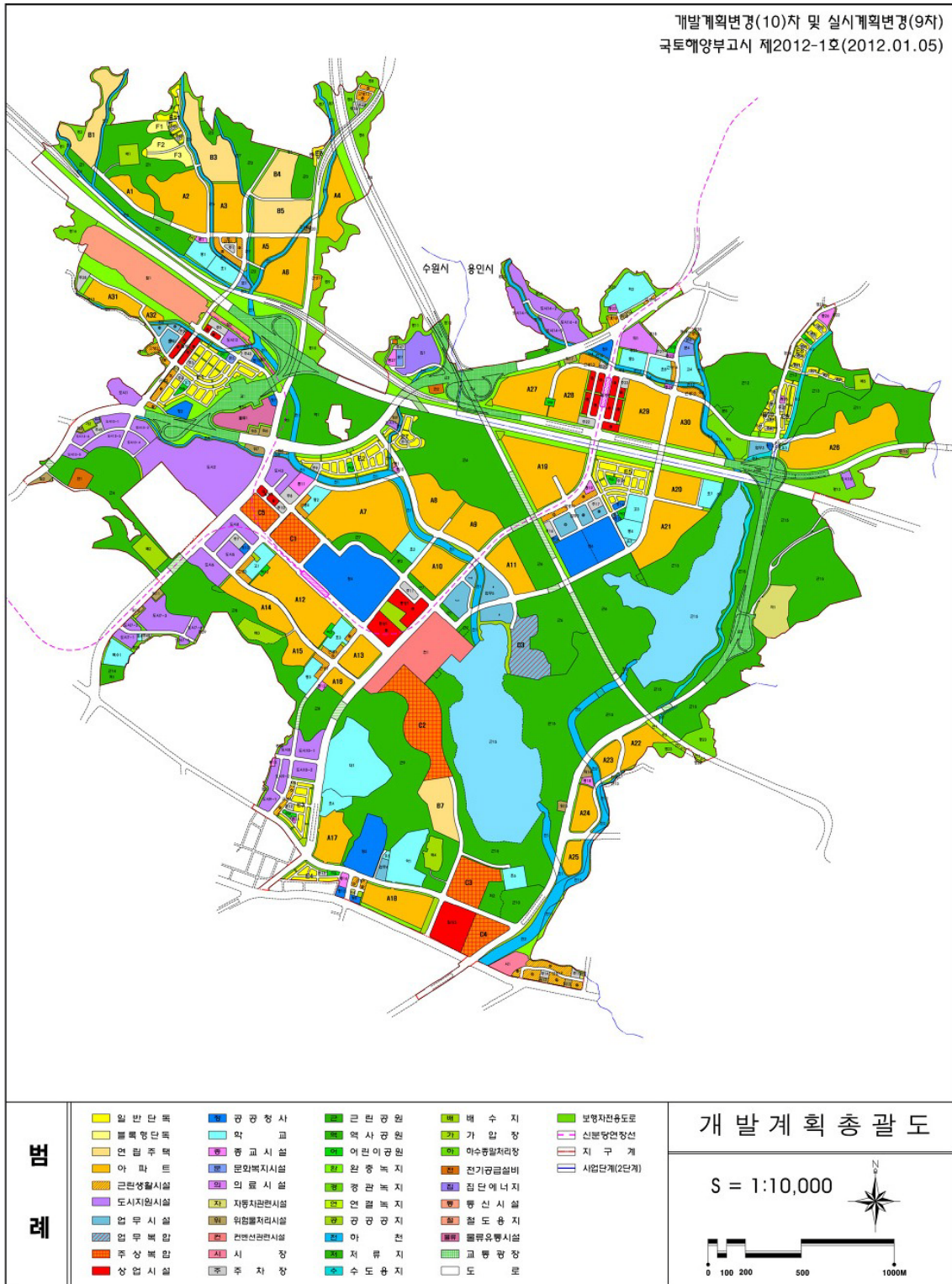
Figure 7.9 Gwang-gyo NCD Project Area (November 2012)¹⁴¹



Note: 1) A disorderly development area in Sang-hyeon-dong outside of Gwang-gyo site (left part) and an adjacent apartment building in Gwang-gyo site
2) A construction site of residential complexes and the New-Bundang subway line

¹⁴¹ Additional photos and aerial pictures are presented in Appendix 1-1.

Figure 7.10 Map of Land Use Plan for Gwang-gyo NCD Project. Source: MLTM (2012b)



Note: To the north of the site is Mt. Gwang-gyo. There are lakes and great green spaces in the southeast. Orange is ‘land for apartments’, whilst yellow is ‘land for detached and terraced houses’. Blue is for businesses, public offices, and welfare facilities. Purple is for urban supporting facilities such as research complexes and apartment-type factories. A red dotted line passing through the site from the northeast to the southwest is the New Bun-dang subway line.

7.3 The Features of the Yong-in Developments

This section will examine the features of land use by diverse development methods with quantitative data. Based on the results, the factors and considerations that have shaped current development patterns will be investigated in the next section, mainly through interview records.

7.3.1 Compactness

As Yong-in has been developed through diverse development methods, its compactness as a whole is difficult to judge. Here, in advance of the analysis, a recent empirical study is reviewed in terms of its overall appraisal of compactness. Choi et al. (2010), through developing a ‘sprawl index’¹⁴² and applying it to 77 local administrative areas in the Capital region, conclude that Su-ji and Gi-heung boroughs in Yong-in are ranked in the lowest group for compactness (at 60th and 62nd place respectively), leaving aside (rural) counties, and Cheo-in borough, which shares the features of counties, is ranked at 70th mainly because of low density.¹⁴³ The low ranking of Yong-in in urban areas is attributed mainly to the shortage of jobs, rather than physical features in terms of compactness.

¹⁴² The ‘sprawl index’ is composed of: densities of housing and employment; mixture of land uses; balance between jobs and housing; street network design, such as numbers of crossroads and lengths of roads per unit area; and accessibility to public transport, such as numbers of bus stops and subway stations (ibid).

¹⁴³ Further, the study shows that local cities and boroughs in Gyeong-gi province surrounding Seoul and Incheon metropolitan cities in the Capital region achieved more mixed land use and jobs-housing balance than boroughs in Seoul and Incheon cities, even though most NC projects and notorious disorderly development have taken place in the province (ibid).

Min (2011) argues that cities such as Yong-in, that are close to Seoul, in the megacity region inevitably depend on the economy of the core city, Seoul, and in this situation ‘closeness between workplaces and housing’ is more appropriate than ‘balance between jobs and housing’ in appraising urban forms. This issue will be revisited in 7.4.7 in terms of self-sufficiency and public transport.

7.3.2 Features of Land Use by Development Methods

The Classification of Land Use

The classification of land use which will be used for the analysis is presented in Table 7.6. As relevant laws and actual land use plans vary in their classification, the author integrated and reclassified them by generally acceptable criteria for the purpose of the research. Urban land is largely divided into that for private and that for public use: ‘land for private use’ is developed by the private sector after the provision of land which is equipped with infrastructure; while ‘land for public use’ is developed directly by the public sector, or is provided through the intervention of the public sector in a development.

With ‘land for public use’, ‘public open space’ is differentiated from ‘land for public facilities’ by its openness to the general public. The latter tends to limit access by user situations and fees, though the difference is relative. In addition, ‘open space’ is usually open to the sky, without buildings covering the site to any significant extent, though these two uses may frequently be intermixed. Land for these two large categories is

comparatively flexible as to its size on any particular site, whereas ‘infrastructure’ has certain requirements for its basic urban functions.

Table 7.6 The Classification of Land Use

Large Categories	Categories (Land Use Purposes)		Contents
Private Land	Residential Land	Houses	Detached and Multiplex Houses
		Multi-unit Dwellings	Terraced Houses and Apartments
		Neighbourhood Living Facilities	Neighbourhood Stores
	Commercial and Business Land		Commercial, Business, and Multi-use Areas
	Industrial Land		Industrial Land
Land for Public Open Space	Parks		Parks and Squares
	Green Space		Green Space for Landscape, Connections, and Green Buffers
	Rivers		Rivers, Terraced Land along Rivers, and Water Retention Areas
	Other Public Open Space		Other Public Open Spaces such as Urban Agricultural Land
Land for Public Facilities	Public Offices		Public Offices
	Schools		Schools
	Medical Facilities		Hospitals
	Welfare and Cultural Facilities		Facilities for Social Welfare, Cultural (such as Library), and Religious purposes
	Sports Facilities		Sports Facilities
Land for Infrastructure	Roads		Roads
	Railways		Railways and Other Railway Facilities
	Traffic Facilities		Car Parks, Bus Stations, Petrol Stations, Traffic Squares, and Logistics Facilities
	Markets		Large-scale Agricultural and Marine Products Wholesale Markets, and Commercial Distribution Facilities
	Other Infrastructure		Electric and Energy supply, Water and Sewage, and Communication Facilities; Waste landfills; and etc.
Reserved Land			Reserved Land

‘Land for infrastructure’ is similar to ‘land for public facilities’ in that both of them commonly place physical facilities on land, while the former has a more public

character than the latter,¹⁴⁴ as ‘infrastructure’ can be provided only through intervention by the public sector, such as direct construction or subsidies. In contrast, considerable sections of ‘public facilities’ are constructed and run by the private sector after land allocation, though the boundary is becoming blurred by the trend towards privatisation.

Land for self-sufficiency urban functions

This study defines ‘land for self-sufficiency functions’, with reference to the definition of ‘land for self-sufficiency facilities’ in the New City Planning Standard (MLTM, 2010g)¹⁴⁵, as ‘land associated with the functions for creating jobs within the site’, which includes: land for neighborhood living facilities, commercial and business land, industrial land; land for public offices, medical facilities, welfare and cultural facilities; and reserved land.

Urban Development Methods

Table 7.7 re-summarises Table 5.2. This study classifies the three development methods from the top, except for HR, as ‘large-scale development’ which aims to provide a large number of new dwellings by urban clearance on a comparatively large site. HRs will be included in the analysis when needed.

¹⁴⁴ Adam Smith stated in *The Wealth of Nations* in 1776 that the provision of infrastructure exclusively belongs to the role of the government, along with national defence and jurisdiction (Samuelson and Nordhaus, 2009).

¹⁴⁵ ‘Land for self-sufficiency facilities’ is defined by the New City Planning Standard as ‘land for creating employment and vitalising urban economy’ including: for universities and research institutes, public offices, convention facilities, medical complexes, cultural and welfare facilities; for industrial facilities such as urban factories; and for retail, business, and distribution facilities (MLTM, 2010g).

Table 7.7 Urban Development Methods in Korea

Development method (Abbreviation)	Usual Site Size	Main Policy Aims	Public nature
New City Development (NCD)	330 ha and more	Mass provision of dwellings and multifunctional city	Government initiation and public management; the expropriation of land; the construction and sale of dwellings by the private sector
Housing Site Development (HSD)	5-330 ha	Mass provision of dwellings	The same as the above
Urban Development (UD)	5-100 ha	Site-unit planned urban development with diverse purposes	Private initiation, but public control in the process of planning; the re-plotting and expropriation of land
Housing Renewal (HR)	1-6 ha	Improvement of the residential environment	Redevelopment and Reconstruction projects: private development
			Housing Environment Improvement project: public support

Relationships between Development Methods and Land Use

The researcher searched all the development plans for a total of 41 development projects in and around Yong-in, not by sampling, to examine the relationships between development methods and land use.¹⁴⁶

New city development: Gwang-gyo NCD

Table 7.8 compares major data in the land use plan for Gwang-gyo NCD with data from three other NCDs, which are contiguous to Yong-in, in order to clarify the features and examine changes with time.¹⁴⁷ The high population densities of Bun-dang and Dong-tan, which preceded the Gwang-gyo project, reflect the serious shortage of housing at the

¹⁴⁶ The detailed data by development projects (plans for population and households, density, and land use) are presented in Appendix 3-7.

¹⁴⁷ The detailed data are presented in Appendix 3-7.

time. The determinants of density will be explored later through a qualitative analysis of the processes and substantive considerations. From the data, a difference in ‘population densities’ was found, but a difference in ‘household densities’ was not significant. This is associated with decreases in the ‘number of family members per household’ and increases in ‘housing sizes per person’.

Table 7.8 Comparison of Land Uses in Four NCDs in and adjacent to Yong-in

Unit: persons, persons/hectare, households/hectare, and year

Project	Population	Population Density ¹⁾	Households	Household Density ²⁾	Plan Year	Completion Year
Bun-dang	390,320	614.7	97,580	153.7	1989	1996
Dong-tan	124,326	462.9	40,921	152.4	2001	2013
Gwang-gyo	77,883	373.3	31,113	149.1	2005	2016
Dong-tan2	285,878	371.3	115,323	149.8	2008	2015

Unit: hectares

Project	Residential Land	Private Land	Parks and Green space	Land for Public Facilities	Land for Infrastructure	Land for Self-sufficiency Functions	Total Site Size
Bun-dang	635.02	799.00	415.16	133.10	463.67	226.11	1963.92
(ratio)	31.7%	40.7%	21.1%	6.8%	23.6%	11.5%	100.0%
Dong-tan	268.58	392.87	226.02	41.23	172.76	139.50	903.61
(ratio)	29.2%	43.5%	25.0%	4.6%	19.1%	15.4%	100.0%
Gwang-gyo	208.62	307.73	452.10	84.16	243.80	153.32	1130.45
(ratio)	17.5%	27.2%	40.0%	7.4%	21.6%	13.6%	100.0%
Dong-tan2	769.96	1004.78	577.12	131.44	463.02	356.18	2401.49
(ratio)	31.2%	41.8%	24.0%	5.5%	19.3%	14.8%	100.0%

Note: 1) Population density = Persons/residential land, 2) Household density = Households/residential land

Gwang-gyo shows a higher proportion of ‘parks and green space’ than any other projects, which fits with its motif of eco-friendly development, with a great lake park in the site. As for self-sufficiency, a significant increase in ‘land for self-sufficiency functions’ is observed in comparison with that of the first-stage NC project in Bun-dang.

Average comparison by development methods

Table 7.9 compares average densities and the ratios of diverse land uses by development methods.¹⁴⁸ For comparison, ‘household density per private land’ in the last column is more suitable, because ‘private land’ encompasses all other types of land use which accommodate residents, as well as ‘residential land’. Differences in densities between development methods are observed in data at a certain degree.¹⁴⁹

Table 7.9 Comparison of Averages by Development Methods

Unit: persons, persons/hectare, and households/hectare							
Project	Population	Population Density	Households	Household Density*	Household Density**		
Gwang-gyo NCD	77,883	373.3	31,113	149.1	101.1		
Average of 16 HSDs	17,866	441.3	5,528	136.5	122.6		
Average of 10 UD	8,353	344.7	2,922	119.5	123.8		
Average of 11 HRs	_3)	_3)	453	206.4	206.4		
Unit: hectares							
Project	Residential Land	Private Land	Parks and Green space	Land for Public Facilities	Land for Infra-structure	Land for Self-sufficiency Functions	Total Site Size
Gwang-gyo NCD	208.62	307.73	452.10	84.16	243.80	153.32	1130.45
(percentage)	17.5%	27.2%	40.0%	7.4%	21.6%	13.6%	100.0%
Average HSD	40.49	45.09	24.18	7.55	21.42	7.26	100.86
(percentage)	39.2%	44.7%	24.0%	7.5%	21.2%	7.2%	100.0%
Average UD	16.50	17.30	7.55	2.03	8.65	7.32	43.21
(percentage)	38.2%	54.6%	17.5%	4.7%	20.0%	16.9%	100.0%
Average HR	2.19	2.19	0.12	0.04	0.33	0.04	2.73
(percentage)	80.4%	80.4%	4.5%	1.6%	12.1%	1.6%	100.0%

Note: 1) Household Density* = households/residential land, Household Density** = households/private land

2) Averages for densities are weighted averages by site size.

3) No data: HR development plans did not present their planned population sizes.

4) The average percentages (%) are weighted by site size.

¹⁴⁸ The detailed data are presented in Appendix 3-7.

¹⁴⁹ However, the results of an ‘independent T-test’ to test the significance of mean differences show that the differences in densities by development methods are not statistically significant. This lack of statistical significance may be partly caused by the small numbers of samples by groups.

For reference, the average ‘household density per private land’ was 113.8 households/hectare for the above four NCDs, and 242.2 for Redevelopment and Reconstruction projects among HRs (excluding Housing Environment Improvement projects).

At a glance, considerable differences in land use by development methods are observed. The larger development methods are, the smaller the percentages of ‘residential and private land’ are, and, in contrast, the more land there is for ‘parks and green space, public facilities, infrastructure, and self-sufficiency functions’.¹⁵⁰ More detailed comparison will be performed in Chapter 9 along with data for the second case study.

As urban compactness depends on regional context and housing culture, a simple comparison of numerical data might be insufficient to produce meaningful implications. Therefore, the awareness and understanding of various participants will be examined in the following sections.

7.4 The Shaping of Current Development Patterns

This section will examine the processes and considerations of participants in shaping current development patterns in Yong-in. The term ‘development pattern’ includes both the development method and the associated urban form and land use. The issues addressed in this and the next sections have emerged from the fieldwork in pursuing the following questions: How are the principles of sustainable development accommodated by participants? And how they are applied in practice? For this, the motivation of individual participants (driving factors causing specific behaviours) and the negotiation processes are explored: For what reasons (incentives) do individual participants get

¹⁵⁰ The high percentage of ‘land for self-sufficiency functions’ in UD can be attributed to three UD projects directed towards commercial land development. UD projects have diverse development purposes, including not only residential purposes, but also commercial and industrial purposes. This effect will also be dealt with in the analysis in Chapter 9.

involved in urban developments? And what results have been generated from the interactions?

Changes in Areas of Concern in Land Use Planning over Time

Before investigating these, changes in areas of concern in planning in Yong-in over time need to be looked at, as the context of time is also important as well as the context of the region if we are to understand urban development as a whole. In the Yong-in area, the core problem of the disorderly development of the 1990s was the shortage of infrastructure and public facilities such as roads and schools. After public intervention through HSD and UD methods in the 2000s mitigated the problems, the concerns of participants changed. In reviews for project permissions, concerns have moved to issues such as regional facilities, public open space and landscape (interviews with two members of Yong-in urban planning committee, May 2012).

7.4.1 Features of Urban Diffusion: Sprawl or Compact Development?

In general, Korean cities are judged to be more compact numerically than their counterparts in Western countries. This sub-section examines the features of urban diffusion in more depth. As a result of interviews, it was found that the participants involved in planning and implementing development projects, except for central government officials,¹⁵¹ were well acquainted with the concept of the compact city and

¹⁵¹ In particular, among MLTM officials, those from the Office of Housing and Land Policy generally did not know about the compact city, while officials from the Office of Urban and Regional Policy replied that they had heard the term in recent years. This shows a difference in their departmental concern. On the other hand, their general ignorance of it is also indicated by the major subjects studied by MLTM officials

relevant techniques. However, they confessed that they had not used the principles of the compact city intentionally in real projects. This means that the compact city has not been a real issue in the field (director planner, KRIHS, May 2012) and has not had a consensus of support. Therefore, the physical compactness of Korean cities, including Yong-in, must be attributed to other reasons, which will be addressed in the following sections.

On the other hand, the professionals interviewed acknowledged that Yong-in was highly compact in terms of density, land use, and public transport, but, at the same time, some were sceptical as to whether Yong-in was working as a compact city. This was partly caused by the disorderly development. Two researchers in KRIHS appraised it as not compact but overcrowded, and some academic experts used the term ‘sprawl’ to describe the situation in Yong-in, blaming this for long journey-to-work distances (interviews in May 2012). The issues of urban self-sufficiency will be re-examined later in this section.

The Features of Urban Diffusion since the 1990s

Examining the features of urban diffusion starts from looking carefully at the terms. From the late 1980s on, a large amount of residential land was developed through many large-scale development projects, including new city projects, outside Seoul in the Capital region. In addition, in 1993, the deregulation of land development was implemented in order to provide residential and industrial land rapidly and in large

for examination: only one official among about a thousand at the headquarters of the MLTM had majored in urban planning (MLTM, 2011a).

quantities. It has generally been claimed that these two measures have brought about urban 'sprawl' (Kim, 2008a; Yun, 2002; KRIHS, 2012). However, this thesis differentiates the term sprawl from disorderly development which means shortage of infrastructure. The sprawl of a city is characterised by low density in land use or a development specified for a single purpose, such as a residential one, usually resulting in a development pattern of 'scattered, stripped and leap-frogged' style (Ewing, 1997; Neuman, 2005), as compared with compact development.

Furthermore, the differences between the effects of deregulation and planned (plan-led) development need to be drawn out. Suburban development as a result of the relaxation of land regulation was certainly to blame for the disorderly development, because it proceeded incrementally, without detailed consideration of landscape, public facilities and transport systems, even though it contributed to the provision of residential and industrial land and, unintentionally, to a certain degree of high urban densities. However, plan-led development was introduced to secure proper urban infrastructure. The decentralisation of Seoul as a megacity was somewhat inevitable, because the continuous build up of population was taking it beyond its capacity to carry out its urban functions efficiently.

To sum up, both the disorderly development and planned development took the high density direction, and these directions were different from sprawl or suburbanisation in the Western context, even though these also took place in formerly suburban areas. Anderson et al. (1996) define the compaction of a city as encompassing both monocentric and polycentric patterns. For this reason, the term, 'compaction' has replaced 'centralisation' in this thesis. So, the planned decentralisation accompanied by

relocation of industry and employment that occurred to some degree in the Capital area from the 1990s on was far from sprawl, in that new settlements achieved quite high densities and pursued mixed-use self-sufficiency. This issue will be revisited in sub-section 7.4.8.

7.4.2 Changes in Policy Directions, Participants, and Decision-making Structure

After the 1990s, the numbers of participants in urban development increased in line with the growth of civil society. Consequently, conflicts among them deepened and the decision-making structure became complicated. This sub-section explores the political processes and changes in policies around urban developments.

Urban development in a city, particularly in the Capital region, has taken place within complex policy dimensions, including: the improvement of the urban and housing environment; the geographical competitiveness of the region; and the need to balance developments between locals and regions. Urban developments in Yong-in were initiated mainly by the logic of the need for the mass provision of housing. And, further, they were expanded in the direction of eliminating potential risk in asset markets and the macro-economy (MLTM, 2010c).¹⁵² To these, the conservation of environmentally vulnerable areas from development has been added as another basic consideration. The following paragraphs examine institutional grounds and planning procedures.

¹⁵² As an example, it is well known that the Global Financial Crisis in 2008 was derived by the collapse of the bubble in the financial market for subprime mortgage loans for housing purchase in the US.

*Housing Site and New City Development Method*¹⁵³

New settlement development in Korea reached a groundbreaking turning point with the HSDPA passed by the military government in 1980, which introduced large-scale urban clearance method through the expropriation of land. The Act's purpose is: 'contributing to stabilising people's housing experiences and improving their welfare by solving an urgent housing shortage' (MLTM, 2010d). Relevant acts and governmental documents such as the Comprehensive Housing Plan set out their policy purposes in chorus as 'the stabilization of housing for ordinary people (or low-income groups)'.

The sites for HSDs were to be designated by MLTM, as proposed by KLHC. In this case, the existing urban (master) plans for Yong-in were disregarded (director, Yong-in City, May 2012). The interviewee recalled that the city government had not proposed any site designation for HSD.¹⁵⁴ For these reasons, the academic world in Korea tends to regard such large-scale housing development as the arch enemy of the planning system, because such projects nullify local plans established through public discussions and destroy existing communities.

The central government has been in charge of the implementation of HSD projects, and the MLTM has reviewed and determined development plans through consulting with the authorities concerned, such as the MOE (through EIA), and planning committees (MLTM, 2010d). Diverse participants take part in the process for their own interests or policy purposes. For example, the MLTM tends to provide more dwellings on a site,

¹⁵³ NCDs belong to HSDs, that is, NCD is defined as 'HSD of a site exceeding 330 ha' by the Act.

¹⁵⁴ In other areas, after the devolution of powers, municipal governments are also initiating HSDs (MLTM, 2010d).

which is in conflict with the stance of the MOE to secure more green space (government official, MLTM, May 2012).

Urban Development Method

The general procedure to obtain planning permission, particularly for district-unit planning for a multi-unit dwelling construction project, is similarly applied for the UD project, which was introduced by the 2000 legislation. The UD Act was designed for activating multi-purpose urban developments as well as residential ones. It enabled private landowners to initiate urban land development using expropriation as well as re-plotting (land substitution), which means that development gains from projects are vested in private landowners, though the accounting profit should be set at zero. The mayor of a local government holds approval power for a project. For this, local government goes through the process of consultation with the authorities concerned, review by planning committee, and hearings with residents (MLTM, 2010b).

In the process, consultation with the authorities concerned is important, in that almost all the opinions submitted feed into the plan, because, if they were not reflected in the plan, officials (in the UD division) who approve the project would be responsible for them (inspector, BAI, November 2012).¹⁵⁵ The authorities concerned include: related departments in the local government, such as the transport division; and related organisations, such as the local education office and gas corporation.

¹⁵⁵ In addition, a local government official stated that the development department (division) and the authorities concerned have more important roles than members of the planning committee, in that the development department and the authorities concerned are responsible for the project (approval and consent) and review the project comprehensively, while the planning committee reviews the project in a restricted fashion under closed questions, without substantive accountability (interview in May 2012).

Yong-in urban planning committee consists of 25 members including: three members of the City Council; experts, including local university professors; and officials from related authorities.¹⁵⁶ Through the committee's deliberations, a plan for the project, including land use, heights of buildings, and the scope of the infrastructure, emerges through negotiations (a member of Yong-in urban planning committee, May 2012). In general, developers and landowners have an incentive to use fully their opportunities (for example, allowed maximum floor space) to make profits, while the local government and planning committee try to restrain them in favour of a pleasant urban environment and maintenance of adequate facilities (three government officials, Gyeong-gi Province and Yong-in City, May 2012).

Diverse Participants and Complicated Decision-making Structures

Changes in the governance system have enlarged the scope for participation in urban developments and have complicated the decision-making structures. Lee and Shin (2011) concluded that in the case of Pan-gyo NCD¹⁵⁷ the MLTM had initiated the whole process with a dominant influence and, on some critical issues, the Presidential Office had become involved in them, exerting a decisive power. As a result of fieldwork in Yong-in (May 2012), it was found that the decision-making structures were more complex and participants' stances in an organisation were more multifaceted than in Lee

¹⁵⁶ The list of members of the committee and the items which are being reviewed are confidential in order to prevent lobbying (a member of Yong-in urban planning committee, November 2012).

¹⁵⁷ The Pan-gyo project (2001-08) was a representative second-stage NCD project and a hot issue at the time because of its location between Gang-nam in Seoul, where real estate prices are at the highest level in Korea, and Bun-dang which is judged to be the most successful first-stage NCD project in terms of its prosperity (Lee and Shin, 2011). Indeed, there is a saying that goes: 'Bun-dang under *Cheon-dang* ('heaven' in Korean)'. Thus, a variety of new policies and innovations have been tried in the project, and now Gwang-gyo NCD is following it.

and Shin’s description. The participants identified as involved in large-scale urban developments in Yong-in are set out in Figure 7.11. Interactions and negotiations between them will be examined in the following sections in relation to real issues.

Figure 7.11 Participants in Large-scale Development Projects in Yong-in

Central Government				
Presidential Office	Prime Minister’s Office	MLTM	MOSF	MOE
Policy Directions	Policy Coordination	Housing and Land Policy vs. Urban and Regional Policy Development Department and Other Relevant Departments (e.g. Transportation)	Economic Considerations	Environmental Considerations
		Planning Committee	Other Relevant Ministries	
		Public Corporation [KLHC]	Other Considerations (e.g. Agriculture)	
		Public Institutes [KRIHS etc.]		
Parliament		Councils [Provincial and Local]	Press [Central and Local]	
Gyeong-gi Provincial Government		Yong-in Local Government		
Development Department and Other Relevant Departments		Development Department and Other Relevant Departments		
Planning Committee		Planning Committee		
Public Corporation [GUIC]		Public Corporation [Yong-in Local Co.]		
Public Institute [GRI]				
Private Sector		Residents	Civil Society	
Developers Associations (Private Institutes)		Resident Representatives’ Committees	Citizens	
Developers, Construction Companies		Out-migrants (Landowners and Tenants)	Interest Groups	
Landowners’ Associations for Development		Pre-residents’ Preparation Meetings	Environmental Groups	
Other Market Participants (e.g. Engineering Companies)		New Residents	Local Experts	

7.4.3 Social Equity Aspects of Urban Development Projects

The government aims to solve the shortage of affordable housing for working people by the mass provision of new residential land and dwellings directly by HSD and NCD, and additionally by UD projects. This sub-section addresses the issues related to the social equity aspects of urban sustainability: affordable housing, new settlements for low-income people, and social mix.

Affordable Housing

Housing developments in Yong-in have provided residences for around 700,000 new residents through the 1990s and 2000s. However, the newly provided housing (apartments) has not always been affordable. Rather, the prices were too high for ordinary people (interview with a market consultant, May 2012). Even if they could afford new apartments, the new residents had to carry the burden of a substantial mortgage for most of their working lives. A staff member of the GUIC stated that the Gwang-gyo NC project successfully lowered the prices of newly finished apartments to around 12 million won per pyeong (3.3 square meters), in comparison with 15-17 million won per pyeong in neighboring apartments in Yong-in (interview in May 2012). The public management system for residential land developments has lowered the sale price of dwellings by a price ceiling and costs investigation, even though the construction and sale of dwellings are conducted by private companies. Nevertheless, these prices, even in Gwang-gyo NC, are judged to go beyond an affordable level. Jun (2009) evaluates that it is virtually impossible in Korea for working-class individuals to obtain their own housing (apartment) on the basis of their income.

Given the increased housing prices, it is almost impossible to resettle original residents, particularly those on low incomes, on the new sites after construction. They not only cannot purchase new dwellings, but they also cannot bear the maintenance expenses (interview with a market consultant, May 2012). Thus, streets in new settlements are lined with high-priced high-rise apartments which only middle income earners can afford to maintain, particularly in the early stages after they have been sold, even though these dwellings are cheaper than ones in Gang-nam and Bun-dang. The following interview with a central government official based on his personal experience describes the situation (May 2012):

I think I am an average office worker in terms of income level in Korea. When I married in 2004, my wife and I lived in a 33-pyeong deposit-rental (monthly rent-free) apartment near my workplace on a normal two-year contract. However, after two years, we could not renew the contract, because the new deposit had increased beyond our savings (affected by increases in apartment prices). My apartment decreased in size to 24 pyeong and, then, to 18 pyeong by two-year periods, and got further and further away from my workplace. I finally purchased an 18-pyeong apartment in Yong-in in 2008. It was the most expensive dwelling that I could afford to buy with my mortgage loan: I reached the maximum level allowed for debt-to-income ratio, 40%.¹⁵⁸ This means that we find it almost impossible to save any money privately for the future.¹⁵⁹

In addition to high-priced apartments, in some suburban areas, so-called ‘gated communities’ which consist of high-priced detached houses with private gardens have been constructed, even if the sustainability of such communities is highly criticized by some interviewees.¹⁶⁰ This is connected with the issue of social mix.

¹⁵⁸ DTI (debt-to-income ratio) of 40% means that he pays 40% of his salary for interest and principal redemption on his loan. DTI and LTV (loan-to-value ratio) regulations are representative policy tools in Korea to prevent excessive borrowing from banks for investment in housing (MLTM, 2010c).

¹⁵⁹ According to a common expression in Korea, he became ‘house (owner) poor’ from being ‘rent poor’.

¹⁶⁰ A representative of an environmental group diagnosed that a pastoral luxury village, Go-gi, which is located in a suburban area between Bun-dang NC and Gwang-gyo NC, suffered from insufficient

A Mixture of Rental and Owner-occupied Housing, and Social Mix

As apartments were in the majority in new developments, compared to other housing types, geographical divisions between luxury apartment areas and decaying house areas and between different income groups by the sizes of apartments have gradually raised concerns from a social perspective. It is argued that such social division hinders social integration, eventually diminishing social capital (Jun, 2009). Social mix is suggested as a solution to this problem. It pursues a housing mixture involving different income groups,¹⁶¹ but the effects of this are controversial. According to research in Korea, low-income groups feel a sense of incompatibility in sharing space with the rich, and they prefer an apartment complex composed of similar sized dwellings (Kim and Park, 1993). Lee (2003) points out that a compulsory housing mixture aggravates a sense of comparative deprivation and generates an excessively competitive social environment.

However, there is a normative tendency in Korea to consider that an integrated housing environment is more socially desirable (Choi, 2004; Lee, 2006b). A representative policy for this is a mixture of rental and owner-occupier housing in large-scale developments, besides compulsory provision of small-sized dwellings (MLTM, 2010c). HSDs including NCDs have to provide more than 40% of their residential land for public rental housing by law (MLTM, 2010d). Apartment prices in Yong-in are comparatively cheaper than ones in the Gang-nam and Bun-dang areas, but Yong-in is

infrastructure, such as a shortage of sewage treatment facilities, which had negative influences on the surrounding environment, and anticipated that it would, therefore, be abandoned by the present residents in the near future (secretary general of an environmental group, May 2012). A government official confirmed that many idyllic luxury suburban housing development projects by private developers had ended in failure in Yong-in due to recent decreases in demand (team leader, Yong-in City, May 2012).

¹⁶¹ This thesis does not address arguments for social mix in detail and uses the term social mix as a mixture of different 'income groups' in Korean context, not by strictly defined 'social classes'.

too far distant from Seoul for low-income workers who are stuck in areas near Seoul because of their jobs and inability to bear the commuting costs (interview with a real estate broker, May 2012). Reflecting these conditions, HSD sites in Yong-in have provided a comparatively smaller amount of rental dwellings (close to 40%) than ones near Seoul, such as the National Rental Housing (NRH) Sites, where rental housing forms more than 50% of dwellings.¹⁶² On the other hand, in the case of Dong-cheon UD, which was organized by a re-plotting method, not by expropriation, the compulsory provision of public rental housing was not applied.

In apartment complexes, a design for a social mix, with public rental housing, has developed from ‘a complex with all rental dwellings’ to ‘a mixture of different buildings, some for rent and some for owner-occupied’, and, as the most recommended type, to ‘a mixture of rental and owner-occupied dwellings in an apartment building’ (MLTM, 2010e). However, the opinions about this policy differed among residents, and even among government officials (interviews in May and November 2012). A director of the housing welfare division in the MLTM and a member of staff in charge of public rental housing in KLHC in Gwang-gyo said that the implementation of a physical mixture of housing was difficult, because the mixed residential complex found it difficult to attract apartment-buyers (November, 2012). Thus, in most cases at present, the level of social

¹⁶² Reflecting the above ideological social atmosphere, the Roh MH government of 2003-2007 promoted active housing policies for social mix. One of them was the measure for compulsory provision of rental housing in private Housing Reconstruction projects, as well as large-scale public projects such as NRH Site Development projects. The measure compelled private reconstruction associations (owners of existing apartments) to build public rental dwellings at a certain ratio, for example, a quarter of ‘the increased floor space provided by reconstruction’ (MLTM, 2010c). Ownership of the newly constructed public rental dwellings was transferred to municipalities without compensation. It was justified by the principle of the equitable restitution of development gains. The measure was also intended to stabilise skyrocketing apartment prices, especially in high-priced apartment areas, such as Gang-nam in Seoul. The stabilising effect of this was doubted within policy groups, but the social mix effect of it itself was judged positively, apart from the desirability of the policy (interview with an MLTM official, March 2012).

mix is putting some ‘complexes’ with all public rental housing in a site, and, in rare cases, putting apartment ‘buildings’ of all public rental housing in a complex.

7.4.4 Conflicts between Economic Development and Environmental Conservation

This sub-section examines the diverse stances of participants around environmental issues in development projects, and their interactions.

Conflicts between Development and Conservation: the Fragmentation of Participants

An academic expert who had been involved in many projects in the Capital region said that, ‘Since environmental issues are about ideological values, they are determined through a political negotiation rather than a rational analysis’ (university professor, May 2012). This implies that it is necessary to explore the political conflicts between the arguments for economic development and those for conservation of the environment.

Lee and Shin (2011) in their case study of Pan-gyo NCD conducted through interviews, divided political forces around the NCD into two groups: the MLTM, local governments, public corporations, and private developers for ‘growth’; and the MOE, the Presidential Office and the ruling party¹⁶³ for ‘environmental conservation’. Civic groups and scholars were also divided into the two stances. They explained that anti-growth groups sought environmental conservation and public housing (social housing) rather than large-scale development projects. The researcher identified, through interviews with a variety of participants, that the stances of participants were more complicated when it

¹⁶³ At that period, the President and ruling party (the Democratic party) were progressive.

came to development methods and specific issues. The following paragraphs will examine the fragmentation of diverse participants and their positions, focusing on municipal governments, civic groups, and the central government.

Municipal Governments

Firstly, the attitudes of municipal (provincial and local) governments on development projects differ depending on the opinions of their residents. Generally, they favour housing developments for economic vitality and job creation, and for raising tax revenues.¹⁶⁴ However, when their urban plans are disregarded by new HSD plans by the central government, they disapprove of them (interviews with three government officials, MLTM, Gyeong-gi Province, and Yong-in City, May 2012). Particularly, in the case of a project which focuses on public housing for low-income groups, such as an NRH Site Development¹⁶⁵, initiated by the MLTM on green space, the project frequently meets with fierce opposition from local government and residents.¹⁶⁶ In contrast, an NCD equipped with regional infrastructure is normally welcomed by local governments because this provides comparatively self-sufficient and pleasant circumstances and raises the prices of surrounding properties (interviews with the above participants, May 2012).

¹⁶⁴ Revenues from transaction taxes are assigned to provincial governments, while those from property taxes go to local governments.

¹⁶⁵ NRH Site Development belongs to the HSD. Only the percentage of NRH on a site is different. No NRH Site Development project has been promoted in Yong-in.

¹⁶⁶ Yoo (2005), in his analysis of an NRH Site Development project in the Capital region, found that local government resisted the project more fiercely than residents, as speaking for opposing residents.

Civic and Interest Groups

In the case of civic groups, fragmentation according to their positions and specific issues is going on in various developments in Yong-in. As a result of online searching, it was found that there were two types of civic groups with regard to urban developments: ‘environmental groups’ such as the Yong-in Movement for Environmental Justice (YMEJ), and ‘interest groups’ such as Dong-baek Citizens’ Solidarity organised for neighbourhood concerns. The former is the sole local group of its nationwide organisation, Citizens’ Movement for Environmental Justice. Its existence itself demonstrates that conflicts between development and conservation have been heated in Yong-in. The voices of the latter groups have focused on the improvement and expansion of regional facilities such as a light railway and general hospital. Some of their requests have been criticised as ‘local selfishness’ for raising their property prices in the style of NIMBY and PIMFY¹⁶⁷, frequently accompanied by free-riding behaviour (interview with a local university professor, May 2012).

The YMEJ grew out of a movement for saving Mt. Dae-ji from disorderly developments in 2000. At first, individual activists organised a ‘movement to purchase one pyeong (3.3 square metres) of land’ and an activist demonstrated on a top of a tree on the mountain for 17 days. As a result of their activities, the Yong-in government promised citizens that 64,000 pyeongs of Mt. Dae-ji would be preserved from development (YMEJ, 2012). A member of YMEJ stated that YMEJ was monitoring the activities of the public sector and private developers to minimise negative impacts on

¹⁶⁷ Abbreviations from ‘not in my back yard’ and ‘please in my front yard’

nature, and requesting more prudent Environmental Impact Assessment (EIA) (secretary general, YMEJ, May 2012). Interestingly, this claim is very similar to the hopes of the staff of public corporations interviewed who were implementing actual projects. A member of staff for the GUIC who had engaged in the Gwang-gyo NCD project confessed (project administration team manager, GUIC, May 2012):

My greatest regret is that too many feet of mountains have been incised (to construct more dwellings). And I hope that we are more careful in performing various impact assessments with sufficient time in future developments.¹⁶⁸

Residents' associations also have diverse positions according to their attributes, and these will be addressed in the next section with regard to the issue of community activity and participation.

The Central Government: the MLTM

As for the role and attitude of the central government, Lee and Shin (2011) explain that the MLTM is the most influential key participant in an NCD project, but government officials are captured by interest groups. They also mention a 'peculiarity' in the public nature of the MLTM: firstly, there is a difference between the voice of the Office of Housing and Land Policy, which promotes development as a public developer, and that of the Office of Urban and Regional Policy, which places more emphasis on

¹⁶⁸ He added: 'The planning period for Gwang-gyo NC was just three years. This meant that we completed various impact assessments and also the negotiations and arrangements with relevant organisations within the three years. We really lacked time.' However, when the researcher asked whether the results might have been different if there had been ample time for planning, he answered that since the constraints (site area and number of dwellings) were given, the difference might have been marginal (interview in May 2012).

sustainability for the future as a public regulator¹⁶⁹; and, secondly, the Ministry behaves in its own interest rather than the public interest, despite being a public organisation.¹⁷⁰

However, in a contemporary democratic society, diverse interests and values come into conflict even within the government. Coordination producing a perfect order based on a rational analysis may be an ‘illusion’, or may possibly exist only in a despotic government (Kim and Choi, 1994). It was found from this case study that, as a result of devolution and diversification, ‘fragmented incrementalism’ within the government is also proceeding with more complicated dimensions. In the processes, diverse interests and values are discussed, negotiated, and coordinated: between housing policy and urban policy in the MLTM; between the MLTM and other ministries such as the MOE and the MOSF; between the central government and municipalities; and, further, between the Executive and Parliament. Therefore, the conflicts between departments and ministries in the government are inevitable and are in a sense desirable as natural processes reflecting diverse opinions in a society.¹⁷¹

¹⁶⁹ As to why housing policy has dominated over urban policy in the MLTM, a former vice-minister mentioned ironically: ‘It is because cities have been constructed by the Office of Housing Policy, not by the Office of Urban (City) Policy’ (May 2012). This implies that urban policy could not build a new city on its own initiative.

¹⁷⁰ Against this claim, the characteristics of policies should be also considered. Among housing policies, ‘housing provision policy’, such as large-scale development, has redistributive implications, in common with ‘housing welfare policy’. In other words, ‘housing provision policy’ also has a public aspect, because it provides mass dwellings as a merit goods (social benefit) for low income groups, and the land development itself generates tremendous development gains which would have been privatised if it not been for the public management scheme. Thus, the policy instruments, HSD and UD, were assigned to the central government and municipal governments each, considering their instrumental effectiveness for delivering their policy purposes. This will be detailed with relation to the issue of development gains in the following sub-section.

¹⁷¹ On this point, the roles of government officials are similar to those of urban planners.

Environmental Arguments and Other Perspectives on Sustainability

Environmental arguments occasionally collide with arguments from other perspectives on sustainability. As an example, in designing an apartment complex, from the early stage of large-scale housing developments in the 1980s, many Korean planners favoured a courtyard type design to support social interaction in a neighbourhood (Min, 2011). However, a planner who was in charge of the design of Dong-baek HS recalled that the EIA recommended a linear type design for securing eco-friendly ventilation paths from a valley, and they had to accept it (interview in May 2012).¹⁷²

Anti-growth groups frequently oppose large-scale development projects, arguing that they damage the environment, and prefer low-density eco-friendly development. They claim that large-scale developments do not bring stability to the housing market, but rather, they spread speculative pseudo-demands for housing, and housing policy should concentrate on public housing for low-income groups (Lee and Shin, 2011). These arguments raise several questions related to the compact city: whether large-scale developments with high densities damage the environment more than piecemeal developments with low densities; whether the latter developments by private developers are more socially equitable than the former by public management; whether the stabilisation of housing markets can be delivered without mass supply of dwellings; whether an adequate supply of housing is achievable without such large-scale development; and, again, whether housing provision policy can entirely be replaced by public housing policy.¹⁷³ The above claim, which approves eco-friendly development,

¹⁷² He added that, fundamentally, the linear type design was also preferred by residents (May 2012).

¹⁷³ These may be seen as another 'peculiarity' of environmentalism, in relation to the compact city.

arguing for minimising environmental impacts, may cause a decrease in housing supply and an increase in property prices, and, therefore, may serve to protect vested interests in existing high-priced residential areas by preventing an influx of low-income groups. These questions require rigorous investigation into the effects of development as well as into the political process, which will be addressed in the following two sub-sections.

7.4.5 The Sharing of Development Gains and Costs

This sub-section considers the issue of the equitable sharing (restitution) of development gains and equitable sharing (imposition) of development costs from urban development projects. Here, the meanings of the two 'equitable's are used differently from each other: the former 'equitable' implies social redistribution, whilst the latter is related to the principle of beneficiary-pays, which is also linked to the concept of efficiency. On the other hand, the larger-scale housing developments of NCD and HSD can generate net profits for the public sector (public corporations). Thus, public corporations and governments have been criticised for making huge gains from NCDs and HSDs¹⁷⁴ (interviews with two researchers from public institutes, KRIHS and GUIC, May 2012).

Development Gains Made by Public Corporations

The perceived merits of public corporations precipitated the establishment of public corporations by municipal governments following the devolution of the late 1990s (Kim

¹⁷⁴ As an example, a civic group estimated the total gains of the KLC at 490 billion won from four HSD projects in the Capital region, including Dong-baek and Juk-jeon HSDs in Yong-in (Citizens' Coalition for Economic Justice, 2005).

and Ahn, 2002). These included corporations such as Gyeong-gi Urban Innovation Corporation (GUIC) at a provincial level and Yong-in Local Corporation at a local level. Actually, collecting (a portion of) development gains is one of the merits, alongside utilizing enterprise organisations. Therefore, a noticeable difference between ‘housing provision policy’ by large-scale development and other ‘public housing (welfare) policies’ is that, for the former, such as NCD and HSD, the finance is not made available by the state, not to mention UD by private initiative.¹⁷⁵ In contrast, ‘public housing policy’ needs fiscal support from the state from tax revenues and public funds.

On the other hand, the development gains of public corporations are used as finance for ‘public housing policy’, such as the construction of public rental housing, and used as a cross subsidy for implementing other development projects in decaying regions which have low business values, especially in the case of nationwide public corporations (MLTM, 2010d; interview with a director general of KLHC, May 2012).¹⁷⁶ However, after the 2000s, the voices of residents who object to the transfer of development gains (generated in their areas) into other areas have increasingly been heard. For instance, in Gwang-gyo NCD, it was agreed that all the development gains generated from the project should be reinvested in the site (GUIC, 2011), which might result from the fact that the project had been initiated by municipal governments (interview with a director general of GUIC, May 2012). These trends constrain the financial flexibility of public housing policy and locally balanced development projects.

¹⁷⁵ Eventually, large-scale development projects are financed by the payments of new residents for new dwellings (MLTM, 2010d).

¹⁷⁶ Therefore, the gains of development enable the government to promote large-scale development (‘housing provision policy’) without a fiscal burden, which is connected to gains for tax-payers, and partly supports other ‘public housing (welfare) policies’ through implicit subsidies within and beyond a site and fund raising.

Cost-sharing, Free-riding, and Disorderly Development

As large-scale developments are implemented without financial support from the state, the whole costs are ultimately imposed on new residents through the sale of new housing. The levels of cost sharing depend mainly on the size of development (development method), because the projects have different public facilities and infrastructure to be built. In general, the larger the size of a site, the larger the individual burden: in larger sites, larger facilities are required which are not necessary in smaller sites.¹⁷⁷ Thus, there is a frequently observed tendency: smaller developments are promoted near a well-developed large-scale site by both public and private developers. The disorderly developments in Yong-in from the mid-1990s could have a free-ride on public facilities and infrastructure in the adjacent Bun-dang NC (1989-1996) (Seo, 2002). Furthermore, an urban planner, who had drafted the present Yong-in urban master plan and many HSD plans in Yong-in, blamed the HSD projects in Yong-in for another type of disorderly development which had free-ridden on Bun-dang NC (interview in May 2012).¹⁷⁸ Disorderly development is explained by such free-riding behaviour. However, such disorderly development generates more social costs in rectifying the malfunctions in the long run (Seo, 2000).¹⁷⁹

¹⁷⁷ Here, 'costs' do not mean 'real total costs', but 'costs shared by individuals'.

¹⁷⁸ NCD projects, rather, were frequently criticised by new residents for excessive sharing of costs: for example, costs for roads for inter-regional transportation, not for simple connection with outer areas.

¹⁷⁹ A Yong-in government official pointed out that disorderly development in the past had imposed several-fold burdens on governments and citizens in order to rectify the malfunctions over a long period, in comparison with the case of planned development (interview in May 2012). In addition, the central government had to establish an additional plan which constructed seven new regional transportation facilities, including a highway from Yong-in to Seoul, to resolve the problems (Lee, 2000a).

The Distribution of Development Gains

To sum up, through large-scale land development, the central government achieves the goal of housing policy in mass provision of dwellings; the local government develops areas in its jurisdiction with more residents and public facilities without a burden on their budget; public corporations enlarge their organisations and earn profits; private developers including construction companies earn business profits; existing property-owners also share development gains through compensation; and new residents make development gains by purchasing new dwellings at comparatively cheap prices.¹⁸⁰ In addition, residents in surrounding areas have unearned gains due to an increase in property prices without sharing any of the costs. A possible disadvantage appears in the case of out-migrants who have no property in the site, because they may be expelled from their living bases without sufficient compensations in some cases.¹⁸¹

¹⁸⁰ For reference, the following table shows an estimate of development gains generated by Bun-dang NCD (1989-96) on the site, and the distribution of the gains among participants. The development period for the calculation is from land acquisition up to the point where residents move into their new dwellings.

Table: Distribution of Development Gains from Bun-dang NCD. Source: Kwon (2005)

Unit: won (1 won = 1,800 pounds) per one-pyeong (= 3.3 m²) land for apartment construction, %

Participants	Sizes of Development Gains	Percentage
Landowners (out-migrants)	323,878 won	4 %
Land Developer (public corporation: KLC)	81,940 won	1 %
Housing Builders (private companies)	1,059,127 won	14 %
New Residents (apartment purchasers)	5,900,043 won	81 %
Total	7,364,988 won	100 %

From this, Kwon (2005) concludes that the structure of distribution is distorted (inequitable), pointing out that the gains of new apartment purchasers are 5.6 times those of the construction companies. However, the land share of them should be considered. For example, in the case of the purchaser of an apartment with a 24.5-pyeong standard size, the land share is around 7.5 pyeongs and the total gain from an apartment is around 44.3 million won.

¹⁸¹ In this case, the term 'compensation' does not mean a reward for the expropriation of properties, but a benefit in return for the transfer of living bases. On the other hand, in recent cases such as the Gwang-gyo and Se-jong projects, the out-migrants have reached agreements in terms of 'measures for migration' through negotiation with the promoters, but not in every case.

In conclusion, economic benefits from a large-scale development project are shared by the majority of participants, and this is an important impetus for the development scheme. Also, governments and public agencies can provide mass housing without a financial burden and can implement cross-subsidies for public housing. However, this is achieved at the expense of existing villages and agricultural lands that are destroyed, a topic which will be reviewed in the following sub-sections.

7.4.6 Considerations in Allocating Diverse Land Uses

The construction of large-scale new settlements in Korea means the transformation of agricultural land and forest into urban land equipped with infrastructure and public facilities (MLTM, 2010a). This necessitates a cost-benefit analysis between diverse land uses, including EIA, considering the environmental costs and benefits for the future (MLTM, 2010d). In developing countries, the needs of the present are easily overemphasised in comparison with those of the future, due to present distressing situations. For example, shortage of food at the present time may be regarded as more serious than the wellbeing of future generations.¹⁸² On the other hand, it should be considered that the needs of the future will be quite different from those of the present in these fast-changing economies. If values, which will be judged more highly by future residents, such as safety, aesthetic aspects, and a desire for participation, are not sufficiently considered, such development patterns may be unsustainable. Therefore, these changing conditions and future values should be properly reflected in planning.

¹⁸² It is reflected in the above analysis as a high time discount rate (interest rate) (Kim, 2008b), which is interpreted as the higher future values of present savings (investments) in the supply side.

This sub-section examines considerations in determining land use for open space, agricultural land and forest.

The division between urban land (to be urbanized) and non-urban land (to be preserved) depends on the following considerations, as detailed in Chapter 4: the densities of building (residential and commercial) areas, sizes of public open spaces, and the need for preserving agricultural land and forest. If only a small amount of urban land is available, at least one or two of the following are inevitable: high densities, high-rise buildings, and small open spaces.¹⁸³ High-density and high-rise dwellings in the Capital region were inevitable because of high land prices, in other words, as there was only a small amount of urban land available, as most interviewees indicated (May and November 2012). Thus, the investigation is about the reasons why urban land was so restricted.

Open Space

The claim that open and green spaces in urban areas should be expanded is acknowledged as common sense by most Koreans and this is based on the recognition that, currently, insufficient open space is causing environmental degradation in urban areas (Kim and Yuh, 2009). Kim et al. (2007) suggest the dramatic enlargement of open spaces in planning large-scale new settlements in the Capital region as a first priority for the success of the compact city approach. In addressing this issue, the following points are raised. Firstly, to what degree is the mountainous and riverside land (forest)

¹⁸³ Bertaud (2010) showed these relations strictly by calculation with land prices and construction costs (construction technology).

surrounding a project site accessible?¹⁸⁴ To what extent will natural land be damaged by the development of more urban land? If natural space is destroyed for development, even if it is replaced by artificial parks, this will be negatively appraised.

Figure 7.12 Dong-baek HS Surrounded by Hills. Source: Dong-baek Realtor (2012)



Note: The integrative landscaping of hills and forests embedded in urban development, which might be supported by the concept of ‘green infrastructure’, can be an advantage of the large-scale development.

Secondly, it should be considered that Korean urban lands are comparatively hilly, and the natural hills and mountains in urban areas are highly valued by residents. A resident stated that (artificial) parks further away than a five-minute walk were rarely used, so their existence was almost meaningless for him (interview in May 2012). A 70-year-old resident stated that, ‘There is no (artificial) park near my apartment, but it is no problem because I takes a walk in the (natural) riverside behind the apartment’ (May 2012). A 44-year-old resident described his housing environment as follows (May 2012):

¹⁸⁴ If the surrounding natural land is included in the site, it raises the percentage of open space on the site.

I can see a small mountain (hill) through my window. I can reach it just by crossing a small road. I take a walk there and sometimes go on a picnic with my family. I think its existence accounts for about a half the value of my apartment. I do not need a private garden. I share common gardens in our apartment complex and I exercise in a playground in a primary school behind my apartment.

These interviews show the perceptions of residents on urban open space, and partly explain why many Korean people choose apartments without a private garden as a residence: the latter issue will be examined in the next section.

Thirdly, it has been seriously considered in development projects that increasing the amount of open and green space in a project site raises costs and, accordingly, apartment prices. The raised sale prices hinder the affordability of housing. As the provision of affordable housing is the goal of projects, this point has been decisively important and has restricted the provision of ample open spaces in new settlements (interview with an MLTM official, May 2012). As Kim and Yuh's analysis (2009) of the trends of open spaces in HSD projects shows, the percentage of open space has increased continuously from the 1980s, but there was a slight contraction in the mid-2000s, when housing prices were rising fast, so painstaking efforts to expand the supply of new apartments were made. An MLTM official described a scene that took place at that time where urban density and the size of open space in a NC project were discussed (May 2012):

In a weekly meeting which consisted of members from the Presidential Office, MOFE (now MOSF), and MOCT (now MLTM), after government officials looked at data on the relationship between the percentage of open space and the number of dwellings (apartments), they decided to halve the percentage of open and green space (planned) and to add tens of thousands of apartments on the site.

Agricultural Land and Forest

Recently developments have been concentrated on agricultural land more than on forest (mountainous) land (MLTM, 2010a). The development of forest land is challenged by arguments for environmental conservation as well as by difficulties in groundwork. However, until the 1990s, development was more encouraged on forest (mountainous) land than on agricultural land (MLTM, 2010d), because of the deep-rooted feelings about the need to protect agricultural land in order to maintain agricultural production. In general, in contemporary Korea, the policy priority in development between forest and agricultural land is not clear.

7.4.7 Urban Self-sufficiency and Regional Strategy

Developments in Yong-in share the characteristics of those in other developing countries, particularly in expanding metropolitan areas in Asia. Firstly, Yong-in shows a mixed urban-rural character (Yong-in City, 2010a) which is frequently observed in Asia's sprawling urban settlements (McGee, 1991). And, the expansion has been filled with comparatively cheaper apartment complexes constructed along the Seoul-Busan line, which fits with the fact that suburbanisation in Asia has been associated with low-income rather than higher-income groups (Laquian, 2005). Also, the core city, Seoul, still remains as the primary city centre in a mega city-region, the Capital region (McGee, 1991), dominating other cities including Yong-in economically and politically with a centripetal force (Kim et al., 2003).

Various Evaluation of the Yong-in Development

Yong-in in the processes of its urban development has displayed the problem of disorderly development. However, an academic expert who has participated in planning many projects in the Capital region commented (university professor, May 2012):

As the Yong-in development started without a whole picture 20 years ago, its present urban circumstances are liveable to some degree. All cities are generated from disorderly development in their initial stages. It is a fantasy to think it is possible to make a perfect new city all at once. Though the Yong-in development has displayed many problems, it represents a type of development pattern and it has contributed to mass provision of urban land and the stabilisation of housing prices under the constraints of the institutional capacity available at that time.

Urban development in Yong-in and the Capital region is expressed in various terms. A researcher considered Yong-in a compact city on its own terms, but not in terms of the whole Capital region, because the whole area has developed with long travel distances (researcher, KRIHS, May 2012). Another researcher described it as ‘compact sprawl’, criticising the way it is connected by roads, not by railways, despite the high densities in each city (researcher, GRI, May 2012).¹⁸⁵

Two market experts explained that around 700,000 residents who had moved into Yong-in during the past 20 years had elected to live in apartments with greater interior spaces and affordable prices (two development consultants, May 2012). However, a considerable number of them are still commuting to their workplaces located on the

¹⁸⁵ KRIHS (2012) evaluated new cities in the Capital region as ‘planned sprawl’, even though they all closely resemble the compact city, because the job-housing mismatch increases demand for regional transport, and they suggested that self-sufficiency in each city and reinforced connectivity through regional public transports should be secured. Further, the above interviewee from KRIHS claimed that self-sufficiency (job creation) in a city should be prioritized and made sufficiently secure for there to be no need for more regional transports (May 2012). Self-sufficiency and public transport are also necessary conditions for the practical version of the compact city promoted by the OECD (2012).

Seoul to Bun-dang area (Kim et al., 2003). Some participants were concerned that commercial areas in Yong-in, particularly in the Dong-baek HSD district, were becoming empty, and thus developing crime-ridden streets, as residents have started to go shopping to Bun-dang NC after their areas were connected with Bun-dang by faster and more convenient regional transports such as direct roads and subway (interviews with a consultant, a team leader of Yong-in City, and a staff member of KLHC, May 2012). This situation shows that a well-developed NC has a ‘straw’ effect on its surrounding area, drawing in smaller development sites.

Public Transport System

A researcher, who was involved in planning Gwang-gyo NCD, situated the Gwang-gyo project in the history of the Yong-in development as follows (director, GRI, May 2012):

Though there were many trials and errors in the early Yong-in development, we have reflected on the disorderly development and made efforts to overcome it, particularly through the Gwang-gyo project. One of the most important efforts made for it was to connect the site to the New Bun-dang subway line. The promoters put almost all of the project on it.

The New Bun-dang line is a subway (electronic traction) line connected to Bun-dang and Gang-nam in Seoul (DX Line, 2012). New developments in Yong-in are focusing on subway stations in accordance with the TOD concept. In particular, TOD in Gwang-gyo, as evidence of an NCD evolving toward the compact city, was planned from the initial stage of the project, causing the subway line to pass through the site and incurring huge costs.¹⁸⁶ And, a goal of ‘50% public transport’ was planned for in Gwang-gyo,

¹⁸⁶ The effort moved the completion date of the New Bun-dang line closer. The additional financial burden from this was imposed on Gwang-gyo (GUIC, 2011) and, eventually, on new residents of the NC

which is considerably higher than the share (30%) in Bun-dang, one of the first-stage NCs (GUIC, 2011). For this, the Gwang-gyo project is promoting the establishment of a connected traffic network with the urban railway, BRT (bus rapid transit), buses, and integrated transit centres (ibid).¹⁸⁷

Also, in the case of Dong-baek HSD, after construction was completed in 2006, a light (electronic traction) railway project, the Yong-in Light Rail Transit (LRT) project, was implemented to connect many residential sites to the Bun-dang subway line and to the old city centre in east Yong-in. This is going to open to traffic in 2013 (YongIn EverLine, 2012). It is an instrument of public transport along with the BRT for commuters to Bun-dang and Gang-nam. However, interviewees pointed out that there had been many constraints on working towards TOD on account of road-oriented development patterns and car-oriented life styles (May 2012).¹⁸⁸

Self-sufficiency

Gordon and Richardson (1997) and Ewing (1997) argue that the compact city includes not only high-density and mixed land use, but also the concentration of employment and

through increased sale prices for dwellings. The subway line will be extended to west Su-won in the future, passing through Gwang-gyo NC (ibid).

¹⁸⁷ Other recent NCDs are also making an effort to establish well-connected public transport systems. For example, Dong-tan NC project, adjacent to west Yong-in, is planning to connect to the Great Train Express (GTX) in the Capital region under planning which utilizes 40-50 metre underground space, which is another example of land use by TOD (KRIHS, 2012).

¹⁸⁸ Two researchers in public institutes criticized the central government for having inclined towards road-oriented development. They claimed that the government had been too closely connected with the car industry and construction companies where roads and housing were concerned, and had supported the construction of roads rather than railways, and that this inclination had distorted the realization of the compact city in Gyeong-gi province (interviews in May 2012). These statements show a critical perception of current development patterns.

housing. Self-sufficiency in developing new settlements is being emphasised more and more (OECD, 2012). In this regard, as seen in the above Section 7.3, quantitative outcomes show that larger-scale developments are more advantageous for securing self-sufficiency.¹⁸⁹ However, most new settlements have not been successful in providing self sufficiency, particularly in job-creation, despite many efforts such as the transfer of public organisations (KRIHS, 2012), and they are criticised as ‘satellites’ or ‘dormitory’ settlements (Lee and Shin, 2011).

A public researcher pointed out that the failure in self-sufficiency was because the Department of Housing Policy in the MLTM, which was concerned only with mass provision of housing (unlike the Department of Urban Policy), had lead the projects, and he claimed that, although the creation of the multi-functional city had been announced as a new policy direction replacing residence-oriented new settlements from the 2000s on, the main concern of the central government was still the supply of more dwellings. The researcher stated that policy direction should be modified by devolving policy to municipal governments (researcher, KRIHS, May 2012). Against this, an MLTM official argued (May 2012): ‘The shortage of housing is not a local problem, and local governments undervalue the needs of potential immigrants. Local governments tend not to provide sufficient dwellings’.¹⁹⁰ This statement implies that regional considerations are important in new settlement projects.

¹⁸⁹ The ‘land provided for self-sufficiency functions’ on the Gwang-gyo NCD site totals 14%. Dong-tan II, the latest NC, which is located to the southwest of Yong-in, has 15%; and if the adjacent industrial complex is included, the figure increases to 17% (KRIHS, 2012).

¹⁹⁰ The comparative neglect of housing supply was also confirmed from interviews with three Yong-in local government officials (May 2012) on their weak recognition of the need for a housing plan.

As economic activities are undertaken on a regional scale rather than a city scale in the Capital region, regional considerations in planning new settlements are necessary, as suggested in Smart Growth Management. Also, in this regard, there is the argument that the number of jobs within a city's administrative unit might be less important in the metropolitan city-region (Min, 2011), and this will be discussed in Chapter 9. Large-scale development in itself, especially an NCD beyond the local level, is already regarded as the result of regional considerations.

7.4.8 Large-scale Development by Urban Clearance: Will it be Sustained?

The main characteristics of development methods implemented in Yong-in are as below:

- Many large-scale development projects by HSD and NCD have been promoted by the central government.
- Large-scale development methods, including UD, have aimed mainly to solve the shortage of decent housing.¹⁹¹
- After urban land (equipped with infrastructure) is parceled out by the public sector, private housing developers (construction companies) develop the land into residential complexes (districts). Dwellings are provided by the market system. However, development is controlled by public management through devices such as price ceilings and compulsory ratios of small-sized and public rental dwellings (to larger and owner-occupied dwellings).
- To finance the projects, a system of advance payment (according to the construction schedule) for purchasing apartments is used between construction companies and future residents (commonly based on bank loans).

¹⁹¹ In the case of Housing Renewal (HR) projects in Yong-in, after the projects, the numbers of dwellings increased by 10-70%, which shows that HR projects are also aiming at providing decent housing.

- In the promotion of the projects, the assigning of shares in development costs has been one of the most important issues among participants.

This sub-section examines: the advantages and disadvantages of large-scale development using the urban clearance method; the compulsory purchase method for land acquisition; and the processes used to arrive at densities and urban forms.

The most important advantage of large-scale development is the possibility of securing a large amount of urban land at low cost, which can contribute to providing new housing with low prices at a rapid rate. Moreover, it makes it possible to create necessary urban functions in a short period of time, in comparison with incremental developments by private developers based on a local master plan. Since the projects are initiated or controlled by the public sector, the conversion of rural land into urban land, which is very difficult to get permission for in private development, is allowed. Also, the public management scheme of the sale of land (equipped with infrastructure) in parcels to construction companies can provide the equitable sharing of development gains and costs, prohibiting free-riding. The large-scale development and reinvested development gains can contribute to other related policy purposes, such as the provision of public rental housing. Additionally, large-scale development can facilitate the introduction and dissemination of innovative methods. For instance, energy-efficient housing complexes are built, applying new technologies such as the utilisation of new renewable energy and reinforced insulation.¹⁹²

¹⁹² For example, a construction company built a village with all 'zero energy' houses in Dong-tan NC in 2010, which means the houses had zero consumption of energy from outside and utilized solar-powered and geothermal heating (Daewoo E&C, 2010).

Compulsory Purchase of Land

On the other hand, the urban clearance method expels present residents, destroying existing (rural) communities. This could be a critical disadvantage, threatening the sustainability of the method. However, participants interviewed held differing views, which suggested that Korean urban and rural contexts might be quite different from comparatively stable Western ones. A public researcher suggested that scarcely any traditional communities remained in rural areas in the Capital region after the 1980s, due to industrialisation and urbanisation (director, GRI, May 2012), and now these areas have manufacturing facilities and warehouses scattered in a disorderly fashion among the greenhouses and cattle sheds. A participant in charge of land compensation in the Capital region gave an example of an event on an HSD site (May 2012):

The landowners (farmers) had fiercely resisted an expropriation plan. But afterwards, when the area was excluded from the project site, they again demonstrated, requesting the promoter to keep to the original expropriation plan. This implies that their real concerns were the amount of compensation, not expropriation itself, though this type of action does not apply in every case.

A practitioner (general manager, KLHC staff, May 2012) recalled:

We (KLC, now KLHC) had referred to the experiences of Japanese new town developments for the first-stage NC projects. But there have been two big differences. Firstly, we have built apartments absolutely more than any other type of housing. And, secondly, a compulsory purchase method has been widely employed for land acquisition.

A director general of the corporation which had managed many projects in the Capital region anticipated (May 2012):

The compulsory purchase method will continue to be generally used in the future, because the method is not only efficient, but also acceptable to participants. If the expropriation method were to cease to be used at some time in the future, it would be because there was no more need for development projects, not because of the method itself.

Residents' Participation in Development Projects

Resident involvement in large-scale projects developed by a clearance method is highly restricted in comparison with involvement in other incremental developments in existing urban areas. Particularly, in the planning periods of the development plans for new settlements, there is no resident who is decided to move there. However, this is also changing, as observed in Gwang-gyo NC project, where the promoter collects the opinions of the persons concerned widely and consults with new residents through hundreds of meetings, after organising 'councils of new residents' in advance of their moving into new apartments (GUIC, 2011). A former president of the federation of resident organisations in Gwang-gyo NC stated that they had influenced planning, even changing land uses in certain areas, and also participated in village naming (interview in November 2012). Issues on building new communities in new settlements will be addressed in the next section.

The Materialisation of Densities and Urban Forms

Lee and Shin (2011) describe decision-making processes around densities and urban land forms in an NC project as political exchanges between pro-growth groups in favour of high density and environmental groups in favour of low density. However, according to the statements of the participants interviewed, these are regarded as depending on the

selection (acceptability) of participants: ultimately, new residents. A professor who has participated in a NC project as a master planner stated (May 2012):

Density is not determined by urban planners. It is set up according to policy considerations and feasibility for business. In designing a residential complex and choosing between housing types, developers and government officials have to consider the desires of consumers and citizens starting from a tabula rasa. Therefore, these are eventually chosen by residents. Developers should behave as if they were a 'transparent body' to reflect the needs of consumers, and they are actually doing so.

Kim (2005) argues that housing developers (construction companies) know best the preferences of future generations, because they have done their best to find out which are the most favoured dwellings in the future so they can sell them at the highest prices. The sustainability of apartments as a housing type will be detailed in the next section.

The Need for Rapidity in Projects and Perceptions of This

Many participants, including project promoters, blamed an excessive emphasis on rapidity for the insufficient consideration of environmental issues in development. A director general of the KLHC asserted (May 2012):

A 'pressing housing quantity target' was the most serious cause of the lack of self-sufficiency in current developments. To achieve the target, new settlements are located at a long distance from existing cities, in places where jobs are scarce.

However, the majority of participants, at the same time, recognised the inevitability of rapidity. A government official from the Ministry of Finance pointed out that any delay in decision-making and implementation is perceived to be worse than an incompletely

agreed and badly-designed solution in the context of a developing country (interview in November, 2012).

Nevertheless, there is a gradually spreading recognition of need for an approach with more careful consideration of the diverse aspects of urban lives and more consensus-building processes between participants. A local government official who had been in charge of many projects in Yong-in mentioned, particularly in regard to redevelopment projects, that government officials should wait for a time-consuming consensus-building process between participants, and should not intervene in the process rashly, because they have sufficient capacity to deal with the project (May 2012). He emphasised the learning process needed to grow institutional capacity. This recognition was shared by many other participants interviewed.

7.5 The Acceptability of Current Residential Features

The reason why analysing apartments as a housing type is important is because, if present Korean preferences for apartments built in high-density new settlements are not maintained among future populations, this will cause huge environmental and economic burdens.¹⁹³ For example, two government officials anticipated that the current high-density reconstruction through higher-rise apartments would not be sustained in the future, because the preferences of people would become diversified, for example, into desires for reduced densities or characterful designs, and reconstruction projects would

¹⁹³ Moreover, it is also a matter of concern that if demand for high-density apartments decreases, this could trigger the collapse of asset values, with associated negative impacts on the macroeconomy, as seen in the recent global financial crises.

not be profitable anymore because of the small amount of remaining floor space (government officials, MLTM and MACCA, May 2012). This section will examine whether current demands for particular housing types can be sustained in the future. The case study results will show that present demands for high-rise apartments are quite solid and sudden changes in preferences should not appear in the near future. The issue of ‘super’ high-rise apartments will be analysed in Chapter 9, along with the data from the second case study.

As apartments have replaced traditional housing types, new trends in community activities have appeared. Particularly, a new approach is emerging to building communities in large-scale development sites. Moreover, some interviewees pointed out that an intimate and active community could also be formed in an apartment district, and that vibrant community involvement might not necessarily be related to a physical housing type.

7.5.1 The High-rise Apartment as a Housing Type

The high-rise apartment buildings have been the dominant type of construction in development sites in Yong-in, as well as in other cities in Korea. The reasons for the spread of apartments as a housing type are explored in this section.

The Spread of the High-rise Apartment

Table 7.10 presents changes in the composition of housing types in Yong-in. More than 210,000 apartments were newly constructed between 1985 and 2010. Multi-unit

dwellings (apartments, terraced houses, and multiplex houses) account for almost all this increase. Multi-unit dwellings account for more than 70% of the total housing stock in Korea, while they are more than 90% of the housing stock in Yong-in.

Table 7.10 Changes in the Housing Stock in Yong-in by Types of Dwelling

Data source: *Population and Housing Census Report 1985-2010* (NSA, 2011b)

Unit: number of dwellings

	Year	Total	Detached House	Apartment	Terraced House	Multiplex House	Others
Yong-in	1985	22,765	20,154	1,383	420	0	808
	1990	27,929	21,232	3,501	2,073	380	743
	1995	49,572	20,522	16,212	4,858	6,022	1,958
	2000	97,379	21,843	54,221	9,032	9,755	4,163
	2005	195,877	22,973	149,895	10,459	11,026	1,524
	2010	259,899	23,753	212,243	11,155	11,775	3,015
		100%	9%	82%	4%	5%	1%
Nationwide	2010	14,677,419	4,089,491	8,576,013	536,070	1,314,452	464,490
		100%	28%	58%	4%	9%	3%

The Reasons for the Spread of the Apartment

The majority of residents interviewed about living in apartments pointed out that the greatest advantage of the apartment is convenience, both in terms of a home and of a neighborhood. A 70-year-old resident who had experienced apartment living from an early period recalled (May 2012):

The apartment which I moved into in 1970 was the first apartment built in Dae-gu (the third largest city in South Korea). It was amazing. It was equipped with new technologies that I had never seen in other places until that time. Hot water was supplied, and, afterwards, an elevator was also installed.

One of the features of apartments in Korea which is different from many Western cities is that apartments attract high-income groups as well as low-income groups.¹⁹⁴ The above interview shows that the introduction of apartments was recognised as being combined with modernisation. An apartment is a symbol of wealth and, at the same time, a major instrument for the accumulation of wealth (Jun, 2009). The middle class in modern Korea is commonly defined as people who have apartments in specific areas, such as Gang-nam in Seoul, where apartments have the potential to increase in value (Jang, 2006). Thus, the polarisation of housing has appeared, with a pattern of high-income groups in apartments and low-income groups in houses (Jun, 2009).

Another feature of housing provision in Korea is that the public sector, replacing the private sector, has actively intervened in the supply of dwellings (apartments), mobilising policy instruments such as price control. As the prices of apartments, particularly in the Capital region, have continuously increased, the main beneficiaries of such housing policy have been the upper and middle-income groups with their own apartments (Ha, 2006; Ha et al., 1993). This situation has reinforced an ownership-oriented housing situation, not a residence-oriented one.

A government official pointed out that many Korean residents do not care about residential conditions in the long-run, or associated community issues; they are just interested in increases in the prices of their own dwellings; and they are ready to leave whenever they can realise a trading profit and this closely correlates with the high residential mobility in Korea (inspector, BAI, November 2012). The reason why the

¹⁹⁴ The most expensive dwellings in Korea were apartments in 2010, and they were mixed-use apartments (apartments with stores in the lower storeys of the building) located in Gang-nam, Seoul (MLTM, 2010c).

apartment is popular in Korea is summarised as its convenience and profitability as an asset.¹⁹⁵

7.5.2 Community Activity in Apartment Districts

This section will address the relationships between housing types and community activity, and will consider the social aspects of apartment living in terms of community building in new settlements, privacy, and community involvement.

Relationships between Housing Types and Community Activity

‘Architectural determinism’ claimed that the physical environment determined human behaviour, but this has been criticized by the arguments that socio-cultural and economic factors are also important in explaining human behaviours in a city (Hillier and Hanson, 1984). Social idealism pursued the creation of better community living through planning based on a belief in determinism, extensively applying Perry’s Neighborhood Unit Planning, which was emphasised in the Dudley Report in 1944 (Broady, 1972). After that, however, different research results appeared, such as Willmott (1963), which implied that community consciousness is formed irrespective of physical urban forms. Revaluating urban slums and working class residential areas, these researchers regarded the new settlements of high-rise blocks as destroying existing communities (Young and Willmott, 1957; Jacobs, 1962). The DoE (1972) also explained, from a position of anti-architectural determinism, that housing satisfaction was closely

¹⁹⁵ This has a circular logic, because the profitability of an apartment is generated from its increasing popularity. Therefore, the fundamental nature of the preference for an apartment needs to be analysed.

related with diverse elements such as the socio-political image of a residential district and facility management, rather than physical forms such as densities, types of building, and distance from the ground. To sum up, though the physical environment and forms of building affect the behaviour and social relations of residents, this is not decisive and does not demonstrate a unilateral causality. The physical forms of buildings and cities reflect social and cultural factors, and they are mutually interactive (Hillier and Hanson, 1984). This section will examine these relationships in the case of the apartment.

Also, in Korean academia, similar research is found showing that housing types and urban forms significantly affect human relations. The results show that current residential circumstances, which mainly consist of apartments, are weakening the sense of solidarity in a community and, further, diminishing social capital.¹⁹⁶ Apartment living in Korea is criticised as having decreased social contact between residents, generating human isolation, and having weakened the traditional sense of neighborhood (Shin and Kim, 1989; Shin, 1985).¹⁹⁷ The deepening of social anonymity is also ascribed to the apartment-oriented housing culture, along with high spatial mobility in Korea,¹⁹⁸ which has been called a ‘nomadic’ lifestyle (Jun, 2009).

Thus, here, the following questions are raised: whether apartment life negatively affects community activities; and whether a well-designed apartment complex has any possibility of improving community activities.

¹⁹⁶ In the US context, Putnam (2000) pointed out that suburbanisation decreased social capital, and Kay (1997) claimed that the diffusion of the ‘asphalt culture’ weakened communities in US society.

¹⁹⁷ Further, as the apartment is recognised as weakening a sense of belonging in a community, a normative and intentional approach to community movements in apartment districts is also observed (Park, 2000; Shim 2000).

¹⁹⁸ Data on spatial mobility in Korea is addressed in Chapter 9 and presented Appendix 3-4.

Social Contact in an Apartment District

In relation to this, a 38-year-old woman in Yong-in showed a different experience from the above general perception, stating (May 2012):

Before I moved into this apartment complex several years ago, I had lived in a village of detached houses with beautiful scenery in Gang-nam, Seoul. Within the village, stores for daily life such as a bakery and pharmacy were scarce and too far to walk to. Therefore, I had to use a car or bus to reach those stores and facilities. Also, there was almost no contact with neighbours. However, in this apartment complex, I come across many residents in my daily routine, and I can see them through the windows and in the shared gardens. Friendship activities are also common: for example, we share the fruit in our communal garden; and we take care of neighbours' children after school for each other. Also, many stores are available in a store building in the complex, including: several markets, small restaurants and pubs, private educational institutes for children, and so on. This building is reached in two minutes' walk. Other facilities are accessible by walking or easily by village buses. These merits, conveniences and good neighborhood relationships are the reasons why I live in this apartment complex.

This statement suggests that apartment life may increase social contacts. The woman added that apartment complexes are likely to be advantageous for collaborative work with neighbours, such as a voluntary activity, through the frequent contacts and community facilities within the complexes. Though these experiences cannot be directly generalised, most interviewees agreed that apartment districts are no less likely to produce intimate and liveable communities.

On the other hand, the interviewee stated that plentiful social contacts in her apartment building might be caused partly by its 'corridor access' structure.¹⁹⁹ However, four other

¹⁹⁹ The access structure of apartments is divided into 'corridor access' and 'stairway (elevator) access' types.

interviewees, including two professionals, who were asked about this did not agree with her opinion, and added that the effect would be minor (May 2012). Nevertheless, some research in Korea has shown that community activities differ according to the structure of apartment complexes, such as dwelling sizes, heights, the size of complexes, and the mixture of diverse types of buildings (Cheon, 2004; Kim, 2002). In contrast to these views, a senior planner who had been involved in many projects in Yong-in highlighted the fact that a current mainstream point of view in planning new settlements in Korea does not regard physical form in a residential district as a decisive factor influencing community activities, but rather considers contemporary patterns of social contact for residents as having geographically broadened and relying more and more on online communication (director, KRIHS, May 2012).

At the same time, some studies have shown that the apartment may form active neighbourhood relationships, because it basically ‘arranges residents with similar socio-economic features intensively within a particular space’ (Hong, 1991). Further, the apartment is judged to have a high potential for forming a close community in that: apartment is a multi-unit housing which requires common living; its spatial extent is clear; and it needs an autonomous function with an agreed regulation (Lim et al., 2003).

Privacy in an Apartment

Human beings do not always need intimate neighbours and a community. The majority of participants interviewed as residents were not involved in any local community activity and were not concerned about any local community issue (March and May 2012). Rather, the apartment for them had the feature of a ‘defensible space’ for the

safety of private life and protection of privacy (Newman, 1973). In the Korean context, it is accepted as a merit of the apartment that it makes it possible to live an 'open-and-shut' lifestyle, in other words, to switch easily between isolation and connection to neighbours (Jun, 2009). It was explained that apartment life made residents choose which neighbours they contacted and the depth of the relationships, while in traditional Korean society the bond that existed in local communities had been excessively emphasised and the community rules became inconvenient for residents.

The above interviewee mentioned that she did not think that frequently coming across her neighbours in the apartment complex and easily being able to look through each others' windows hindered their privacy (May 2012). Also, none of the residents interviewed perceived that the apartment was disadvantageous in terms of privacy (March and May 2012). This attitude is understood as generated by their historical and cultural backgrounds.

Community Organisations and their Activities in Apartment Complexes

After new residents move into a new apartment complex, an official 'representative committee of residents' is organised, and the committee and a 'residents' general meeting' decide all the matters related to the management of the complex (MLTM, 2010c). In general, unofficial societies such as a 'women's society' and a 'senior residents' society' are also formed (interview with a housing manager of an apartment complex, May 2012). The community organisations identified in the case study area are classified in Table 7.11. The first two are official (legally necessary) organisations, whilst the others are unofficial.

Table 7.11 Community Organisations in Apartment Districts

Category	Characteristics and Main Activities
Neighbourhood Association	Semi-governmental organization which communicates with residents
Residents' Representative Committee	Official resident organization which has the right to manage an apartment complex (employing housing managers)
Women's Society	Unofficial (but almost necessary) organization of adult women (housewives) which raises and gets involved in many community issues
Interest Group	Community group which is organized around a local interest
Civic and Environmental Group	NGO which promotes a common good in which participants believe

Among these, the 'women's society' is involved in various issues in the complex and organises many events such as a weekly market, seasonal day trips, and socially-oriented services (interview with the president of a neighbourhood association, May 2012). As the women's society has an influential voice in community issues, sometimes it can get a president of the 'residents' representative committee' changed (an interest group leader, November 2012),²⁰⁰ and sometimes it causes disputes on account of negative activities such as collusion in apartment price-fixing.²⁰¹ 'Interest groups' in residential districts are formed to protect and raise matters of local interest and property prices, while local-based 'civic and environmental groups' act for the common good in matters of a more regional nature.²⁰²

²⁰⁰ The interviewee explained the power relations: 'As power in a neighbourhood community is generated through money and time, the women's societies have both through intervening in benefit businesses' (November 2012).

²⁰¹ A central government official recalled that he had confirmed many cases of collusion by women's societies through on-the-spot investigation in Yong-in in 2007 (deputy director, MLTM, May 2012).

²⁰² The above leader of an interest group distinguished his group from civic groups in that the former is united in pursuit of its 'interest', but the latter pursues a shared 'ideology' (November 2012).

The Forming of Neighborhood Communities in New Settlements

From the two rounds of fieldwork, it was found that community organisations and their activities varied considerably by site. In general, a community of residents in new settlements starts to form spontaneously after apartment sale contracts have been exchanged (commonly 2.5 to 3 years before actual moving-in) through online contact between contractors (interviews with residents and researchers, May 2012). In the case of Dong-baek HS, residents' organisations were formed by pre-residents after the sale of apartments in 2004, three years before moving into the new apartments, and had already had off-line friendship meetings, such as for hiking. In the process, they had negotiated with government and project promoters about their future living circumstances.

The role of online contacts

The internet is regarded by some scholars as providing a technical base to realise an ideal of community through facilitating interactions between community members (Arnold, 2003; Wellman et al., 2001; Kavanaugh et al., 2005).²⁰³ Hong (2009), through a case study of an online community in a new apartment complex, identified that: online contacts provided an advantageous condition for building and activating a new community; an online community also revealed a feature of 'solid community', in terms of residents' participation in decisions and building a sense of fellowship.

²⁰³ On the other hand, Bimber (2007) pointed out that one of the most overused and unclear terms in contemporary public discourse was 'community', and its meaning became more ambiguous in discussions on the internet; and he claimed that a solid community was difficult to form through the internet.

A study of Korean apartment complexes shows that, in general, the more owners there are living in an apartment complex, rather than tenants, the longer their residence periods are, and the smaller an apartment complex is, the more actively the residents participate in community activities (Kim and Park, 1993).

Issues in new settlements that activate interest groups

A crucial factor activating ‘interest groups’ which is commonly observed in large-scale new settlements is the issues of locating public facilities on sites, for example, a regional road, general hospital, and government complex. These are indivisibly related to the issue of sharing development costs for the facilities. For example, Dong-baek Citizens’ Solidarity (with about 1,000 members), which was organised to argue for the speedy promotion and operation of a light railway transit (LRT) and a general hospital, in the district which was affected by the facilities, differentiated itself from its parent organisation, Dong-baek Love (with about 18,000 members), which is a resident interest group encompassing the whole site. The leader of the former group mentioned that these issues are important especially in the early stages of new settlements (interview in November, 2012). Then, after these issues are solved to a certain degree, other issues, which are comparatively less urgent and ‘less productive’ (in his expression), being mainly related to the wellbeing of residents, start to emerge, such as the conditions that provide views or sunshine, or the installation of soundproof walls or underground roads.

To conclude the interview results, apartments also can provide favourable conditions in achieving vibrant communities that show community attachment and participation,

through the dense and mixed-use spatial structure of apartment complexes and the social homogeneity of residents.

7.6 Conclusion

This chapter has examined the features of the Yong-in development which have focused on the mass provision of apartments, and explored the processes which have shaped the current development patterns of Yong-in. For this, different development methods have been examined: one is a larger-scale urban clearance method for new settlements; and the other is urban development by landowners, of which the procedure is similar to the system of planning permission. Urban densities were high irrespective of the development methods employed. From the case study, it was found that these developments have been derived by participants in pursuit of development gains, and the equitable share of these and associated public facilities have been some of the critical issues of these new settlements. After the next chapter's case study of Se-jong, which has a different context, the findings from the two case studies will be integrated and compared.

CHAPTER 8

THE CASE STUDY OF SE-JONG CITY

8.1 Introduction

The second case study is of urban development in Se-jong city. This is different from the first case in that Se-jong city is designed as a metropolitan-level city leading to regional development beyond a passive new city to accommodate moving-in residents. As in the previous chapter, this chapter will look at the context of the city's development and investigate features of land use within the framework of the compact city. And then, the issues of the shaping of development patterns and the acceptability of housing features will be examined from the perspective of sustainable development.

8.2 The Context of the Se-jong Development

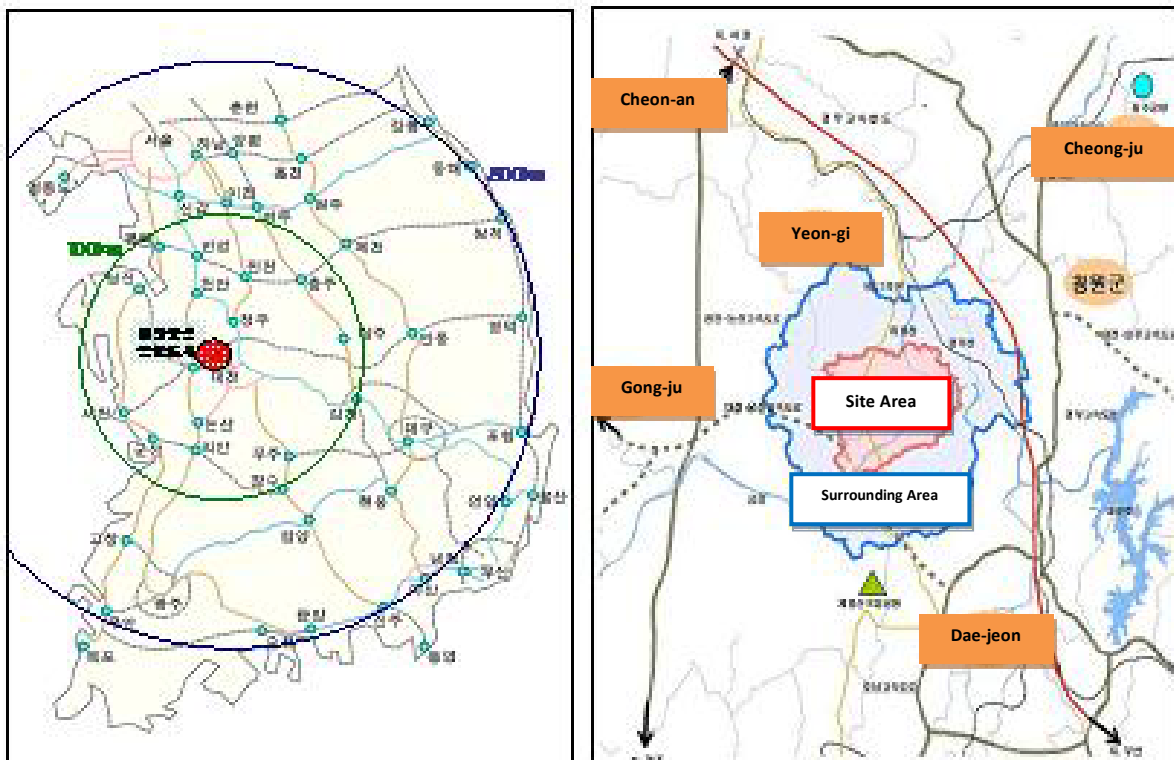
This section introduces an outline of the Se-jong area and examines briefly the history of Se-jong NC development as a project suggested for balanced regional development. And the main contents of the project will be examined in readiness for further study.

8.2.1 An Outline of the Se-jong Area

The official title of the Se-jong NCD project is the Multifunctional Administrative City (MAC) Construction Project, and it is commonly called Happy City (*Haeng-bok City* in Korean) according to its Korean initials. The thesis, however, mainly uses the name Se-jong, which was given it in 2006. The site for the project is about 150 kilometres south of Seoul, as illustrated in Figure 8.1, and is mainly in the former Yeon-gi county, in

Chung-nam province, which had a population of about 81,000 in 2011. Its southern section is adjacent to Dae-jeon provincial-level metropolitan city, which has a population of 1.5 million (NSA, 2012a).²⁰⁴ The site originally consisted mainly of agricultural areas and surrounding forests through which the Geum-gang River ran (MOCT, 2006b). The total size of the site is 7,291 hectares. It was planned to accommodate 500,000 residents, and the time scale for the project is from 2005 to 2030 (MACCA, 2010). The context in which the project was initiated was different from that of Yong-in (demand for housing), and this will be briefly described in the following paragraphs.

Figure 8.1 Geographical Location of the Se-jong Site. Source: MOCT (2006b: 26)



²⁰⁴ The site partly includes some areas of Gong-ju city (125,000 inhabitants) in Chung-nam province to the west, and some areas of Cheong-ju city and Cheong-won county (total 809,000 inhabitants) in Chung-buk province to the east. Chung-nam and Chung-buk provinces border the Capital area in the north. Cheon-an and A-san cities (total 823,000 inhabitants) are between Se-jong city and the Capital region (NSA, 2012a).

8.2.2 The History of the Se-jong Development

The project was originally suggested as a plan to relocate the Capital by a candidate called Roh, who stood in the Presidential election of 2002. It was one of the key issues of the election, and Roh was elected. Thus, it started as a plan for a new administrative capital by the Roh MH Government of 2003-07, and the present site was selected as the location in July 2004. However, as the plan was judged to be against Korea's unwritten Constitution by the Constitutional Court, in October 2004, it was reduced in 2005 to being a project for the transfer of central administrative organisations (MACCA, 2008). The project has been promoted as one of Korea's balanced regional development projects (MLTM, 2008b) and reflects policy directions in the era of the Roh MH Government, which aspired toward social equity and participation (Policy Briefing, 2007). The history of the MAC construction project is summarised in Table 8.1 from MACCA (2012a).

Table 8.1 Major Stages in the MAC Construction Project

Month-Year	Events
09-2002	A Presidential candidate's pledge: New Administrative Capital in Chung-cheong area
04-2004	Special Act for New Administrative Capital Construction enacted
07-2004	Location of New Administrative Capital announced to be in Yeon-gi county area
10-2004	Constitutional Court's decision: Special Act was against the Constitution
03-2005	Special Act for Multifunctional Administrative City Construction (SAMACC) enacted
05-2005	Central government organizations transfer plan announced
12-2005	Land acquisition and compensation on project site started
01-2006	MAC Construction Agency (MACCA) inaugurated
07-2006	MAC Master Plan established
11-2006	MAC Development Plan established
12-2006	MAC named Se-jong

07-2007	MAC construction work (land development) started
03-2009	First Village buildings construction work started.
01-2010	Se-jong city amendment plan (cancelation of transfer plan) announced
06-2010	Se-jong city amendment plan rejected in Parliament
05-2011	Location of International Science Business Belt near Se-jong city announced
12-2011	First residents (First Village) move in (to continue till 2030)
07-2012	Se-jong city government inaugurated
09-2012	Transfer of central government organisations started. (to continue till 2014)

Balanced Regional Development Projects

As reviewed in Chapter 3, the achievement of short journeys to work for the reduction of car travel and self-sufficient urban functions in a new city requires not only an urban form with mixed land use, but also additional efforts to locate and intensify industries and services. In this context, the Roh MH Government of 2003-2007 initiated balanced regional development²⁰⁵ projects to create multifunctional new cities in non-Capital provinces, and these new cities are now being built.²⁰⁶ These cities were advocated against a background of global neo-liberalism and, at the same time, with the government playing a positive role in promoting economic development in the Korean context.

²⁰⁵ This is literally translated by ‘balanced national development’, but its real meaning is balanced development between regions, especially between the Capital region (including Seoul) and non-Capital regions. Therefore, this thesis uses the term ‘balanced regional development’.

²⁰⁶ These project cities include: the Administrative City, Se-jong, into which 49 central government institutions will be moved; ten Innovation Cities, to which 135 public institutions will be relocated, and, which will form industrial clusters; six Enterprise Cities which aim at self-sufficient cities created by the initiatives of private companies (MLTM, 2010a); and many other types of new cities including six Free Economic Zones which exclude the application of planning acts under the banner of international competitiveness and the inducement of global investment (MKE, 2011). Some of these new city types are similar to the Urban Enterprise Zones of the UK Thatcher Government and the Charter City proposed by Paul Romer (2009).

In addition, as suggested by the official name of the government that initiated these projects, the Participatory Government, the enhancement of social capital through the enlargement of participation was highlighted.²⁰⁷ At that time, along with the recognition that the intensification of population and industry in the Capital region had caused the political and economic isolation of non-Capital regions, there was a social atmosphere which stressed that horizontal participation and equity should replace vertical authority.

8.2.3 The Se-jong Development Project

After the name of the NC project was changed from the New Administrative Capital into the Multifunctional Administrative City in 2005, there was an emphasis on the ‘multifunction’ of the city. After the new Act was passed in March 2005, the Site Area and Surrounding Area were designated in May 2005, and the plan for the transfer of 49 central administrative organisations²⁰⁸ was confirmed in October 2005 (MOCT, 2006b). The location was reviewed in secret, based on intensive internal discussions by the promoting committee and MOCT, to prevent speculative behaviour in the area.

The master plan and development plan were established in July and November 2006 respectively. The name of the city, Se-jong, was announced in December 2006, having been determined by a naming contest, with general voting by internet and a committee

²⁰⁷ The Roh MH Government had overlapping characteristics: on the one hand, it emphasised social equity and participation from its progressive political stance; on the other hand, it followed the global neo-liberal prescriptions which were in force, particularly after the IMF relief loan in the late 1990s.

²⁰⁸ The institutions to be transferred included: 49 central administrative organisations, headed by the Prime Minister’s Office (including 12 ministries, 4 bureaus, and 2 administrative agencies); and 16 national research institutes (MLTM, 2010a).

review (MACCA, 2008).²⁰⁹ The implementation plan was approved and construction work began in July 2007. The new provincial-level municipality which has jurisdiction over the Se-jong site and the remaining area of Yeon-gi county took office in July 2012.

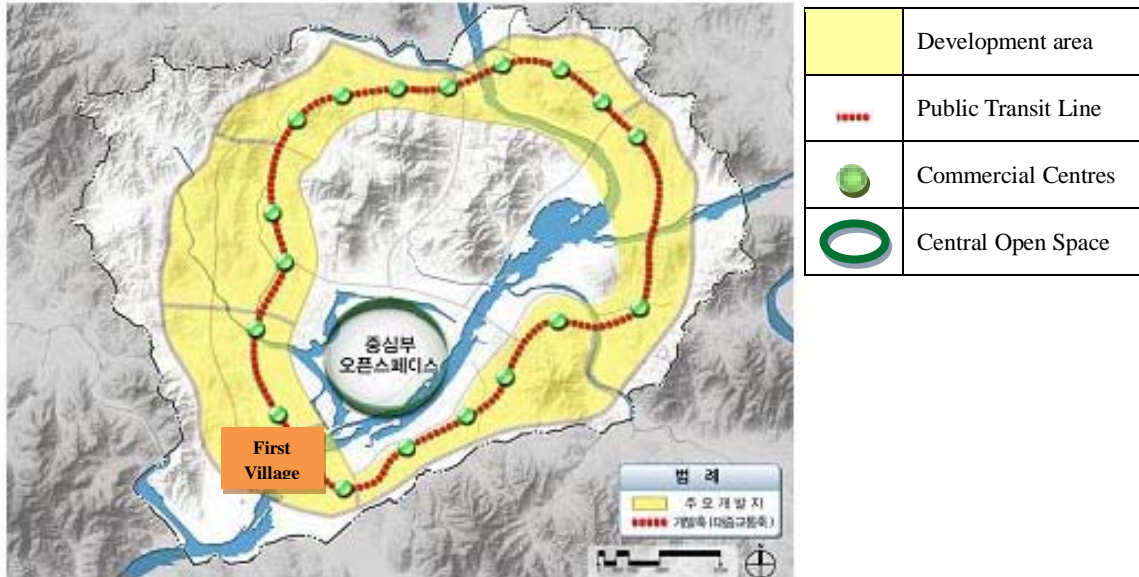
The number of employees of the above organisations who will be moved into Se-jong is under 13,000.²¹⁰ However, it is planned that the population in 2030 will be 0.5 million, and the size of the site is 7,291 hectares, which exceeds the normal sizes of NCs. For example, it is around six and a half times the size of Gwang-gyo NC (1,130 ha). If only the number of transferring employees (for the main function of the city, central government administration) is considered, such a large NC is not required: rather, an HSD-level project would be sufficient. This implies that Se-jong is intended to be a self-sufficient city, which will lead to balanced regional development. For this, the development plan includes various urban functions and businesses, such as a medical science park. Also, one item that adds to the size is a huge open space, which stands out conspicuously in Figure 8.2. Apparently, such a large open space in the centre of the city might be introduced for creating ‘something special for a wonderful city’ (interview with a university professor, May 2012).

²⁰⁹ ‘Se-jong’ is the name of a King (reign 1418-50) of the Jo-seon Dynasty (1392-1910) who created a written language for the Korean people. The author proposed Se-jong in the naming contest, and the proposal was chosen with the author’s own explanation for the naming, ‘the hill (‘Jong’) in the world (‘Se’), along with dozens of other participants who had suggested the same name. The prize was 300,000 won (about £170).

²¹⁰ To be precise, the figure is expected to reach 12,728 persons: 10,452 in central administrative organisations and 2,276 in national research institutes (MACCA, 2010a).

Figure 8.2 Basic Urban Structure of the MAC and Location of First Village

Source: MOCT (2006b: 49)



First Village

For an embedded case, the case study will concentrate on a district in the city, First Village (*Cheott ma-eul* in Korean), several blocks of which were partly completed and started to admit new residents from December 2011, whilst other districts were still under construction. Se-jong city is divided into seven Living Zones and First Village is the third of four districts in the second Living Zone, which is intended to specialize in the function of culture and international interchange. First Village will accommodate 17,500 residents, with 7,000 dwellings, in an area of 64 hectares (MACCA, 2010). First Village has another feature which may differentiate it from other districts: parts of it

have been constructed directly by a public corporation, the KHC (consolidated into KLHC from October 2009), not by private construction companies.²¹¹

Figure 8.3 Se-jong MAC Project Area and First Village (May and November 2012)²¹²

MAC Construction Site¹⁾



First Village Construction Site



An Elementary School in First Village



A Garden and Pathway in First Village



Note: 1) Whole view of the MAC construction area from the MAC Information Centre

²¹¹ The KHC had participated in housing complex design and construction work directly on public sites, in competition with private companies; but this is not possible anymore because the consolidated KLHC is prohibited from doing such business by the new Act, which was enacted in 2009, against the background of a trend towards privatisation in the Lee MB Government of 2008-12. Thus, First Village became the last residential complex created by KHC (MACCA, 2012a).

²¹² Additional photos and aerial pictures are presented in Appendix 1-3.

8.3 The Features of the Se-jong Development

This section examines whether the Se-jong development fits the elements of the compact city. And the features of its land use will be compared with the ones of other NCDs with quantitative data.

8.3.1 Compactness

Se-jong development accords with physical requirements for the compact city. First of all, the density is still high, as presented in Table 8.2 on ‘net residential density’, particularly considering the site is located in a non-Capital area where the pressure towards densification is not so high. Thus, a question is raised as to why Se-jong was planned with such high densities despite ample land in and around the site, which will be explored in the following sections.

Table 8.2 Residential Densities in Sample New Cities

Source: MACCA (2010: 56)

Country	New City (New Town)	Planned Population (persons)	Size of Residential Land (ha)	Net Residential Density (persons/ha)
South Korea	Bun-dang	390,000	635	614
	Pan-gyo	89,100	263	347
	Se-jong	500,000	1,533	326
Malaysia	Putrajaya	320,000	1,170	273
Japan	Tama ¹⁾	298,900	815	367
UK	Milton Keynes	200,000	5,632	36

Note: 1) Tama (designed in 1965) is located in Tokyo-do under high pressure towards densification.

Secondly, Se-jong was also planned for mixed land use, similarly to other NCDs. For example, ‘neighborhood living facilities’ are widely dispersed in residential districts, and populations of 15,000 are accommodated in commercial and business districts (MACCA, 2010). Thirdly, the urban boundary is clearly distinguished from the surrounding rural areas. One of the unique features of the Se-jong development process which have not been found in other NCDs was the designation of a huge Surrounding Area of 223.77 square kilometres²¹³ (MACCA, 2012a) indicating a strong intention to prohibit private ribbon development.

Fourthly, as concerns public transport, the ‘ring’ structure of the city is important to note. Along a ring line connected by BRT, a total of 7 Living Zones and 22 villages (districts) are located (MACCA, 2010). Residents use branch buses (village buses) between their village centres and residential complexes, and in every complex a shopping quarter can be accessed by walking. Commercial areas (sub-city centres) are arranged in every 7 Living Zone (50,000-90,000 residents each) and there is no single large city centre.²¹⁴ ‘Complex community centres’²¹⁵ will be built in every one of the 22 villages (20,000-30,000 residents each) (ibid). Schools, including two primary schools per complex, will be also arranged so that they can be accessed by walking. In addition, the KLHC staff were particularly enthusiastic about the transport plan, which aims to reduce the percentage of car roads through providing shorter journey-to-work distances, and to use extraordinary measures to build a walkable and bicycle-friendly environment in

²¹³ It is more than three times the size of the Site Area of 73.14 km².

²¹⁴ This means polycentric urban structure, far from monocentric one.

²¹⁵ The ‘complex community centre’ is a brand-new public facility which can deliver one-stop services to residents by integrating convenience facilities for various services, such as culture, welfare, and health, alongside individual community centres (MACCA, 2012a).

comparison with the previous NCDs (interviews in May 2012).²¹⁶ An MACCA official, when asked about the disadvantages of Se-jong city by the researcher, answered seriously that, ‘The most disadvantageous feature of Se-jong city is that it imposes excessive inconvenience on car users’ (May 2012). The self-sufficiency of the city will be examined in the next section.

Figure 8.5 Aeroviews of Public Facilities in First Village

Source: MACCA (2012), MOCT (2006b)



Most participants interviewed agreed that the Se-jong development fitted the elements of the compact city in that it shared the features of high density and a well-connected public transport system, even though the planning documents did not use the term compact city (May 2012). However, not all aspects were agreed as relating to compactness, nor did all interviewees agree there was compactness. Two experts who had participated in planning the project pointed out that the width of the ring was too large to enable access to the core line by walking²¹⁷ (a KRIHS researcher and a

²¹⁶ The transport plan aims to raise the share of traffic covered by public transport to more than 70% and decrease that of private cars to below 30% (MACCA, 2010a).

²¹⁷ They had to design a public transport system catering for 0.5 million residents. They recalled that some planners (members of the planning committee) proposed alternatives such as a ‘two-ring’ structure or double BRT (public transport-oriented roads), but these were not accepted (interviews in May 2012).

university professor, May 2012). The distance from dwellings to the transport line suggested by the TOD was commonly 500-600 metres, while the one in Se-jong exceeded one kilometre in some areas. In addition, a general manager of KLHC who had been involved in planning the project revealed a different perception of its compactness (May 2012):

Se-jong city is not compact, particularly in comparison with other NCs, and, also, it has not aimed to be a compact city. The FSIs were set too low. It should have been more densified, taking profitability into consideration.

This statement shows the stance and dissatisfaction of a public corporation (project promoter) who had to consider business value, and reflects interviewee's understanding of density: high density may be more desirable especially for efficiency.

8.3.2 Features of Land Use

Table 8.3 compares the densities of the Se-jong project with those of Do-an NCD project, which is located in Dae-jeon city contiguous to Se-jong city, and the averages for five other NCD projects, including four in the Yong-in case study.²¹⁸ Though the densities on 'residential land' in Se-jong are comparatively lower than average, the 'household density on private land' is quite similar. This shows that commercial, business, and industrial land in Se-jong is comparatively small, and Se-jong has high densities similarly to other NDCs.

²¹⁸ The detailed data by development projects (plans for population and households, density, and land use) are presented in Appendix 3-7.

Table 8.3 Comparative Table of Land Uses in Se-jong NCD and other NCDs

Unit: persons, persons/hectare, households/hectare, and year

Project	Population	Population Density	Households	Household Density*	Household Density**	Plan Year	Completion Year
Se-jong	500,000	316.5	200,000	126.6	112.4	2006	2030
Do-an	68,706	344.2	24,538	122.9	113.9	2003	2012
Average of 5 NCDs ²⁾	189,423	455.0	61,895	148.7	113.8	-	-

Unit: hectares

Project	Residential Land	Private Land	Parks and Green Spaces	Land for Public Facilities	Land for Infrastructure	Land for Self-sufficiency Functions	Total Site Size
Se-jong	1,579.73	1,778.62	2,473.77	606.61	1,003.89	496.78	7,290.82
(ratio)	21.2%	24.4%	33.9%	8.3%	13.8%	6.8%	100.0%
Do-an	199.59	215.48	132.28	56.49	166.64	61.04	610.94
(ratio)	30.1%	35.3%	21.7%	9.2%	27.3%	10.0%	100.0%
Average of 5 NCDs	416.35	543.97	360.54	89.28	301.98	187.23	1,402.08
(ratio)	28.8%	38.8%	25.7%	6.4%	21.5%	13.4%	100.0%

Note: 1) Household Density*: density per residential land; Household Density**: density per private land

2) 5 NCDs: Do-an and four NCDs in chapter 7, except for Se-jong projects

As for land use in Se-jong, two noticeable features are observed: large ‘parks and green spaces’, and comparatively small ‘land for self-sufficiency functions’ such as business and industrial land. With regard to the latter, there was a controversy around it in 2009, after the government official in charge pointed out that the percentage of ‘land for self-sufficiency functions’ was too small to secure self-sufficient urban functions. To this, other experts answered back that the size of land was in fact not so important for securing self-sufficiency, and that soft efforts to create more jobs, such as attracting businesses, were more strongly recommended. After that, the original land use plan was maintained without amendment (interview with a MACCA official, May 2012).²¹⁹

²¹⁹ Some participants in Yong-in expressed similar opinions, pointing out that, in the case of Dong-baek, as an excessively large amount of commercial land had been provided, a ‘hollowing-out’ was caused in the commercial area of Dong-baek (May and November 2012), and this type of concern was also raised for Gwang-gyo (a civil activist and a KLHC staff member, November 2012).

8.4 The Shaping of Current Development Patterns

This and the next sections review the same issues as were addressed in the case study of Yong-in. As the general processes and features of Korean urban developments have already been explained in the previous case study, this chapter concentrates on the Se-jong case. This section explores how the current development patterns of Se-jong have been shaped, and for this it examines the views of participants and their role in determining development patterns.

8.4.1 Features of Urban Diffusion: Sprawl or Compact Development?

Se-jong is being developed as a totally new city by a single project with a clearance method replacing existing agricultural and natural areas. This is different from Yong-in, which developed incrementally, responding to skyrocketing demand for housing and urban facilities, whilst the Se-jong project was planned politically, without such substantive demand.

Nevertheless, a similar pattern in urban diffusion is found from a regional perspective. Though the Se-jong site is surrounded by agricultural and mountainous areas, there exist expanding large cities beyond them. The cities adjacent to Se-jong have also spread toward the present Se-jong area over the past few decades (MACCA, 2010; Dae-jeon Metropolitan City, 2010), though the degree of spread is weaker than that in the Capital area. The construction of a new city in these directions may accelerate the deterioration of existing old city centres. First Village is already absorbing residents who commute to

neighboring cities such as Dae-jeon (interviews with a Se-jong City official and a regional institute researcher, November 2012). This issue will be revisited later in this section with regard to urban self-sufficiency and regional strategy.

In addition, a specific measure for preventing speculative private development in the areas surrounding the Se-jong site through the management of the Surrounding Area may be judged to be an effort to contain such urban diffusion, alongside common regulations on agricultural land, forest, including national parks, and the green belt surrounding Dae-jeon city.

8.4.2 Changes in Policy Direction and Governance

Se-jong development is being implemented by a single project, and there has been no precedent in the area which can provide a comparison over the course of time. However, changes in the progress of the project need to be investigated, as its policy direction and governance system have also been changing with time.

Changes in Policy Direction

The policy direction of the Se-jong development has changed, reflecting political dynamics. The basic identity of the city as the new administrative capital had already been reduced to that of an MAC by the Roh MH Government of 2003-07 which had initiated the project (MLTM, 2010a). It was not suggested as a simple new city construction project. Rather, the relocation of the 'capital' was meant to disperse into non-Capital regions those vested political and economic interests that are concentrated

in the present Capital region, particularly in Seoul, and this was done against the background of a social equalitarian trend in that era. Thus, the initial proposal generated huge political disputes, causing conflicts between different social groups and regions. After the retreat of the government, a political compromise was reached with an MAC. Moreover, when conservatives gained control of the government in the following Lee MB Government of 2008-12, they announced, in January 2010, the cancellation of the transfer plan for central administrative organisations, claiming this was inevitable to maintain efficiency in running the government (MACCA, 2012a). In addition, delivering urban self-sufficiency by attracting businesses was given greater emphasis, partly as compensation for the cancellation of the transfer plan. However, the Lee MB Government had to withdraw their amendment due to the opposition of citizens, regionally in the Chung-cheong region²²⁰, after the party's defeat in the municipal election of June 2010.

Decision-making Structure in Planning and Various Participants

The multi-layered promotion system for the Se-jong project is presented in Table 8.4. The 'joint research task force', which included nine major public institutes and diverse committees, drew widely on the opinions of a variety of experts from all walks of life, which shows that the project initiators were trying to create a model city by mobilizing the greatest expertise available at that time (interview with an MLTM official, May 2012). According to interviewees who had been involved in planning in the early stage of the project (2005-06), the urban structure and basic land use was arrived at in

²²⁰ The Chung-cheong region includes Dae-jeon Metropolitan city, Chung-nam province, and Chung-buk province. These three city and provinces surround Se-jong city geographically.

substance through intensive discussions between the MOCT (government), KRIHS (national institute), and KLC (public corporation and project promoter), with reference to prize-winning contributions being made through an international contest on the urban concept (two KRIHS researchers and two members of planning committee, May 2012).

Table 8.4 Promotion System of the MAC Development Project

Source: MACCA (2008)

Organization	Composition
MAC Construction Promotion Committee	Members: total 30 including PM (Co-Chairman), 10 ministers, and civilian members
MOCT (now MLTM), MACCA, and KLC (now KLHC)	Central government organizations and public organization in charge of the project
Advisory Committee	Members: total 100 experts from every field (4 subcommittees)
Other Committees	10 legal committees: architecture committee, infrastructure coordination committee, etc. 12 non-legal committees: central green space committee, enterprises committee, etc.
Task Forces, Consultative Councils, and Other organizations	16 task forces: cultural treasure TF, migration measure TF, etc. 6 Consultative councils: regional transportation improvement council, regional urban planning council etc. 5 Other organizations: real estate speculation countermeasure section, master commissioning group, etc.
Joint Research Group	Member organizations: 9 national research institutes including KRIHS and private engineering companies

In order to establish and implement the master plan and development plan, hundreds of public hearings and resident meetings were organised, mainly for out-migrants and residents in neighbouring cities (MACCA, 2008), of whom a considerable number were potential residents of Se-jong. Here, the current planning structure of the MACCA²²¹ and the different stances of diverse participants are examined.

²²¹ The current planning committee has five subcommittees under the overall control of a master commissioner (master planner in standard NCD projects): urban planning, urban design, transport, landscaping, and architecture. And, a 'planning coordination review team', which consists of six full-time planners in the MACCA, is supporting the MACCA and planning committee (MACCA, 2012a).

The participants interviewed described the roles of diverse participants in the current planning process as follows (two members of the planning committee and two MACCA officials, May 2012): issues are raised mainly by KLHC (project promoter), MACCA (government), and ‘housewives’ monitoring group’ (residents); the issues raised are technically analysed by the ‘planning coordination review team’ and reviewed in the meetings of the planning committee; and solutions are drawn up through in-depth discussions. The two interviewees from the planning committee saw the stances of the participants as follows: the KLHC prioritized profitability and raised issues by collecting opinions from private companies for the smooth progress of construction work; members of the planning committee were critically divided by their own major interests, and they developed an integrated logic through intense reviews; and MACCA officials decided which were the most desirable solutions based on consensus between participants, after considering diverse aspects of these arguments, such as justification and administrative feasibility.

As for the researcher’s question about any changes from the original plans²²², a member of committee pointed out that plans had their contents greatly changed. For example, the initial plan included more than 200 pedestrian flyovers, but this idea was completely withdrawn in order to produce a pedestrian-friendly environment after intensive discussions. The interviewee added (May 2012):

Pan-gyo NC, completed in 2011, was the new city most likely to be imitated, being the most recently developed one, and this featured three-dimensional land use with many elevated roads, tunnels, pedestrian flyovers, and sound-proof walls. However

²²² The master plan and development plan were already established in 2006, and the implementation plan submitted by KLHC was approved in 2007 (MACCA, 2008).

these had already become old-fashioned when reviewed for possible application to Se-jong.

New Governance System

A professor in a local university described his ongoing experience in the Se-jong planning process as follows (May 2012):

We (the planning committee) have meetings once or twice a week. Depending on the agenda, besides regular members, various other participants attend the meetings, such as new residents, specialists in the issues raised, and other concerned persons. Recently discussed issues include: the shape of sideway ramps for the disabled, the design of night lighting, and so on. Many issues have been raised by residents and the private sector. Through the meetings, pending issues are discussed and participants reach a consensus. Such intensive reviews with the collaboration of various participants are very helpful for addressing issues for the new city. It is also, for me, a special experience compared to other projects, in that many issues are openly raised and intensively discussed, and associated measures are coordinated and immediately implemented. I think that, from these processes, institutional capacity for solving complicated problems is evidently developing.

This statement shows that the collective problem-solving approach employed in the Se-jong project, which combines intensive discussions between various participants with institutional and technical support from public authorities and professionals, could contribute to achieving a type of collaborative planning and internalizing learning processes into the system.

On the other hand, it was confirmed in the fieldwork that local experts were participating more actively in many details of the projects than were well-known national experts, because they had an advantage in terms of their knowledge of the

location²²³ (interview with an MACCA official, May 2012). This means that the expected effects of the project are being realized: central administrative functions have virtually been relocated into non-Capital regions, and the associated power has been devolved into local areas. The reason why the current governance system is called ‘new’ governance in this thesis is because it is involving new residents and local experts widely and actively in addressing planning issues. The institutional role of the MACCA is also crucial for the new governance, and this will be dealt with in the last part of the section. The current governance system will last for the settlement of new residents, until after 2030, the year of the development’s completion.

8.4.3 Social Equity Aspects of the Project

From the perspective of social equity, the previous case study addressed three aspects: the provision of affordable housing, the provision of rental housing, and social mix. These are addressed here in order. Firstly, the mass provision of housing is not the main purpose of the Se-jong development. Thus, the Se-jong project’s plan of housing provision is a long one: 200,000 dwellings for 500,000 residents by 2030.

On the other hand, most interviewees (among a total of 20) who had moved or were going to move into Se-jong had the perception that the sale prices of apartments were higher than they had expected, considering its location (March and May 2012), even though the prices were just a half to two-thirds of the ones in Yong-in, which is partly attributable to the high cost of land compensation for the huge green space.

²²³ The MACCA was located on the Se-jong site by decision of the Prime Minister, in 2006, although the majority of officials had claimed that it should be located in Seoul or Gwa-cheon, as other central government organisations were, for smooth consultation with other organisations (MACCA, 2008).

Table 8.5 Housing (Multi-unit Dwelling) Provision Plan by Size

Source: MACCA (2010)

Classification ¹⁾	Size	Number of Dwellings	Percentage (%)
small size	below 60 m ²	56,497	31.2
medium size	60-85 m ²	56,509	31.3
large size	over 85 m ²	67,798	37.5
total	-	180,804	100.0

Note: 1) This classification is according to the development plan. In general, apartments 'below 85 m²' are classified as small (MLTM, 2010c).

According to the housing plan, the share of small and medium-sized dwellings below 85 square metres within multi-unit dwellings is 62.5%, and the share of rental housing in the multi-unit dwelling as a whole is 20% (MACCA, 2010). The percentages of small apartments and rental housing for low income groups are appraised to be comparatively higher than the ones on other residential sites that are similar in terms of location (KLHC staff member, May 2012).²²⁴ These percentages earned positive reviews from the perspective of social equity by interviewees (a member of planning committee and a local university professor, May 2012).

As for social mix, the mixed arrangement of various types of residential property, such as owner-occupier and rented, and dwellings of different sizes, is also indicated as one of the most important concerns in the district-unit planning of the Se-jong project (MACCA, 2007; 2010). In this connection, a professor who had been involved in planning the Se-jong development explained (May 2012):

In general, in the early period after the completion of an NC construction, it is difficult to settle people with low incomes there. The maturation of a commercial

²²⁴ Moreover, it was confirmed in the second fieldwork that apartments were being re-designed into smaller-sized ones following changing market demands (interview with a Se-jong City official, November 2012).

area takes around ten years. Before then, people with low incomes cannot easily get jobs and dwellings in the NC. By contrast, people with high incomes, who move into large apartments, do not experience serious inconvenience living there because they use cars. However, one of the merits of Se-jong is that living areas of mixed income groups are created from the earliest stage. We have made an effort to improve the early settlement of diverse income groups, representatively, by providing apartments of different sizes and more rental housing, including permanent rental housing. In addition, people's readiness to downsize apartments due to recent recessions in the real estate market also militates for this.

The 'Ring' Structure

One of significant characteristics of Se-jong city design is its 'ring' structure. This was determined based on an international contest for an urban concept in 2006. David Harvey, a British social theorist and chairman of the examining committee for the contest, explaining the reasons for selecting the prize winner,²²⁵ stated that, 'This city will be an equitable city, as it does not have a hierarchy in urban structure, so land prices will be set evenly' (cited from an interview with a KRIHS researcher, May 2012). However, the ring structure as a basic urban concept was an object of serious dispute between various professionals.

8.4.4 Conflicts between Economic Development and Environmental Conservation

In spite of all the disputes around the ring structure, it was decided on as a basic concept for the new city. Many professionals who were involved in the planning recalled that the ring structure had frustrated many planning experts, because the concept of a ring city

²²⁵ The prize winning work was 'The City of the Thousand Cities' by Andres Perea Ortega, a Spanish architect, of which the mottos were 'a city without restrictions', 'a sustainable city', and 'a city harmonised with nature' (MACCA, 2008; Ortega, 2012). A government official recalled that the oriental philosophy of 'emptiness' (in the central area) appealed to the judges (a MLTM official, May 2012).

was unfamiliar to urban planners accustomed to traditional planning theories such as central place theory (two KRIHS researchers and a university professor, May 2012). A researcher, who participated in planning the Se-jong project, stated (May 2012):

I also objected initially to the idea of the ring city, locating a huge green space in the centre. But, at that time, environmentalists and equalitarians gained power over other professionals such as planning and transport experts.

A professor who specialised in land use planning stated that he had criticised the ring structure as requiring additional burden of infrastructure (member of planning committee, May 2012).²²⁶ These interviews imply that the Se-jong project, in the process of planning, has prioritised the environment²²⁷ and equity over economic efficiency and business value.

On the other hand, it was difficult to find a significant confrontation between environmental conservation and economic growth. Rather, the Se-jong project has been appraised as a new model city for its urban sustainability, which is harmonized with regional development (MACCA, 2012a). It was stated that many outstanding experimental methods relating to the environment have been tried in Se-jong (group interview with eight MACCA officials, May 2012). For example, cycle paths totaling 386.1 kilometres (with 315 drop-off spots) were constructed on the site, and a considerable portion of these was installed on pedestrian walkways separated from

²²⁶ The interviewee recalled, 'I suggested a 'dual-ring' structure, amending the original concept to lighten the urban costs. But this was not accepted' (May 2012).

²²⁷ To conserve the ecological system, the Se-jong project employed a specific process which established an 'ecological and environmental plan' in the initial period and coordinated the contents of the development plan with it (MACCA, 2008). The standard planning system for the environment is the 'prior environmental review' before development planning, and 'environmental impact assessment (EIA)' after development planning as an evaluation, both of which are judged to be passive (Min, 2011).

roads, in order to improve their utilization by ensuring safety from car traffic (MACCA, 2012a).²²⁸ Various measures for regional economic development will be addressed later in terms of self-sufficiency.

8.4.5 The Sharing of Development Costs

As for development costs, an issue of financial support from central government is highlighted here. NCDs promoted by the central government are usually implemented without any financial support (MLTM, 2010d). However, in the case of Se-jong, a total 8.5 trillion won of the total development cost of 22.5 trillion won was supported as investment for regional facilities such as regional roads and cultural facilities (MACCA, 2012a). Therefore, the support may be perceived as a privilege for the project, which may raise an equity issue in cost bearing. A general manager of the promoter suggested that it would be difficult to replicate the experiences of Se-jong in other urban developments, because the Se-jong project was conducted with such extraordinary support (KLHC staff member, May 2012). However, it should be also considered that the project has been promoted on a much greater scale than an ordinary NC, including the provision of many national facilities, and encompassing enormous natural areas within the site, which means increases in compensation costs (an estimated total of 4 trillion won). These need to be considered carefully.²²⁹

²²⁸ Also, on the outer area of the site, additional cycle paths were constructed to connect with cycle paths in neighbouring cities, and solar-paneled roofs were set up on the cycle paths for both the production of solar-powered energy and the improvement of the paths' utilization (MACCA, 2012a).

²²⁹ Roughly speaking, though the Se-jong project (new residents) received additional fiscal support from government, it had to bear extra costs, which were probably more than the support, for purchasing surrounding natural land for conservation.

In spite of this support, the Se-jong project also depends basically on the market mechanism in the construction and sale of dwellings. The following statement from a staff member of public corporation shows the project's high dependence on economic factors: 'The residential density should have been further increased in consideration of the huge development costs' (May 2012).

8.4.6 Considerations in Allocating Diverse Land Uses

This sub-section addresses issues of diverse land uses: urbanized areas, open and green spaces in and outside the site, and agricultural land. Residential and commercial areas in Se-jong were planned with high densities, even if more urban land could have been utilized. And the development plan included surrounding natural areas (mountainous and riverside) in the project site (MACCA, 2010), unlike the plans of standard NCDs. This increased costs tremendously, but it contributed to the conservation of the natural environment.²³⁰ It was allowed partly because the development was implemented in a non-Capital area where the pressure of development is not as high as in the Capital area.

Open Space

Among the many types of open space in Se-jong, the central green space of 134.24 hectares will be a grand artificial park replacing existing natural and agricultural land. Though the transformation would raise the accessibility of residents to green space, its use was controversial at the time of planning. Some members of the planning committee

²³⁰ In this respect, the high sale prices of dwellings beyond participants' expectations described in sub-section 8.4.3 may be explained and justified as costs of better landscape and well-conserved surrounding nature in comparison with other development sites without such additional burdens.

insisted that the area should be preserved as agricultural land, rice paddy; but it was finally decided it would be a meadowland park (a member of planning committee, May 2012). This means that the committee gave prior consideration to a symbolic place for the city. At the same time, *MACCA White Paper* (2012a) appraised it as a representative eco-friendly measure. This shows that the enlargement of parks and green spaces within a city is recognized as a positive action for the environment in the Korean context.

Agricultural Land

As the Se-jong development is not propelled by the expansion of an existing metropolitan city, most of the surrounding areas remain agricultural land. The majority of residents who moved out are newly engaged there in agriculture. The geographical condition of Se-jong in a non-Capital area where residential areas are surrounded by agricultural lands with lower land prices is facilitating urban agriculture by urban dwellers. For example, the MACCA provided collective land for vegetable gardens as 'weekend farms' for new residents in First Village in April 2012 and allocated 12 square metres per a household in the order of application for 512 households (MACCA, 2012b). A resident mentioned that the vegetable garden was being used most frequently as material for everyday conversation between residents (May 2012). This urban agricultural activity was seen as affecting affirmatively the daily life of residents, as well as having eco-friendly aspects (group interview with MACCA and KLHC officials, May 2012).

8.4.7 Urban Self-sufficiency and Regional Strategy

For the success of a new city project, self-sufficiency, creating jobs in the area in the narrow sense of the phrase, has been recognized as more and more important in Korean urban development practices. Nevertheless, the self-sufficiency of Se-jong city was judged to be precarious, particularly in the short run, as it was in the case of other NCDs (two members of planning committee, May 2012), especially because it has been promoted without a significant market need for urbanisation in the area. In the early period of the city, its function was to be created exclusively with the administrative one of the central government, which would be transferred from the Capital region.

However, as it has transpired, unprecedented measures have been added from the initial stage of planning onwards for delivering self-sufficiency, including: the attraction to Se-jong of enterprises and universities; and a link with the adjacent Dae-deok Innopolis (research cluster) and O-song Bio-Health Science Technopolis through the establishing of regional plans with neighbouring cities (MACCA, 2008), even though the actual fulfillment of these plans is still a matter for anticipation (interview with an MLTM official, May 2012). In addition, a plan to locate another large-scale national project, the International Science Business Belt (with a budget of 5.2 trillion won) in the area (with the Dae-deok Innopolis as the centre) was added by the Lee MB Government in 2011 (PMO, 2011).

As for transport systems, a public transport-oriented system was designed for the site, centring on the BRT, and regional transport systems are being created on and outside the site. In this connection, officials from the Se-jong city administration, and a

representative of residents, expressed a chorus of concern, pointing out that the shortage of car parks in the urban area, which would work against car owners, would be the most serious problem in the city (November 2012).²³¹

Urban Size and Self-sufficiency

On the other hand, a professor who had participated in the planning committee at the early stage pointed out: 'Generally in Korea, 3-500,000 people is regarded as the necessary size for a population which can support self-sufficiency, so we reached a consensus on 500,000, so as to have some spare' (May 2012). To sum up, the planned size of the population was determined by considerations of self-sufficiency and urban competitiveness, to stimulate growth, and thus to lead to regionally balanced development, which was the purpose of the project.

Regional Considerations

Despite these considerations, the concentration of investment in the area caused some interviewees to worry that it would accelerate the deterioration of existing old city centres in adjacent cities (two local university professors and a regional institute researcher, May and November 2012). They pointed out that the economic and social activities of the population should be considered on a regional basis. On the other hand, they also expected benefits from scale economies²³² beyond trickle-down effects on the

²³¹ A Se-jong City official, criticising the fact that the planned transport system excessively prioritised public transport, mentioned that it was neglecting travel patterns in rural areas, which highly depended on cars (Se-jong city encompasses surrounding rural areas as well as the Se-jong site), and that citizens would have to put up with considerable inconvenience to visit government offices (November, 2012).

²³² A professor raised an example: a current citizens' movement for a museum of natural history would gain more feasibility as the supporting population increases on a regional base (May 2012).

regional scale. The MACCA has addressed these regional issues through establishing regional urban plan and regional transport plan in collaboration with neighbouring provinces and cities and their residents (MACCA, 2012a). To conclude, in neighbouring cities, the vitalization (regeneration) of existing old commercial spheres and balanced development between new and old city centres (subcentres) are emerging as important tasks to be solved on a regional basis.

8.4.8 Large-scale Development by Urban Clearance: Will it be Sustained?

This question is whether the Se-jong development, with its large scale, can act as a benchmark for other urban developments. The scale of the project was appraised to be crucial for securing self-sufficiency. However, such a large scale is difficult to reproduce, on account of the constraints of political and financial resources. Actually, the size of the site and planned population of Se-jong are larger than the total for ten Innovative Cities²³³ which have been initiated by the same political motive for similar functions in non-Capital regions within the same time scope.

The Compulsory Purchase of Land and Compensation

One of the most contentious difficulties in the project was the expropriation of such a large amount of land which was privately owned. Moreover, unlike the Capital region, there were many traditional communities rooted in the rural area. However, land purchase and compensation were almost completed in a year, in 2006, which was

²³³ In Innovation Cities, the average size of site is 457 ha and the average population planned is 30,000 (MOCT, 2006c), whilst the figures for Se-jong city are 7,291 ha and 500,000. The sizes of individual Innovation Cities are similar to those of HSDs.

around twice as fast as in normal development projects (KRIHS, 2007).²³⁴ For this, compensation principles of ‘participation and conversation’ and an approach that regarded people moving out from the site as ‘first residents’ were established (Kang, 2006). A general manager of the KLHC explained the reason why the compensation processes had proceeded smoothly as follows (May, 2012):

There was an element of collaboration in residents’ recognition of the inevitability of this as a national project; and many government (MACCA and Yeon-gi County) officials and KLC staff made a supreme effort to persuade residents and to prepare measures to meet their demands.

The measures taken with the participation of residents included: measures for migration and new living; support programmes, such as job placement; and measures for low-income dwellers (MACCA, 2008). The active engagement of government officials in the compensation process was another significant feature of the project, because compensation matters in such projects are normally exclusively the concern of promoters (public corporations), and the government engagement in this case was effective in preparing institutional measures for compensation and migration.

The Role of Public Sector Personnel

As noted in the above details of the compensation process, one of the significant features of the Se-jong project was that it was implemented by putting a governmental organisation, MACCA, in exclusive charge of the project, in contrast to other NCD

²³⁴ The compensation for land was implemented with about 3.3 trillion won for 11,587 landowners with a total of 5,623 ha (about 23,000 parcels), and the compensation for buildings etc was done with about 0.7 trillion won for about 18,000 cases (MACCA, 2008).

projects.²³⁵ The above general manager of KLHC, who had worked for the project from the initial stage, pointed out that putting in many publicly employed staff had contributed to forming a better governance system for residents and a civil society, and to reducing associated overall costs (May 2012). This implies that, in promoting large-scale development projects through broader public participation, more administrative resources need to be employed to ensure care in dealing with a variety of detailed tasks, such as persuasion, negotiation, and mediation for the smooth settling down of new residents in new lives, which were neglected in the past.

Public Design

When the researcher was carrying out the first round of fieldwork on the site in May 2012, issues related to urban design, such as exterior lightening at night and the colours of buildings' roofs, were being discussed actively in planning committee meetings with the participation of residents. The 'universal design concept' across the whole city, which might be more advantageous in the case of an NCD, was judged to do credit to the project (interview with a KLHC staff member, May 2012). However, an advisory member of the planning committee pointed out the lack of historical contents in the city as a flaw, as most of the architecture would be built at the same time, though this is inevitable in the case of an NCD (May 2012).

²³⁵ In the case of an ordinary NCD, only one or two government officials in a ministry (MLTM) take charge of the project as their task, along with their other projects; but for the Se-jong development, the MACCA, with more than 150 of its staff members, has been exclusively in charge of the project (MACCA, 2012a). Also, the KLHC put comparatively more staff, about 160, onto the Se-jong site (ibid).

An MACCA official ascribed the monotony of the buildings partly to the recession in the real estate market (May 2012). On the other hand, the experimental design of First Village (first-stage district) was judged to be ‘creative and in harmony with its surroundings’ by many participants (May 2012).²³⁶ However, such an experimental attempt might not be available anymore now that public corporations are excluded by law from directly building residential housing for sale.

As Se-jong is a newly created city on a totally cleared area with sufficient political and financial support, it may present the image of the future (sustainable) city. This was agreed by all the participants interviewed (May 2012). Only one interviewee, a staff member of KLHC was sceptical about the application of Se-jong development to other developments due to its special support from the budget of central government; but he also agreed that Se-jong presented a model for the future form of a city (May 2012). Therefore, it is anticipated that the degrees of residential density and open space in Se-jong can be a model for future developments, which will be examined in the next section, which deals with the demands of residents.

²³⁶ The design of the first-stage residential complexes in First Village (photo) which carried the flag for ‘building sustainable communities’ was a prize winning design for the Korea Architecture Award in 2012 (KIRA, 2012). Photo Source: Korean Architecture Award (<http://kaa.kira.or.kr/>)



8.5 The Acceptability of Current Residential Features

8.5.1 The High-rise Apartment as a Housing Type

Se-jong is being constructed predominantly with high-rise apartments, which create high densities. Among 194,000 dwellings planned on residential land, 93.2 per cent (180,804 dwellings) will be provided in ‘multi-unit dwelling areas’ (MACCA, 2010). Most of the multi-unit dwellings are high-rise apartments, and the other areas also provide multi-unit dwellings, such as terraced houses. In this respect, Se-jong NC is not different from other NCs. This section will examine why Se-jong is being developed with such high densities in spite of ample space from the angle of the preferences of residents.

Reasons for the General Choice of Apartments

Among the participants interviewed, ten interviewees, who were from central ministries, public corporations, and research institutes, were themselves going to move into Se-jong or other similar Innovative Cities under the plan of public sector relocation to non-Capital regions. And all ten interviewees, without an exception, had chosen apartments as their new housing (March and May 2012), even though other types of housing such as detached houses were available, these being in non-Capital regions where land prices are considerably low. Thus, the reasons for the choices deserved to be asked, because these were their real choices in real circumstances, not just opinions. In order to investigate the real preferences of a population, it may be more valuable to examine

their actual behaviour and the factors that influence their choices rather than their cursory perceptions or unrealistic aspirations. And residents who had just moved into First Village were also interviewed as ones who had already selected apartments.

According to the above ten interviewees, the reasons for their selection are summarised as convenience and, partly, gains from increasing property prices. As examined in the previous case study of Yong-in, the convenience is generated partly from the high density and mixed land use, as these mutually affect each other; and the gains from increasing property prices are caused by people's belief that the majority of the population will continue to favour apartments in the future. The fact that apartments are predominantly being built in the Se-jong project, given the city's motto that it is the future-oriented sustainable city, is in itself a piece of evidence for the likely popularity of the apartment as a housing type in the future as well, because dwellings are being constructed by private companies reflecting the preferences of the population.

Figure 8.6 A Traditional House and Modern Apartment Complex

Source: Yong-in Folk Village (<http://www.koreanfolk.co.kr/>), the author (November 2012)

An Old-fashioned Thatched Cottage¹⁾



An Apartment Complex Miniature²⁾



Note: 1) A thatched cottage for ordinary people in the past (Yong-in Folk Village); 2) An apartment complex miniature which was exhibited by a construction company for the sale of dwellings in Se-jong

A 68-year-old resident who had lived near Se-jong city and had now moved into First Village stated (May 2012):

I lived in a thatched cottage in a county village until I was around 20. And then, over six months, our family built a house with wood and mud with the assistance of relatives. It was a (traditional) tile-roofed house with a broad vegetable garden. After marriage, my husband and I moved into a rental room in a house in Dea-jeon city. We moved from one rental room to another more than five times, and then purchased our own house. It was a detached house on 200-pyeong (660-m²) of land, with a great garden. And my family moved into an apartment with 41-pyeong (135-m²), for the first time in my life, in 1993, when I was 49 years old. My apartment was on the 10th floor in a 15-storey building. And, through two more moves, I moved into this apartment this year, which is on the 24th floor in a 30-story building.²³⁷ I was happy to move into new apartments. I felt nothing special about being away from the earth from the beginning of apartment living.

My husband and I have worked hard and made money, and we have been able to have our own apartment and to enlarge the pyeongs (sizes) of our apartment. If I were to be born again, I would like to live in a larger and higher apartment.²³⁸ Certainly, a house also has advantages, such as a private garden where we can grow fruit trees and vegetables, and we can live in a rural village, mixing closely with neighbours. However, it is not always good, because we have to be associated also with unwanted neighbours there (in a traditional community). There may be a generation gap as to housing preference.²³⁹ Here, I can associate with neighbours of my own choice, for example, through the senior citizens' association and church activity in the apartment complex.

In addition, the apartment is better for the elderly, because it is not only convenient for daily living, such as heating management, but also for access to public facilities such as hospital. As there are many eyes in an apartment complex, in the case of an emergency for an old person, help can quickly be made. By contrast, houses have many disadvantages compared to apartments, such as: the difficulty of thermo-keeping (insulation), inefficient interior structure, and poor communication facilities. I think that the present old city centres should be redeveloped with apartments. Therefore, I will live in apartment until I die.

²³⁷ She moved following the direction of urban development (expansion) of Dae-jeon city.

²³⁸ She meant a super high-rise mixed-use apartment building (with stores on the lower floors).

²³⁹ She thought of herself as belonging to a new generation.

This statement presents various aspects of the preferences of people for apartments, including social activity, access to facilities, and the pursuit of convenience. In addition, it can be interpreted that, as Korean society experiences rapid modernization, apartments, which can easily be standardized in terms of sizes and locations, have become an instrument for measuring social success. Additionally, the woman above added that she favoured the hilly and riverside natural land behind her apartment rather than artificial urban parks, which was similar to the opinions cited in the Yong-in case study.

8.5.2 Community Activity in Apartment Districts

This sub-section addresses the building of new communities in First Village, residents' engagement, and factors facilitating community activities.

Community Building in New Settlements

First Village started to admit new residents on 26th December 2011, and when the researcher visited there for the first round of fieldwork, new communities in the new apartment complexes (districts) were beginning to be formed. The researcher interviewed a 29-year-old resident²⁴⁰, who gave the following comments (May 2012):

(On the selection of an apartment in Se-jong city) My husband commutes to his workplace in Dae-jeon, which takes about 30 minutes. We were entitled to have an apartment by the 'special provision programme for newly married couples'. The

²⁴⁰ She was an ordinary housewife with a two-year-old child, was voluntarily participating in community activities as a member of the 'housewives' monitoring group', and was a member of the 'residents committee' as a representative of her apartment building.

reason why we selected Se-jong is that it would have future value in terms of better urban conditions in education, culture, medical services, and so on, even if there would be some difficulties in living here in the early period. My family moved into First Village on 27th December 2011. I did not know that the design of First Village was the winning work of an international contest.

(On the beginning of new community building) At first, I joined an online residents' café to make the acquaintance of new neighbours. We exchanged information about infant care and organised a book club with 13-14 members for friendship. Recently, communities have been formed extensively through churches and schools (for parents of children). In the process, the role of the online café was crucial.

(On activities as a member of the 'housewives' monitoring group') In First Village, ordinary 'women's' societies' have not been organised, and, instead, the 'housewives' monitoring group' was organised.²⁴¹ The group communicates with woman residents and organises some campaigns and voluntary services. I know that the one of the mottos of Se-jong is 'the city where women want to live'. The members meet MACCA officials through regular meetings at least once a month. In advance of the meetings, members raise issues through emails, and, at the meetings, we discuss the issues with relevant participants. Once, I suggested a particular idea for a cycle path, as a user. This was seriously reviewed and partly implemented, so I felt a sense of satisfaction.

Her comments show an aspiration for better apartment living, especially for the upgraded housing conditions delivered by NCD, and disregard for the unique design of the residence, which might be a minor consideration in her decision. The statement presents some features of community building in new settlements in the early period, such as the role of the online café. Her high opinion of community building and governance in Se-jong has an obvious limit in statistical representativeness, but it was widely agreed by the other residents interviewed.

²⁴¹ This seems to have been affected by the negative images of existing 'women's' societies' in apartment complexes due to their self-interested activities in some cases.

Community Activity in Apartment Complexes

The researcher asked the interviewee about her experiences and perceptions of community activities in the new apartment complex. She stated (May 2012):

In apartment living in First Village, there is the same neighborhood fellowship as in traditional communities, I think, such as *Pumassi*²⁴². For example, for our dish club, we make *Kimchi*²⁴³ on a collective basis and share other side dishes. We have held a music concert in our complex, which was initiated by a suggestion in the online café: 'Let's meet at the square in our complex with our own musical instruments!' It is a sort of 'talent donation', which is, in other words, donating our time. For example, a resident who specialises in the violin teaches children the violin in community facilities. Thus, parents do not need to send their children to private after-school institutes. (*On whether there is any reward for the talent donation*) The reward is our own satisfaction.

(*On voluntary community engagement*) For this, I would like to relate my experience. As the site is under construction, there is a lot of dust and waste. I wanted to clean up our complex (public space) and wrote an idea on the online café suggesting some cleaning activity. Though the office of complex management assisted my suggestion with an announcement, I feared that nobody would come, and I thought that it would be good if just five persons came. But, surprisingly, on the day, more than 70 residents came with their own cleaning equipment. After the cleaning, they gathered opinions and reached a consensus: grand cleanings on a regular basis would be held on holidays, so that husbands could participate. Thus, on the next grand cleaning day, more than 200 residents, including children, participated. (*On another example of community activity*) In a few days' time, a photo exhibition²⁴⁴ will be held with the collaboration of commercial residents (traders). I think that both dwellers who live and traders who operate business in our village are all our community residents.

This statement shows an instance of active participation with a sense of belonging to a community. And it implies that, in apartment complexes, which are quite different from

²⁴² *Pumassi* is a method of collaborative work in traditional Korean rural communities based on the principle of reciprocity and assistance.

²⁴³ *Kimchi* is a Korean side dish which is made from ripened vegetables and necessary for everyday meals.

²⁴⁴ This event may be the expression of a sense of belonging in the new community and be for boosting it.

a traditional village in their physical appearances, there is a possibility of affirmative community involvement. Particularly, in this case, such activities appear when the new settlement has just started to accommodate totally new residents. Government officials in a group interview added examples of facilitating community building (May 2012): for example, vegetable gardens, as weekend farms, contribute to building a sense of closeness between residents, because they promote collaborative work in agriculture. An MACCA official commented that Se-jong was not just being constructed physically according to plans, but it was in the process of making a livable city by continuous conversations and agreements with residents, and, in this regard, it was different from other NCDs. He commented that, 'I appreciate the efforts for building liveable communities the most highly from the perspective of sustainability' (May 2012).

In addition, it is found that the well equipped community facilities in First Village, such as 'complex community centre' and 'smart school', are also contributing to supporting community activities. A KLHC staff member mentioned that community spaces in First Village were carefully designed to facilitate residents' interacting with neighbours and to induce residents to spend time outside and to get together (May 2012). For example, Se-jong city promotes a 'no wall' policy throughout the whole city (MACCA, 2012a).

Three academic experts interviewed on this issue, who had been involved in planning the Se-jong project, ascribed such displays of community building partly to the intentional efforts of participants, which were found in individual micro plans established for Living Zones (May 2012). The master plan sets the goal of the Se-jong

development as ‘the city of “symbiosis” sustained “together” and “well”’²⁴⁵ (MACCA, 2010). However, they pointed out that such active community engagement found in First Village is not easy to replicate in other apartment districts. They mentioned that the community attachments and activities in the First Village may be caused by the following features: the socio-economic homogeneity of new residents, such as in income level and age; and their satisfactions and expectations as new residents moving into a specific new city.

8.6 Conclusion

This chapter has examined the Se-jong city development as the second case study. The Se-jong project was different to Yong-in’s development in various aspects, from the political and economic contexts to the actual development methods employed. As the Se-jong development had been favoured by extraordinary political and economic support, it is perceived to present a future-oriented development pattern overcoming current practical constraints. This is important for the research because it explicitly seeks a sustainable development pattern in the Korean context. However, the high-density and high-rise land use and housing pattern of Se-jong were similar to the one of other new settlements including Yong-in, except for the greater provision of open space in the centre. These issues will be analysed further and compared with the first case study in the next chapter.

²⁴⁵ This goal includes the following six sub-objectives: ‘harmonious democratic city’, ‘citizen-centred open city’, and ‘environmentally sustainable city’ with relation to the ‘together’; and ‘convenient advanced city’, ‘beautiful city with history and culture’, and ‘city safe from disasters’ with relation to the ‘well’ (MACCA, 2010a).

CHAPTER 9

ANALYSING THE CASE STUDIES

9.1 Introduction

This chapter will analyse the case studies of urban development in two cities in Korea. Table 9.1 integrates and compares the findings from the two case studies: that of Yong-in and that of Se-jong. These findings will be analysed using the concept of the compact city and the principles of sustainable development as an analytic framework. The following sections correspond to the research questions, one-by-one.

Table 9.1 Comparative Table of the Two Case Studies

Categories		Yong-in Case	Se-jong Case
The context of the development	Background in the initial period	Population explosion in the Capital area and subsequent urban expansion, and demand by population for the settlement of housing problem, in early 1990s.	Construction of a New Administrative Capital (now MAC) to lead national balancing development in mid-2000s.
	Outline of the area	Site areas: 41.3 km ² in 38 projects since 1990s except for private residential developments. City area: total 591.5 km ² , urban area 387.2 km ² . Population: 188,000 in 1990; 913,000 in 2012. Estimated population: 1.2 million in 2020.	Site area: 73.1 km ² . City area and population: 465.2 km ² , 110,000 in 2012 when new municipality commenced (mainly outside site). Planned population on site: 500,000 in 2030.
	Development projects	After disorderly development in mid-1990s, HSDs, UD (since 2000), and an NCD in Gwang-gyo.	Single NCD project for MAC (Multifunctional Administrative City)
	Embedded cases for the case study	Dong-baek HSD (1999-2006) Dong-cheon UD (2004-2010) Gwang-gyo NCD (2005-2012)	First Village (district level) in Se-jong development (2006-2030)
The features of the development	Density	High population density in urban area in common with other new cities in the Capital area. Residential density planned for 2020: 177 persons/ha in total area, i.e. 312 persons/ha (for 77% population), except for low density area with 100 persons/ha (for 23% population).	Lower density than other new cities, but still high density in residential areas. Residential density planned: 326 persons/ha.
	Mixed land use	Insufficient public facilities in period of disorderly development and on some development sites (usually in small-sized projects). Gradual improvement toward mixed land use with natural maturation of the city.	NCD plan features mixed land use (though exact term not used) without one single prominent urban centre
	Urban boundary	Urban boundary clearly separates development from surrounding natural and agricultural areas; but in some areas, individual factories, warehouses, and greenhouses scattered in a disorderly fashion.	Urban boundary is clear and the designated Surrounding Area has been strictly preserved.

The formation of current development patterns	Urban diffusion	Urban diffusion in 1990s criticised as disorderly development due to lack of necessary facilities. Compactness of city now generally agreed on, but not by all participants.	Compactness of the city generally agreed on, but not by all participants.
	Policy directions	Vigorous promotion of housing policy for mass provision of dwellings. Equipping urban development with multifunctions has gradually been emphasized.	National balanced development policy for locating new innovative clusters in non-Capital area
	Participants and Governance	After urban development triggered by central government (deregulation without urban master plan), central government (including public corporations) exclusively promoted many HSDs, and this was opposed by local environmental groups. Private developers (landowners) have directly promoted UD since 2000. Municipal governments started to promote their own large-scale projects such as Gwang-gyo NCD, delivering wider governance system with involvement of residents.	Central government has promoted project with many committees to mobilise wide involvement of academic and professional experts. New governance system with wide engagement of residents was seriously considered from beginning of project.
	Policy purpose in terms of social equity	Mass production of dwellings for working class (ordinary) people. Comparatively small amount of small-sized and rental dwellings for low income groups, considering composition of residents in the area. Overall developments judged by many participants to have contributed to stabilisation of housing for working class people.	Project initiated for regionally balanced development (regional equity). Substantial portion of dwellings reserved for small-sized (62%) and rental (20%) apartments for working class and small-sized households (1-2 persons).
	Growth and conservation	Economic profits-oriented urban developments have met with fierce resistance from citizens valuing conservation of environment.	Project has been judged to lead to regional economic growth and offer eco-friendly design, at same time.
	Development gains and costs	Projects driven by development gains (capital gains). Development gains vested in most participants, including dwelling purchasers (new residents). Incentive to make gains by avoiding cost sharing for free-riding neighbouring developments.	Project does not depend only on development gains, but basic scheme of project is the same as other development projects. It is expected that development gains will not be so large.
	Considerations between land uses	Open spaces are comparatively insufficient, but there exists accessible natural and agricultural land adjacent to development sites. Basically, large-scale development is the transformation of agricultural and forest land into urban land.	Percentage of open and green space is very high among new cities: 53 % (38.5 km ²). Similarly, agricultural and forest land have been transformed into urban land.
	Self-sufficiency, public transport, and regional strategy	Self-sufficiency has not been fully delivered: developments without master plan in 1990s and policy focus on mass production of dwellings by central government. Public transport system generally judged to be well established within city, but considerable (regional) traffic to other cities generated due to shortage of jobs. This caused large additional costs for regional transport facilities. Job creation and public transport system recognised as key factors for successful development: for example, Gwang-gyo NC attracted an electronic railway line.	Self-sufficient city is crucial purpose of project: inducing relocation of industry and population currently intensified in Capital area by constructing competitive and multifunctional new cities in non-Capital area. TOD policy through public transit line, pedestrian and bicycle-friendly environment

	Large-scale development method	Diverse development methods: private development (district-unit development), HSD, UD, NCD, and urban renewal Diverse land acquisition methods: purchasing by negotiation, expropriation, and re-plotting. Ordinary street patterns similar to other cities, with high-rise buildings and three-dimensional structures	A single development method: NCD (MAC) by compulsory purchasing method (expropriation) for land acquisition Universal design by planning, many experimental designs
Residential features	Housing type	Housing type in new developments is predominantly high-rise apartments. Apartments prioritised over other housing types on account of their convenience, profitability, and preferred pattern of social contacts in their neighbourhoods. Super high-rise apartments with more open space within complex are more favoured.	Housing type is predominantly high-rise apartments. Apartments are prioritised for same reasons.
	Community activities in apartments	New communities in apartment complexes have gradually been formed and activated. Diverse community activities: e.g. local foods movement, and collusion in fixing property prices.	New communities are rapidly being built in First Village. Residents are actively involved in community issues.

9.2 The Features of the Compact City in the Two Case Studies

This section analyses the urban forms and land uses of the two case-study cities to answer the first research question:

Q1. To what extent do South Korean cities share the features of the compact city?

From the analysis, the compactness of the case-study cities will be demonstrated in terms of the basic elements of the compact city: high density, mixed land use, and a contained urban boundary. And, the overall performances of the cities in terms of self-sufficient urban functions will be discussed.

9.2.1 High Density within a Contained Urban Boundary

Net residential densities (persons/ha) calculated for a series of urban developments were: 371 in Dong-baek HSD, 337 in Dong-cheon UD, 366 in Gwang-gyo NCD, and 326 in Se-jong MAC development. These results show high densities independently of the development methods employed. Most of the urban experts interviewed perceived the above densities as being sufficiently compact. Furthermore, three researchers in particular, who had been involved in the above projects, evaluated these densities as too high (as overcrowding) and considered there were negative effects from this, such as congestion and pollution (researchers and planners, KRIHS and GRI, May 2012).

The feature of a contained urban boundary was also agreed by participants, particularly those from the central government. They attributed this to firm restrictions on land use, such as regulations about the agricultural land and forest surrounding urban areas, including the green belt policy. A government official from the Ministry of Finance considered that the Korean government had facilitated ‘columnarized’ urban forms through its various policies, even if these forms were not intentional. He suggested that, ‘If the land regulations had been relaxed, the urban forms would have spread into ‘pyramidal’ forms’ (interview in May 2012). This confirms an empirical result presented by Bertaud (1997) in Chapter 5.

The direct advantages expected from the compact city are summarised as the reduction of energy consumption and the saving of undeveloped land (Breheny, 1996). The measurement of the energy-saving effect of developments does not belong in this research, but the effect of land saving can be demonstrated through a simple calculation.

For example, if the residential density of Milton Keynes (36 persons/ha) had been applied to the Se-jong development, the size of Se-jong site would have been enlarged to about 66,000 hectares, which is more than nine times its current size, 7,291 hectares.

However, the compact city approach has not been explicitly selected as a policy direction or strategy in Korean urban development. Even the central government officials interviewed who had been in charge of large-scale developments were not very familiar with the concept of the compact city, and development plans for the projects did not include the term. Thus, it can be concluded that the high compactness of current developments has not been promoted with theoretical intention. However, there may have been an implicit policy intention, and social recognition to a certain degree, in favour of compactness, because the results (compactness) of these land use plans were clearly anticipated. The reasons for high density will be investigated in Section 9.4.

9.2.2 Mixed Land Use

The traditional zoning system does not allow for the mixed use of land within zones, as highlighted in Chapter 4, but the Korean zoning system has allowed it institutionally through the subdivision of zones and the creation of many semi-zones, such as Semi-residential Zone (a public researcher and a university professor, May 2012). A government officer gave an explanation of the recent revisions to the planning laws, which were intended to facilitate mixed-use development through district-unit planning, and added that the current trend was supported by the compact city, which had been recommended by the OECD in 2010, and that the compact city was understood by policy groups as advocating mixed land use as a priority, while the high density

prescription was more open to question (deputy director in the urban policy division, MLTM, May 2012). As an empirical study in Korea, Lee (2000b) compared land uses from three different types of projects (HSD, public re-plotting, and private re-plotting by the planning law) which had been completed in Dae-jeon city before 1984, and identified that land uses from them revealed a similar pattern of mixed land use, regardless of the development methods employed.²⁴⁶ He attributed the feature to Korean unique zoning system, which allows highly mixed land use.²⁴⁷

In addition, unlike in ordinary zoning systems, mixed land use is a familiar concept in large-scale development projects through the use of district-unit planning. A member of the planning committee for the Se-jong project pointed out that, though planning documents for the project did not use the term ‘compact city’, key concepts associated with the term, such as mixed land use and public bus systems for short journey-to-work distances (TOD), were extensively applied to the plans (interview in May 2012). As another example, (super) high-rise apartments with stores on the lower floors are now the multi-unit housing type most favoured in Korea, as confirmed by price data,²⁴⁸ and this is a mixed land use in a building (Bramley and Power, 2009).

As for the fundamental reasons for such mixed land use results, many interviewees agreed that it was because residents did not have a negative view of mixed land use, and,

²⁴⁶ The densities of the sites also did not show significant differences (ibid).

²⁴⁷ He gave an example of a policy measure that had promoted mixed land use: ‘neighborhood living facilities’ (such as stores and baths, required for everyday life) had been allowed locations in every zone. This was introduced in the planning law in 1971 in the initial stage of Korean urban development (ibid).

²⁴⁸ According to real transaction price data of real estate, all the most expensive top ten apartments have been super high-rise mixed-use apartments with stores in the lower floors since the mid-2000s (MLTM, 2013a).

moreover, they thought of this as being more convenient (May 2012).²⁴⁹ Residents also seek apartment living for convenience. The convenience of apartment living is divided into convenience in dwelling management and convenience in access to facilities. The latter, particularly, is related to the feature of mixed land use. This will be investigated in Section 9.6.1.

9.2.3 Self-sufficiency

The issue of self-sufficiency in the Yong-in development in the 1990s concerned the shortage of urban infrastructure and public facilities (disorderly development); but since the 2000s it has concerned the shortage of jobs within the city. A critical problem in new city developments in Korea has been that employment has been scarce in and near development sites, as jobs still remain in existing cities (city centres) rather than moving into (or emerging in) the suburbs, which contrasts with the situation in many Western countries such as the UK. The Yong-in development has made an effort to improve the situation, particularly through a multifunctional new city, the Gwang-gyo project. From a different angle, it is also claimed that the contemporary pattern of economic activities, which is expanding and being interrelated beyond an individual city level in a mega city region, the Capital area of Korea, should be considered in setting the scope of self-sufficiency, as discussed in Ferreira and Batey's argument (2011).

The Se-jong project has promoted many innovative measures for securing self-sufficiency, as a leading city for balanced national development. Nevertheless, a central

²⁴⁹ This is also found in the 'neighborhood living facilities' allowed in every zone, which was introduced basically at the requests of consumers of the policy.

government official raised a doubt about the excessively large population planned when compared with the growth potential of the city (interview in November 2012). However, an MACCA official pointed out that efforts to attract industry and employment, such as the Science Business Belt, were expected to contribute to the success of the project, and anticipated that the better housing and education conditions in Se-jong, combined with these efforts, and the subsequent influx of skilled people, as a sort of external effect, would attract more jobs and people (May 2012). On the other hand, these measures to attract people have aroused concern about the decline of existing neighbouring cities (interviews with academic experts in Se-jong, May 2012), which has been comparatively neglected in groups initiating the project. The processes and considerations employed for solving these issues will be addressed in detail in the following sections.

9.2.4 Public Transport

Current public transport in Yong-in city was highly appreciated by many participants,²⁵⁰ particularly in that it was well connected to Seoul through the BRT and subway lines, which transport people to Gang-nam in Seoul within a half hour. However, an expert from a public institute criticised the enormous traffic between Seoul and Yong-in via Bun-dang. He pointed out that this problem was ultimately generated by poor self-sufficiency, that is, insufficient local jobs (researcher, KRIHS, May 2012). For this problem, he blamed the current conurbation structure, which had been formed by large-scale housing developments, with long travel distances between the central area (Seoul)

²⁵⁰ There was an exception: a representative of an environmental group pointed out the poor connection between the northwest urbanised area and the southeast underdeveloped area (interview in May 2012).

and surrounding new cities. He claimed that this was ascribable to the current development methods employed by the national public corporations (KLC and KHC), which had searched for cheap land, and that this meant the failure of the policy. His evaluation can be interpreted as follows: individual (new) cities are compact, but the whole metropolitan area (the Capital region) is not compact, because of its excessive dependence on the central area (lack of self-sufficiency), which generates tremendous car traffic, even given the level of traffic that is inevitable in the contemporary regionalised economy.

In general, TOD is increasingly emphasised in new developments by drawing a transit line to pass through new settlements and business districts, such as the subway line in Gwang-gyo, BRT in Se-jong, and LRT in Dong-baek²⁵¹. These are expected to raise the public transport share of traffic significantly: according to their goals, to 50% in Gwang-gyo (GUIC, 2011) and 70% in Se-jong (MACCA, 2010).

9.2.5 Features of Urban Expansion

The patterns and underlying contexts of urban expansion in Korea are different from those of suburbanization in Western countries. Nevertheless, particularly under the influence of Westernised perceptions, many reports which are critical of the current extensive spread of Korean cities label Korean urban expansion as sprawl. For example, KRIHS (2012) ascribed increases in car travel distances and commuting times²⁵² to

²⁵¹ As noted in Chapter 7, the LRT was added in 2012 after Dong-baek HSD was completed in 2006.

²⁵² The report noted that commuting distances in new cities were three-and-a-half times greater than those in existing urban areas, commuting times were twice as long, and transport dependence on cars was 14.7% times as high, as previously (ibid).

large-scale new settlements and car-oriented development. However, when looking at the causes of these trends, changes in socio-economic factors should be considered, such as: expansion in economic activity areas by industrialisation; the improvement and gentrification of housing following a rise in incomes; the spread of automobile ownership; and increase in leisure activities accelerated by the spread of the five-day working week from the mid-2000s. Recent urban forms and travel patterns have reflected these changes. A government official mentioned that, though the degree of car dependence had increased in new cities, the trend would have been alleviated through compact developments (relying on public transport); so, had it not been for the compact developments, car dependence would have increased even more (director, MLTM, May 2012).

Urban expansion through large-scale land developments in Korea is a long way from urban sprawl, and this is confirmed by the analysis in Table 9.2. This shows the features of developments in the case-study cities, based on planning documents and interview materials, in comparison with existing cities and with the previous situations in the case-study areas, considering the characteristics of the compact city and urban sprawl as presented in Table 3.3. This shows that urban developments in the case-study cities reveal the characteristics of the compact city, and are far from sprawl.

Table 9.2 Appraisal of Developments in the Case-study Cities: Compact or Sprawl?

[O: Yes, X: No, Δ: Mixed feature]

Compact City Characteristics	Yong-in	Se-jong	Urban Sprawl Characteristics	Yong-in	Se-jong
High density	O	O	Low residential density	X	X
Mixture of land uses	O	O	Unlimited outward extension of development	X	X

Fine grain of land uses	O	O	Different types of land uses through zoning	X	X
Increased social and economic interactions	Δ	Δ	Leapfrog development	Δ	X
Contiguous development	Δ	O	No centralized ownership of land or planning	X	X
Contained urban development	O	O	Transportation dominated by private motor vehicles	Δ	X
Urban infrastructure	Δ	O	Fragmentation of governance authority over land uses	X	X
Multimodal transportation	O	O	Great variances in the fiscal capacity of local governments	X	X
High degree of accessibility	Δ	O	Commercial strip development along major roadways	Δ	X
High degree of street connectivity	O	O	Filtering or 'trickle-down' to provide housing for low-incomers	Δ	X
High degree of impervious surface	O	O			
Low open-space ratio	Δ	X			
Unitary control of planning	O	O			
Sufficient government fiscal capacity	O	O			

New town development is classified as an approach of 'decentrists' in the UK context, while the compact city pursues the reuse of brownfield land (Breheny, 1996). From the above analysis, it is found that new city development in Korea shares the characteristics of the compact city in that it promotes high-density and mixed-use land development with a clear urban boundary. The Korean large-scale development delivers the elements of the compact city by constructing high-rise dwellings, locating new settlements outside of existing cities, and allowing for more green spaces than the old urban areas. Therefore, this thesis uses the term 'compactionist' rather than 'centrist'.

Another feature of the Korean urban context which has made this type of development feasible is that the development of new settlements outside existing urban areas has not undermined the vitality of old urban areas (centres). Rather, there has been a natural and

strong impetus that intensifies the population and its activities in existing urban centres in and around Seoul in the Capital region, raising property prices in the areas, alongside the decentralisation impetus caused by out-of-city developments (director of the housing welfare division, MLTM, November 2012).²⁵³ This issue will be revisited in Section 9.7 with regard to the strategy of the compact city.

In conclusion, large-scale new settlement developments in Korea share the features of the compact city, despite certain deviations, particularly in their physical aspects. In the background to these urban situations, there has been a tremendous influx of population into the Capital region: 20 million new residents have flowed into the region through urbanisation since the 1960s. In addressing the urgent task of providing dwellings for them, the Korean Government and the market selected high-density and high-rise (apartment) development, maintaining strict regulations on the use of non-urban land. It was a dramatic change in urban form, because there had been no history of high-rise buildings in Korea. Though there was no specific theory for the compact city, there must have been an implicit consideration of this type: high-density and high-rise were inevitable in the situation, partly in order to conserve natural land. Ultimately, it was demanded by residents through a market-oriented housing provision system. The fundamental reasons for this will be discussed in Section 9.4.

²⁵³ In a *laissez-faire* situation, the intensification into urban centres would be reinforced, as forecast by Jacobs (1962) and contrary to Brenehy's criticism (1996) of her forecast.

9.3 Relationships between Development Methods and Land Use

This section analyses the relationships between development methods and land uses in the case studies with numerical data, in order to solve the second research question:

Q2. What is the nature of the relationships between diverse development methods and land uses in South Korean cities?

This question was set to determine the effects of different development methods on land use. Large-scale development methods are the main focus of the research as presumably an important factor influencing current urban form. From the quantitative analysis, it will be shown that high residential densities and high rates of apartment-building have been maintained independently of the various development methods, and that open spaces and self-sufficient functions within the project sites have increased with the size of the projects and with time.

Table 9.3 compares the densities and land uses of two NCDs in the case-study cities with the average data for 16 HSDs and 6 UD. In the case of UD projects, for the sake of comparison with other development methods used for new settlements, four projects, of which the purposes were not residential, were excluded from the calculation.²⁵⁴

²⁵⁴ The UD method is utilised for diverse development purposes. Here, four extreme cases were excluded from the comparison: three projects specialised in the development of commercial and business land, and one planned in a rural area (now pending for implementation on account of recession).

Table 9.3 Comparison between NCDs, HSCs, and UD in the Case-study Cities

Unit: persons, persons/ hectare, households/hectare, and hectares

Project	Population	Population Density	Households	Household Density*	Household Density**	Total Site Size
Se-jong NCD	500,000	316.5	200,000	126.6	112.4	7,290.82
Gwang-gyo NCD	77,883	373.3	31,113	149.1	101.1	1,130.45
Average HSD	17,866	441.3	5,528	136.5	122.6	100.86
Average HSD* ²⁾	17,898	392.4	5,740	125.8	110.2	127.43
Average UD* ³⁾	8,112	367.0	2,792	126.3	124.7	39.20

Project	Percentage of land used for dwellings	Percentage of Total Site Sizes						
	Land for Multi-unit Dwellings	Residential Land	Private Land	Parks and Green space	Open Space	Land for Public facilities	Land for Infra-structure	Land for Self-sufficiency functions
Se-jong NCD	72.1%	21.2%	24.4%	33.9%	52.5%	8.3%	13.8%	6.8%
Gwang-gyo NCD	88.0%	17.5%	27.2%	40.0%	43.8%	7.4%	21.6%	13.6%
Average HSD	78.4%	39.2%	44.7%	24.0%	26.6%	7.5%	21.2%	7.2%
Average HSD* ³⁾	75.1%	34.5%	40.9%	29.4%	30.9%	7.9%	20.4%	8.3%
Average UD*	97.2%	53.0%	57.1%	16.0%	19.0%	6.6%	17.2%	4.8%

Note 1) Household Density*: density on residential land; Household Density**: density on private land

2) Average HSD*: average of 4 HSD projects for which development plans were established after 2000

3) Average UD*: average of 6 UD projects excluding 4 extreme cases in a total of 10 UD projects

4) The percentage of 'land for multi-unit dwellings' relates to 'land for dwellings', and the others relate to their site sizes. Averages are weighted averages by site sizes.

In the case of densities, the hypothesis that there exist differences by development methods does not prove to be statistically significant.²⁵⁵ However, at a glance, the densities of UD are lower than those of HSDs. This is attributable to the following fact.

The majority of HSD projects in Yong-in were initiated in the 1990s, while most UD

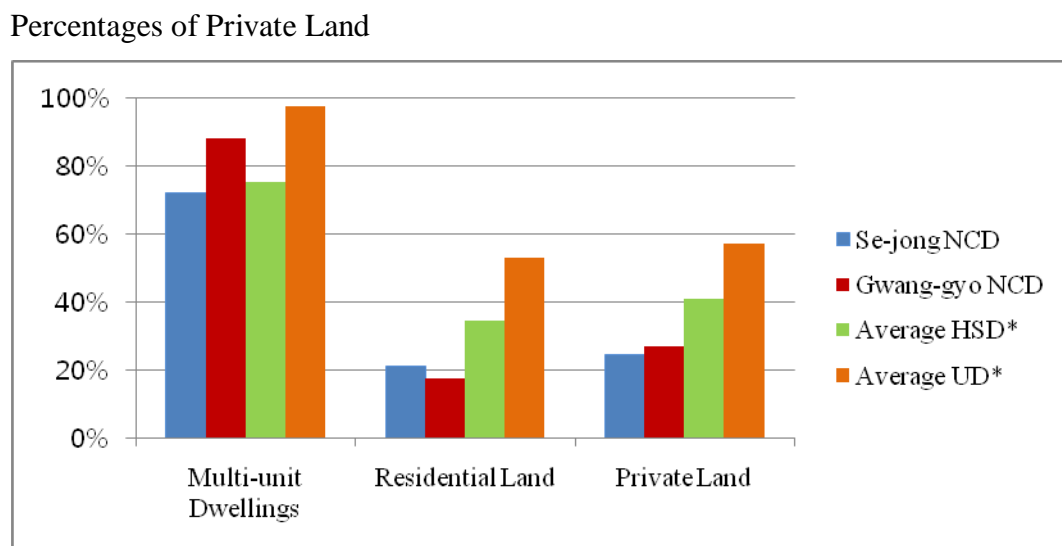
²⁵⁵ Both the 'one-way analysis of variance (ANOVA)' to test mean differences between the four development methods, including HR, and the 'independent T-test' to test mean difference between the HSD and the UD (it was considered that an NCD is a type of HSD, and the number of samples is small) could not unearth any statistical significance with regard to the above variables in density and land use. This is partly attributed to the shortage of samples.

projects were approved in the late 2000s. Therefore, the difference may be due to a difference in time. In the planning process, in order to prevent disorderly development, local governments and urban planning committees have tended to take a strict view of private projects (UDs), which might have an incentive to free-ride on neighbouring large public projects (HSDs), as was learned from the interviews.²⁵⁶

As for land use, the statistical significance of differences between the development methods was also not verified. However, in general, it is identified from the data that the larger developments are, the larger are the sizes of ‘land for public use’ such as open space. By contrast, the percentages of ‘land for private use’ decrease in larger-scale developments. It is also confirmed from the table that UD uses more ‘land for dwellings’ for multi-unit dwellings than HSDs do. This table is illustrated by Figure 9.1.

Figure 9.2 shows different divisions of land by development methods.

Figure 9.1 Percentages of Land Use by Development Methods



²⁵⁶ Further, interviews with the persons concerned implied that there had been a possibility of excessive control (for example, on density) by reason of planning authorities’ concerns about the excessive privatisation of gains and poor infrastructure, and, partly, the attempts of related authorities to shift their responsibilities (risks) (May 2012).

Percentages of Public Land

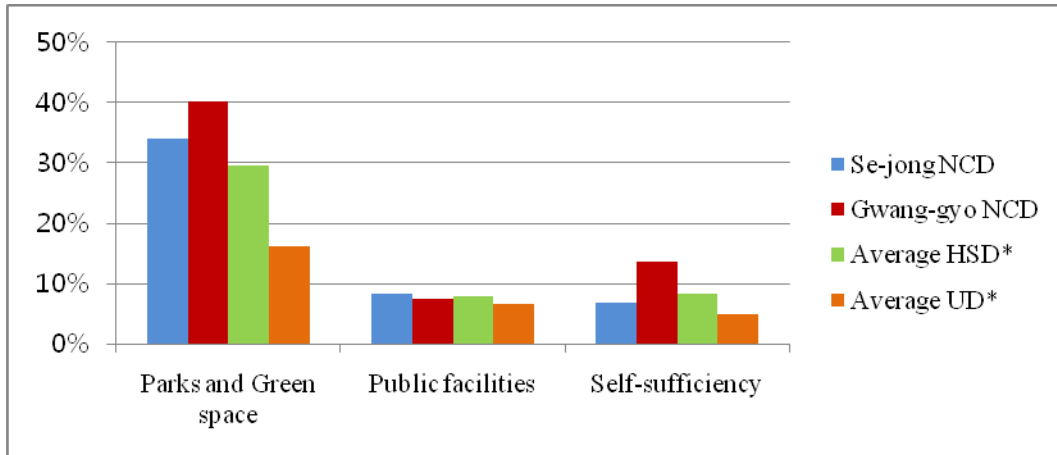
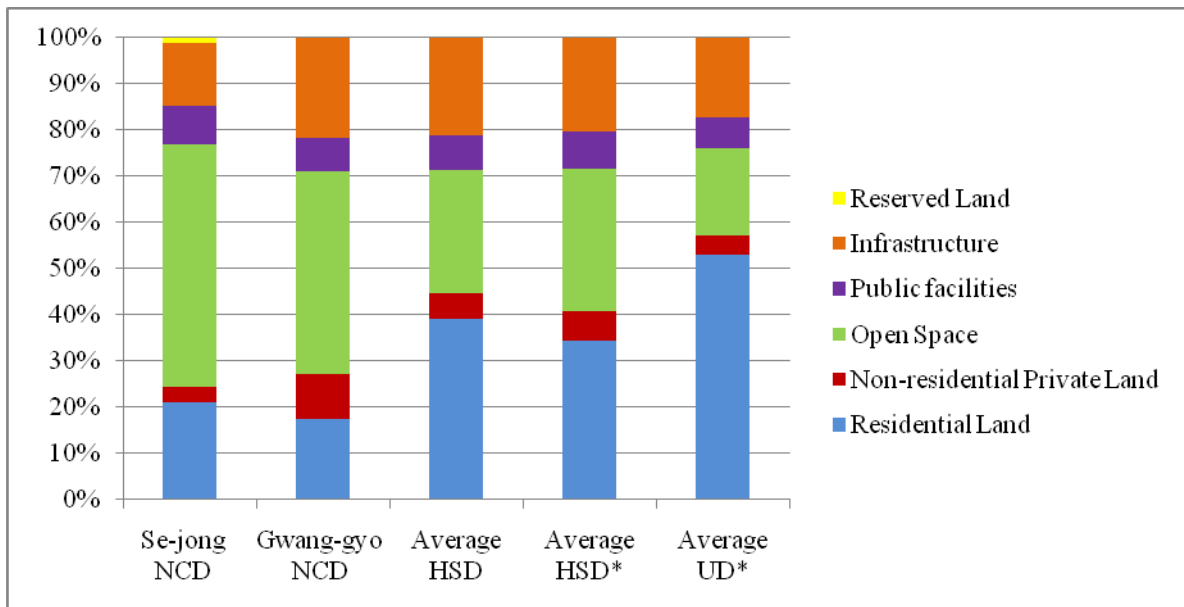


Figure 9.2 Division of Land by Development Methods



Note: 1) Non-residential private land = land for neighbourhood living facilities + commercial and business land + industrial land

2) Average HSD*: average of 4 HSDs after 2000

3) Average UD*: average of 6 UDs excluding 4 extreme cases in a total of 10 UD projects

Analysis of Correlation

To measure the strength of the relationship between two continuous variables, ‘an analysis of correlation’ is conducted. For this, ‘the analysis of bi-variate correlation’

with ‘total size of sites’, instead of with ‘development methods’ (nominal variable), was used on the variables for density and land use.²⁵⁷

As a result, three variables appeared to be statistically significantly correlated with ‘total site size’: the percentage of ‘private land’, ultimately, the percentage of ‘public land’,²⁵⁸, the percentages of ‘open space’, and ‘parks and green space’²⁵⁹. The values of the ‘Pearson correlation coefficient’ of the three variables stand for medium-level strengths of correlation. Also, the other variables showed linear relationships with ‘total site size’ on scatter diagrams at a certain degree, in spite of their having no statistical significance. In relationships between these variables, ‘causality’ is also plausible in case they are correlated, because events are time ordered without any spurious relationships.²⁶⁰ To be more specific, the ‘development method’ and ‘site (size)’ are determined ahead of a land use plan, and the former might affect the division and sizes of land for diverse purposes. Figure 9.3 shows the linear causal relationships by ‘an analysis of regression (ordinary least squares)’.

²⁵⁷ The result of correlation analysis on land use in 32 projects is summarised in the Table below. The statistical insignificances may be attributed to large diversification and unusual cases in land uses.

Table: Correlations between ‘total site size’ and variables concerned

Pearson correlation coefficient	Population Density (on residential land)	Household Density (on residential land)	Household Density (on private land)	Percentage of Land for Multi-unit Dwellings	Percentage of Land for Dwellings	Percentage of Private Land
Total site size	.100	-.063	-.234	-.058	-.300	-.428**
Pearson correlation coefficient	Percentage of Parks and Green spaces	Percentage of Open Spaces	Percentage of Land for Public facilities	Percentage of Land for Infrastructure	Percentage of Land for Public facilities and Infrastructure	Percentage of Land for Self-sufficiency functions
Total site size	-.385*	.557**	.131	-.032	.046	-.012

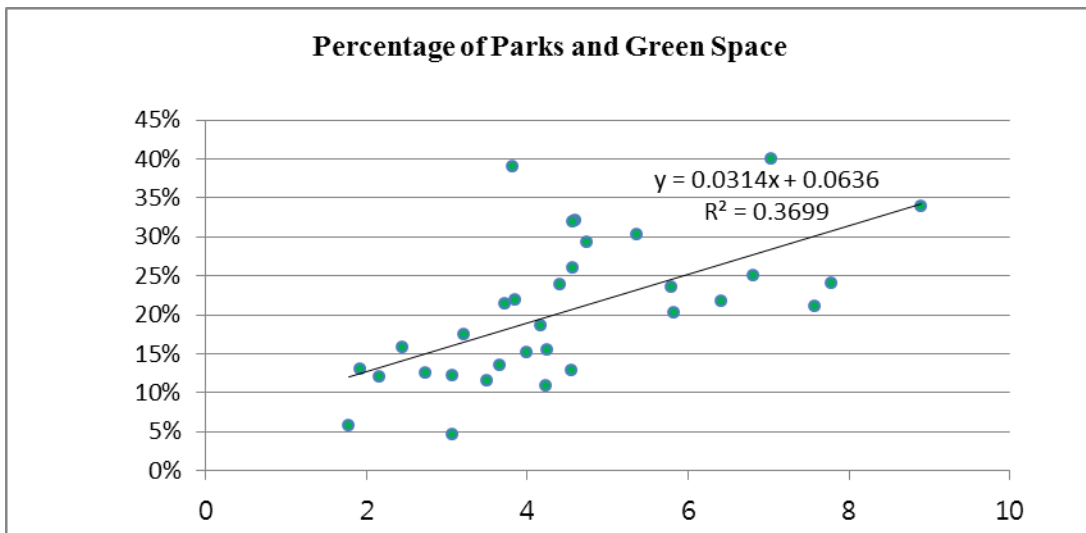
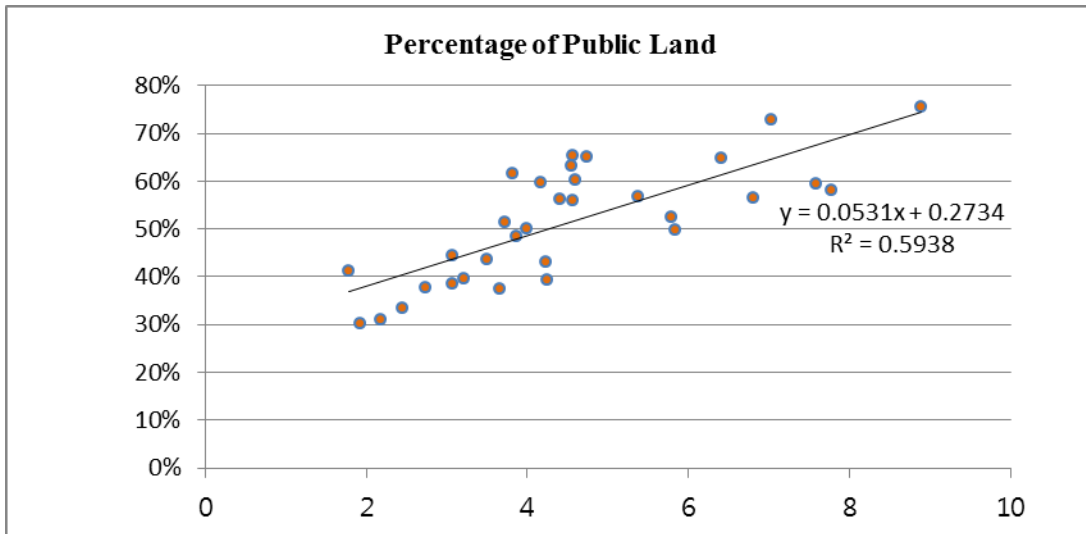
Note: 1) The percentage of ‘land for multi-unit dwellings’ is of ‘land for dwellings’, and the other percentages are all of the ‘total site size’. 2) Significance possibility: * p<.005, ** p<.001

²⁵⁸ ‘Public land’ comprises ‘open space’, ‘land for public facilities and infrastructure’, and ‘reserved land’.

²⁵⁹ ‘Open space’ comprises ‘parks’, ‘green space’, ‘river and riverside land’, and ‘other open space’ such as public vacant land and urban agricultural land.

²⁶⁰ The ‘causality’ between an independent and dependent variable should be confirmed by three conditions of causal inference: the co-variation of variables, time-order of events, and exclusion of possible spurious relationships (de Vaus, 2001).

Figure 9.3 Linear Relationships between ‘Site Sizes’ and Percentages of Land Use



X-axis: the natural log (ln) values of ‘total site sizes’
 Dots: 32 large-scale development projects; Line: linear trend line

In conclusion, densities on development sites were high in general, irrespective of development methods and the size of sites. The larger the development size, the larger the public land, especially open space, secured. In the case of private development, including UD, there is a tendency to construct more apartments intensively, as confirmed by the high percentages of land for multi-dwellings in UDs and by the high densities in HRs (Appendix 3-7). Though the UD method is designed for securing

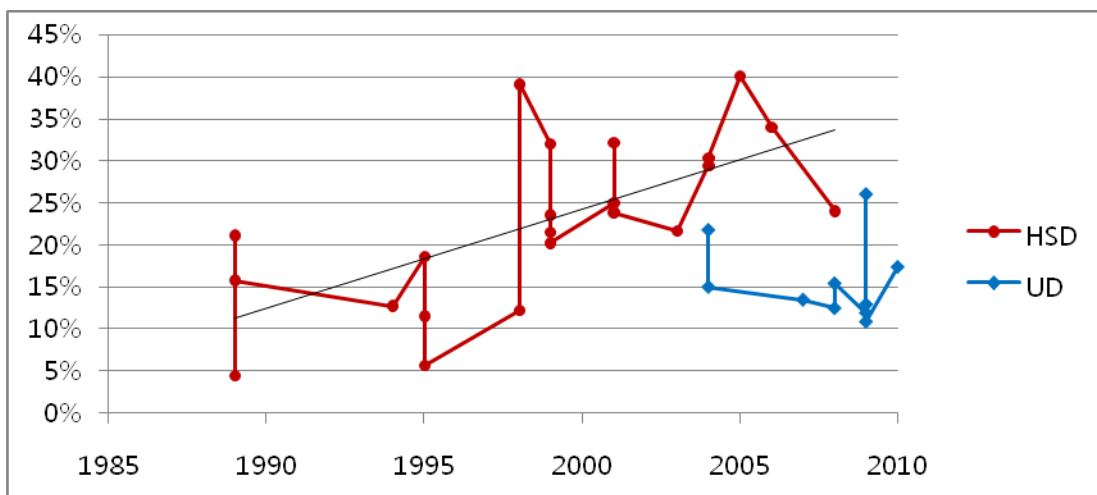
diverse urban functions, most (residential-purposed) UD sites have not delivered such performances in comparison with the larger residential development methods: HSDs and NCDs.²⁶¹ And, from the data, it can be seen that the density and land use may be affected by a lapse of time as well as by different development methods, which will be scrutinized further.

Time-series Statistics

Another factor influencing land use besides development methods (site sizes) might be time. As time goes by, many things change, such as income level, the preferences of urban dwellers, and institutional and technological capacity to deal with urban development. Figure 9.4 shows changes in major land uses by time. As it is meaningful to differentiate the features of UDs from those of HSDs, UDs are separated. As NCDs are large-sized HSDs, NCDs are merged into HSDs.

Figure 9.4 Changes in Land Uses by Time in Large-scale Development Projects

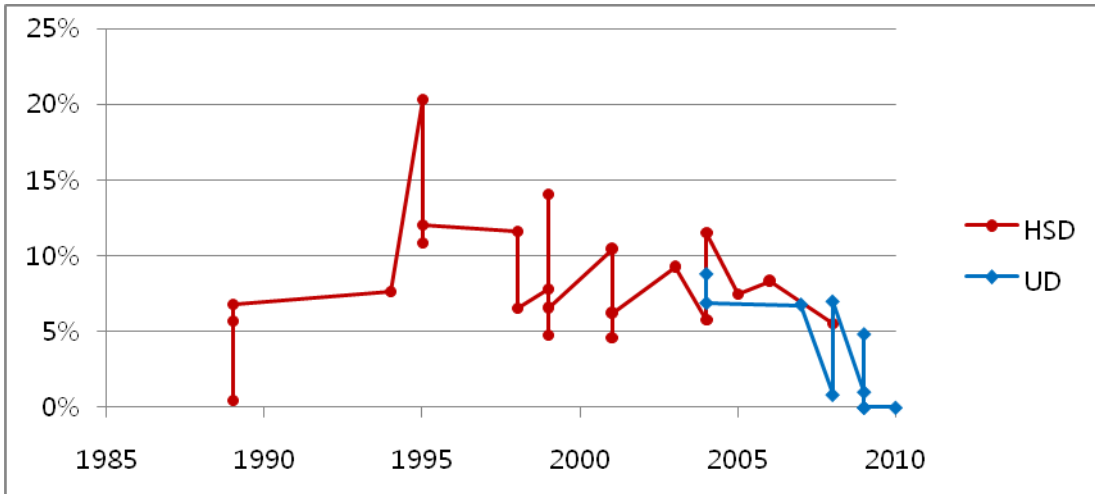
1. Percentage of parks and green space



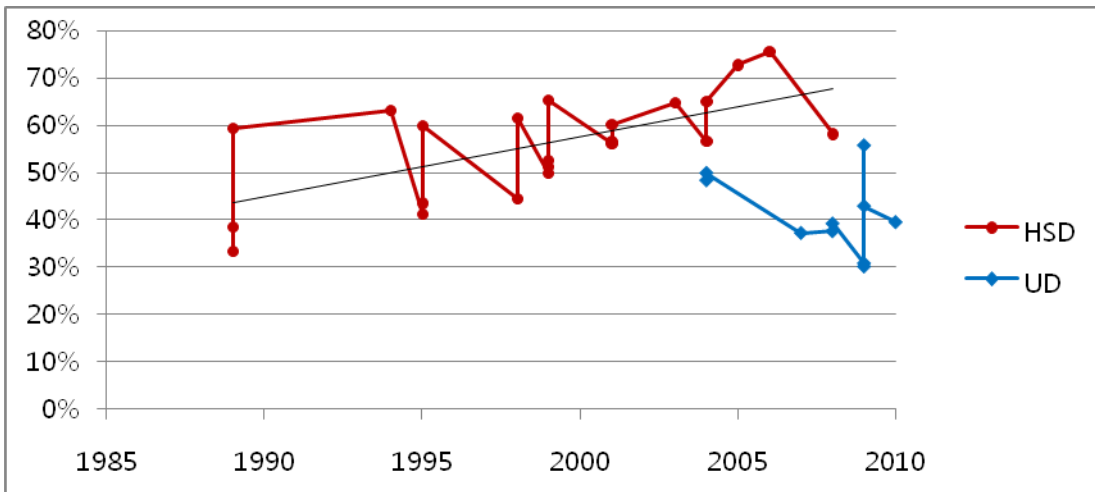
Dots: 22 HSDs including NCDs, and 10 UDs; Line: linear trend line

²⁶¹ In other words, some UD projects can be pointed out to have free-riden on neighbouring larger residential development projects: HSDs and NCDs.

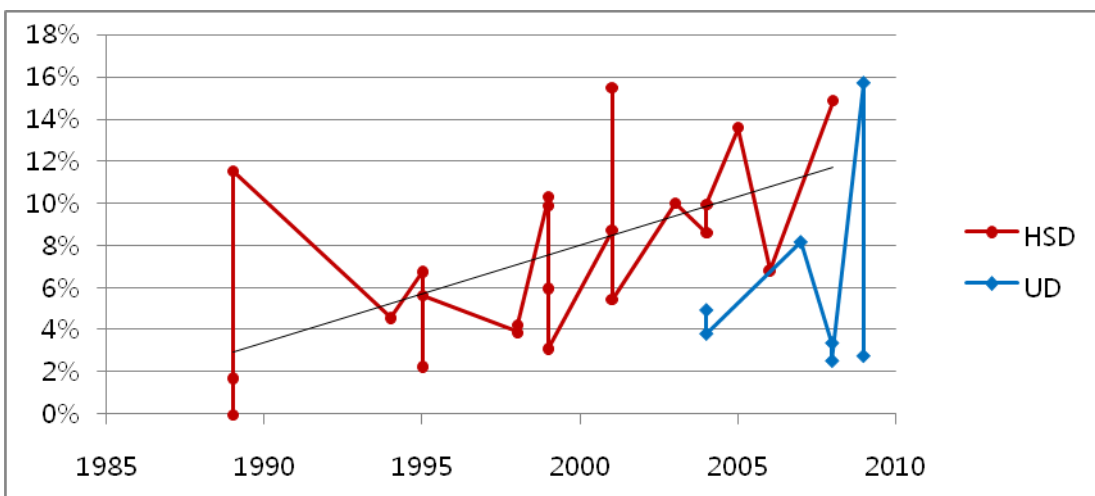
2. Percentage of land for public facilities



3. The percentage of public land



4. The percentage of land for self-sufficient functions



In general, land uses in HSDs have rightward-rising trend lines, which show that HSDs (including NCDs) have allocated more and more large amounts of land for public purposes and self-sufficient functions. Only in the case of ‘land for public facilities’, of which the lack caused disorderly development, is a distinct trend line not drawn.²⁶² UD usually are located under HSDs. As UD are concentrated in a recent, relatively short period, with a small number of cases, a trend line is not drawn. Although NCDs are not differentiated from HSDs on the figures, they are usually located in the upper extremes of the dots.

To sum up, densities are generally high, being irrelevant to development methods and time. As for land use, ‘public land’, including ‘open and green space’, and ‘land for self-sufficient functions’ increase with development methods, site size, and time.

9.4 Negotiation Processes in Shaping Current Development Patterns

This section analyses the negotiation and determination processes of development methods and land use in the case-study cities to answer the third research question:

Q3. How have the development methods and land use plans been shaped in the negotiation processes of urban development projects?

This question is about how large-scale development methods of urban clearance and related land uses have been formed. The formation of development patterns

²⁶² This confirms that the percentages of ‘land for public facilities’ are comparatively stable, not to mention ‘land for infrastructure’, as suggested in Chapter 4 and 7 in terms of the classification of land.

encompasses selecting development methods and determining land use in development sites through the process of negotiation and consensus-building between participants such as government, developers, and residents. For this, this section focuses on both the political processes around urban developments and the motives of various participants. This section starts by delving into the political features of Korean development projects, and discusses economic gains from development projects as a driver for the projects, and environmental arguments as another influential factor in shaping current urban form. Based on the analysis, the reasons for high densities (compactness) will be discussed. And, finally, new governance trends found in recent development projects will be analysed.

9.4.1 Political Processes around Development Projects

As examined in the case studies, the methods and contents of developments have been shaped through political interactions around interests rather than a rational calculation. Therefore, in order to find the factors that have shaped current development patterns, the real motives of participants should be identified, and these may be different from the official objectives.²⁶³ In this discussion, political processes in planning and implementing projects are analysed by development methods.

Housing Site and New City Development Method

In planning procedures for HSDs and NCDs, the direct concern of the MLTM and public corporations, as their policy objectives, is mass provision of dwellings. As these

²⁶³ On the other hand, a development method can succeed in achieving its policy purposes only by inducing participants to accept its policy directions by offering the right incentives.

projects do not contribute significantly to enlarging the MLTM organization, MLTM might be interested in the enlargement of their own power through the projects (director, MLTM, May 2012). Public corporations such as KLHC are directly affected by and attracted to the implementation of projects, in terms of their own organizations, power, and profits (the same interview with the above). Thus they may tend to promote more development projects.

Urban Development Method

Planning a UD project is a local political process around a land use and shares of infrastructure costs, where complicated negotiations and games take place. Participants make efforts to maximize their own interests: for example, government officials seek to secure sufficient urban infrastructure, and a member of planning committee seeks to accomplish his or her own interest, such as a specific type of landscaping. Project developers try their best to minimize the development costs they have to bear, whilst seeking to maintain their reputation.

The private developer for the Dong-cheon UD project stated that ‘pending in the planning committee’, as the committee requesting additional measures (burdens on developer), was the hardest obstacle to promoting the project, because this laid huge time costs on the developer, ultimately, landowners (interview in May 2012). Quantitative data on density and land use in the previous section showed that those requests had been fulfilled to a considerable degree, in comparison with private residential projects in the era of disorderly development. Government officials stated unanimously that if consulting with the institutions concerned and reviewing projects in

planning committees had not taken place, densities would be higher and the percentages of green space would be lower (MLTM and Yong-in City, May 2012).

Incrementalists' View on Conflicts between Participants

In planning large-scale new settlements, various participants are involved in the processes and they use a variety of strategies to realise their own interests and arguments. In the processes, various values collide and are discussed. Fragmented incrementalism argues that conflicts in decision-making are inevitable and, further, desirable in a contemporary democratic society (Healey, 2006).

From the case studies, it was found that conflicts take place within an organisation as well as between organisations: for example, between departments in a local government and a ministry, and between ministries in the central government. They argue and negotiate for their own values and policy aims, and for the interests of the groups for which they speak.

A Perception of an Unsustainable Bias in the Present Political Process

Some participants perceived that there was an unsustainable distortion in large-scale developments: the three key participants – private developers (construction companies), MLTM (housing department) and public corporations (project promoter) – were initiating large-scale developments for their own interests, despite there being no demand for such large-scale new settlements (researchers, KRIHS and GRI, May 2012).

The interviewees called it a ‘three-party trust’ or ‘iron triangle’.²⁶⁴ An urban planner who had worked with the KLHC and a representative of a civic group blamed the KLHC as the ‘main culprit in new disorderly development’ (interview in May 2012). These claims imply that there might be a tendency reinforcing large-scale developments in current political processes. This will be examined in the following sections.

9.4.2 Economic Gains from Development Projects

A critical reason why urban development projects have been political issues in local politics as well as central politics is because the projects have made tremendous profits for many participants (interview with a Seoul City official, March 2012). This subsection highlights the sharing of the development gains and the costs in the projects.

Economic Gains by Participants in Development Projects

The decisive reason why large-scale developments have prevailed in recent urban development is that these provide gains for the majority of participants, as noted in the case study of Yong-in. As the distribution of economic gains and shares of development costs are directly linked to the profits of participants, these are always a major cause of conflicts between participants. It was also confirmed in the second round of fieldwork that the majority of issues raised by interest groups in Yong-in were related to such financial concerns.

²⁶⁴ Politicians are also included in the circle who lays claim to the projects. They tend to speak for the interests of affected residents and private companies (interview with a government official, May 2012).

The Effects of Market-Oriented Urban Development

Thus, economic gain, that is, profitability, is a crucial driver for promoting a project. Also, a public project such as an HSD can only be promoted by mobilizing private capital through economic incentives (interview with a government official who had experience of working in a construction company, November 2012). This market-oriented approach to housing policy reinforces the selection of participants. Housing in Korea has become an instrument for investment rather than the provision of living space, particularly in a period when real estate prices are rising. Thus people do not select a livable and pleasant place for their own residential needs, but select it for its investment value. Evaluating a dwelling by its profitability means evaluating it by the preferences of people as a whole, not by one's own individual preference. A government official mentioned that this form of selection has generated densification in new settlements, because low costs and economies of concentration can be delivered by densification (interview in May 2012). In this case, it is difficult for stable local communities to form, and local government finds it difficult to establish a long-term vision, because people leave a location once they have realized a profit.

9.4.3 Environmental Arguments in Development Projects

In contemporary urban developments in Korea, there have been sharp conflicts between the arguments for development and arguments for conservation. This sub-section discusses the arguments of environmentalists over the issues of urban development in reference to the other perspectives of sustainability.

Conflicts between Environmental Conservation and Economic Growth

Around development issues in Korea, a political front line has been formed between a camp supporting growth and a camp supporting environmentalism and social welfare (Chang et al., 2012). The environmentalists focus on eco-friendly urban regeneration and argue for a housing policy oriented towards public rental housing rather than large-scale new settlements, blaming such large-scale developments for destroying nature and neglecting housing for ordinary people (Environmental Justice, 2012; Lee and Shin, 2011). However, these environmental arguments should be examined more closely from economic and social perspectives.

For instance, the Gwang-gyo NCD project has been criticised by many participants, including residents, for having encouraged burrowing into many unspoilt mountain areas. The Gwang-gyo project had to accommodate more dwellings on its site, by the request of the central government, than were on the original plan of the municipal governments,²⁶⁵ and this contributed to the profitability of the project. Nevertheless, the total development costs, including the cost of environmental improvement in the lake area, were judged to be too high by a KLHC staff member (interview in November 2012). He pointed out that the Gwang-gyo project was not sustainable, because the subsequent fiscal crunch would make it difficult for the promoters to initiate other necessary projects. This implies that an approach which is excessively inclined towards promoting the environment may hinder economic sustainability.

²⁶⁵ 7,000 dwellings were added to the development plan in 2007 and, thus, a total of about 31,000 dwellings would be provided. This increased amount of construction caused more destruction of the mountains (interview with a GUIC staff member, May 2012).

Environmental Arguments from a Social Perspective

Eco-friendly development may raise the sale price of new dwellings and make it difficult for ordinary people to have dwellings of their own, in contrast to the policy aims of the project.²⁶⁶ In this case, the supply of public rental housing for low-income groups also is likely to shrink, and the development will become a new settlement for only high and middle-income groups. A claim for low-density development with more green space within a development site is easily found in Korea in the arguments of environmentalists and civic groups (interviews in May and November 2012). However, this may hinder economic sustainability and the affordability of housing for ordinary people, and may cause more damage to surrounding natural areas.

Perceptions of the Argument for the Compact City

Many participants perceived that the argument for the compact city was an argument of pro-growth groups, and looked at it with suspicion as being supported by construction companies (interviews in May 2012). This perception reflects the Korean urban context, where higher density is connected with more economic profit.²⁶⁷ This relationship is fundamentally attributed to the preferences of people in relation to urban form.

²⁶⁶ In the above example, if the 7,000 dwellings had not been added to the site, Gwang-gyo could have been developed in a more eco-friendly way. But low-density development increases the sale prices of dwellings by raising development costs per dwelling, and generates a result against the interests of ordinary people.

²⁶⁷ According to Min's dissertation (2011) on the compact city in Korea, the argument for high-density compact development has been modified by a claim for the relaxation of density regulations (on maximum FSI), as being affected by the reasoning of urban developers seeking profit maximization.

9.4.4 The Shaping of Urban Density

This sub-section, which looks at processes determining densities in new developments, will demonstrate that densities have been shaped mainly by economic considerations in accommodating the needs of residents.

The Determination Process for Densities

Urban planners involved in the Yong-in and Se-jong projects described the determination processes for densities (interviews in May 2012): firstly, planners (public institutes) presented several alternatives for densities and urban forms; then project promoters (public corporations) suggested densities according to calculations based on land prices, construction costs, and the sale prices of dwellings, considering business values; and, finally, the government decided the densities (FSIs) and heights of buildings, land uses, and the sale prices of dwellings in accordance with the housing supply plan which was the policy objective. In the process, the opinions of public corporations were considered important, because the project had to be profitable to be feasible. A senior planner recalled disputes on densities as below (KRIHS, May 2012):

From the first NCDs (from the end of the 1980s to the early 1990s), planners and architects disliked high-rise dwellings and favoured low-rise high-density, considering privacy, a sustainable community, and aiming at a garden city. Actually, the density levels suggested (180-200 persons/ha)²⁶⁸ were considerably lower than the ones in Seoul at that time (mid-300 persons/ha). However, we had to consider the profits of the developers in providing the target number of dwellings, and the affordability for residents. Consequently, the densities of the new cities became similar to the ones of existing cities. Such density levels have continued until now.

²⁶⁸ This level of density can be achieved by five-storey buildings (Min, 2011), which are classified as low-rise by the Korean Building Act.

Reasons for High Densities: Profitability, Urban Competitiveness, and Convenience

The reasons for high densities in newly developed areas in Korea are explained mainly by economic factors. On the supply side, in a case where high land prices are combined with comparatively low construction costs, a high-rise high-density urban structure is created, as demonstrated by Bertaud's simulation (2010). In Korea, the prices of apartments in newly developed areas have increased dramatically in comparison with other asset prices, from Gang-nam in Seoul in the 1970s to Yong-in at present (MLTM, 2010c). Ultimately, the enthusiasm for apartments in large-scale development sites in Korea depends on the preferences of residents, that is, from the demand side, and this will be closely examined in Section 9.6.²⁶⁹

The reason why urban land is expensive is partly because of the strict regulations governing the use of non-urban land. On the policy side, the central government has provided apartments in quantity on large-scale project sites to solve the shortage of housing, maintaining strict land use regulations.²⁷⁰ Many participants interviewed, including ordinary residents and staff from public corporations, saw high-density development as inevitable, due to the situation of a large population living in the small land that is Korea (May and November 2012). However, for example, the total land area and population of England are almost the same as those of South Korea, but the housing densities of the two countries are quite different. Therefore, the above common rival explanation is rejected. On the other hand, people strongly believe that agricultural and

²⁶⁹ Further, increases in the price of apartments and the growth of owner-occupation are seen as having contributed to the stabilization and, further, the conservatization of Korean society, through the formation of a deeper middle class layer (Jun, 2009).

²⁷⁰ In addition, such strict regulations on the use of non-urban land have provided a basis for large-scale urban land development by keeping the price of non-urban land low.

mountainous land should not be developed into urban land (interviews in May and November). This perception is the basis for the strict regulations on non-urban land.

Another argument for densification is urban competitiveness. In the case of the Se-jong project, the urban size of 500,000 residents in high density dwellings was determined by considerations of urban competitiveness, which means the need to sustain self-sufficient urban functions (a member of the planning committee, May 2012). These issues will be revisited in Section 9.5 with real considerations shaping current development patterns.

Self-sufficiency is connected with the convenience of residents. Apartments in high-density developments are preferred by many residents in Korea because of their convenience. Technical factors such as sunshine, the direction in which the building faces, and the pitch of the building are also significant in determining densities (MLTM, 2010d); but the above-cited planner from a national institute, who has specialised in urban engineering, confessed that the scientific grounds for the technical factors used in determining densities are weak and, in fact, these are actually determined by the social demands of residents. The master commissioner of the Se-jong project affirmed that density is a socio-cultural phenomenon (interview in May 2012). This will be investigated in Section 9.6.

9.4.5 New Governance in Large-scale Urban Developments

Large-scale new housing developments in Korea have not in the past been subject to participation by residents. However, it was found from the case studies that there is an

emerging new trend in governance relying on a more democratic way, particularly in the Gwang-gyo and Se-jong projects.

A fatal disadvantage of large-scale development is the lack of resident participation in the process of planning, particularly in the initial stage of a project when there is no new resident determined. Even in the case of Dong-cheon UD project which was promoted by the landowners' association, no former resident was resettled on the site after the completion of construction (interview with a developer, May 2012).

On the other hand, large-scale developments for new settlements are not implemented by a one-off planning by experts. They are subject to a continuous decision-making process. In the process, an initial plan is continuously changing. In the case of Yong-in, it is the fact that the urban environment surrounding the development site is rapidly being changed by various other development projects that is causing the need to modify the initial plan. Moreover, urban development is a complicated process of forming new communities. A team manager of a public corporation described his experience in Gwang-gyo (a manager of the Project Administration Team, GUIC, May 2012):

We organised a consultative group in which the various parties concerned participated. In the early period, I felt this was impeding the rapid progress of the project. But it has gradually demonstrated its advantages, such as mutual control and understanding through the sharing of information.

In the case of the Se-jong project, after the first residents moved in, monitoring groups were organised. The issues raised by members of the monitoring groups were reviewed in the planning committee; and it was confirmed in the fieldwork that suggestions by

members of the group even influenced the layout and design of streets. In the case of the governance system of Gwang-gyo NCD, it had an advantage in that the project was the first and only NCD project which was promoted by municipal governments. The municipal governments involved organised numerous meetings on the site with the new residents, which were seriously considering their new living conditions in the new settlement. Also, in the case of Dong-baek HSD, though the construction of the project was completed in 2006, planning issues are continuously being raised by residents, such as the need for a general hospital, improvements in transport systems, and the need to bring commercial streets to life (interviews with residents' representatives, November 2012). Since a new city or town is not formed in just a few years, the governance capacity and community engagement, which deal with the complicated issues of forming a new settlement, are increasingly being emphasised as important for making the settlement a more liveable place.

Figure 9.5 Buildings for New Settlements (May and November 2012)



Note: 1) All-sources Settlement and Civil Service Office building on Gwang-gyo NC site, which is operated by the local administration and GUIC for the smooth settlement of new residents
 2) New Renewable Energy Centre which promotes the nationwide One Million Green Homes Project

9.5 Considerations of Sustainability in Current Development Patterns

This section analyses the considerations of urban sustainability employed in shaping current development patterns in the case-study cities in order to answer the fourth research question:

Q4. How have the principles of sustainable development been applied to shaping current development patterns?

The previous section focused on the processes of forming development patterns, while this section focuses on the substantive content of forming development patterns and its feasibility. Delving into the substantive considerations of participants eventually leads to a question on the preferences of the population. Thus the next section will analyse the acceptability to residents of current housing patterns. Each of the three sections will make a contribution from a different angle to answering the main question of the research.

9.5.1 Social Equity as a Policy: Affordable Housing

The main official purpose of large-scale urban development policy is the provision of affordable housing, as confirmed in Chapter 5. Among the three perspectives on sustainable development, affordable housing may be classified as belonging to the sphere of social equity. The concept of equity is used in the following categories: distributive equity between different income groups; inter-regional equity; and inter-generational equity. As for inter-regional equity, this was a strong argument for

initiating the Se-jong project. Also, in Yong-in, the issue of equity between urban and non-urban areas was one of the topics which participants took pains to address. And the concept of sustainable development is frequently explained using the term ‘inter-generational equity’ (Haughton and Hunter, 1994; OECD, 2002). This sub-section focuses on equity between income groups.

The Provision of Affordable Housing

The most frequently observed policy goal in government documents on housing policy is the supply of affordable housing for non-homeowners and the stabilization of the real estate market (MLTM, 2010c). Market stabilization policy is also aimed at controlling a rise in housing prices for ordinary people, and securing social justice by suppressing speculative capital gains. Large-scale housing developments were seen as a direct and representative instrument for achieving this policy goal.

A university professor in Gyeong-gi province considered that this policy had generated considerable and tangible results, given that it was a challenge to provide housing in the right location at the right time for an enormous number of people, including 20 million people who had moved into the Capital region after the 1960s (interview in May 2012). Large-scale developments have contributed to supporting ordinary people so that they seek to join the middle class by providing an opportunity for asset-building, and to improving the housing environment by relieving overcrowding in existing urban areas. However, despite these obvious achievements,²⁷¹ the policy is difficult to evaluate as

²⁷¹ Housing distribution ratio (number of dwellings to households, including single families) surpassed 100% in 2008 (MLTM, 2010c).

sufficiently successful, because achievements are still a long way from reaching a satisfactory level: the number of households living below the minimum housing standard was 1.8 million (10.6% of all households) in 2010²⁷² (NSA, 2011a); and the time people wait to become owner-occupiers is still considerably longer than in Western countries.²⁷³

With regard to these results, current large-scale housing development has been criticised as too market-oriented to address the housing problems of low-income groups (Lee and Shin, 2011). However, the development method is not a completely market-dependent approach. Rather, the public sector has achieved social purposes through active interventions in private housing markets using the instrument of land development. The interventions include: price control in favour of small-sized dwellings; the compulsory provision of small-sized dwellings and rental housing; and a mixture of owner-occupier and rental housing.

Large-Scale Development and Social Mix

As for a social mix between different income groups, large-scale new settlements are seen as at least providing an advantageous condition for achieving this, because they can mix various types of tenure and sizes of dwellings with various types of residents through a moving-in qualification screening.

²⁷² The figure has decreased significantly from 3.3 million (23.4% of total households) in 2000, but progress was still below the policy target of 1.0 million (5.9%) in 2012 (MLTM, 2010c).

²⁷³ The ratio of housing price to annual income (PIR) was 4.5:1 as a national average and 8.1:1 in Seoul in 2008. The UN recommends maintaining a level of 3-5:1 (MLTM, 2010c).

9.5.2 Considerations of Sustainability between Land Uses

The compact city has been argued to be an urban form that contributes to environmental sustainability above all else. The large-scale development policy in Korea, which depends on a market-oriented approach, has pursued the efficient use of land above all: the greatest satisfaction for as many users as possible. This sub-section analyses how the three pillars of urban sustainability have been perceived and considered in addressing the issue of land use.

Environmental Considerations and Open Space in a City

All the professionals interviewed agreed that the current compact urban form, which has apartments as the main housing type, would have a desirable impact on the environment (interviews in May 2012). It would contribute to conserving the environment through the reduction of energy consumption and carbon emissions in transport and buildings as well as through causing less damage to surrounding natural land.²⁷⁴ In addition, from a lifestyle approach, changes in living habits in new settlements were also positively evaluated. For example, a resident explained that separate garbage collection in an apartment complex was more systematic and collaborative among residents than in an area of houses²⁷⁵ (the president of a neighbourhood association in Yong-in, May 2012).

²⁷⁴ From a transport aspect, compact development saves energy consumption through locating residential complexes in areas which are close to or mixed with workplaces, shopping streets, and schools, and through public transport-oriented systems. As for buildings, new settlement developments can achieve more energy-saving by applying the latest innovative technologies, such as that of new renewable energy.

²⁷⁵ The interviewee added that, in an apartment complex, waste was more effectively divided for recycling into papers, bottles, cans, plastics, food waste, and so on, while, in an area of houses, this did not happen (May 2012).

On the other hand, a number of academic experts and public researchers perceived that existing cities in Korea were too overcrowded and exceeded environmental capacity to the point where they degraded the environment and quality of life (interviews in May and November 2012). According to the Capital Region Air Quality Agency (2012), the degree of air pollution in the Capital region was one of the worst among OECD countries in 2008-2010, though it was improving slightly.²⁷⁶ A public researcher claimed that dispersing new settlements was desirable in the Korean context, considering the congestion and pollution, and the associated damage to the health of citizens in existing cities (May 2012). In this context, they perceived the enlargement of open space within a city as an improvement from overcrowding. There is even a tendency in Korean academia that regards enlarging open and green spaces within a city as eco-friendly, having a negative image of compact development (Ha et al., 2007).²⁷⁷ Thus, urban development has required an approach harmonising environmentally sustainable compactness with enlarged open space. An implicitly agreed solution for this problem was apartment-oriented new settlements.

²⁷⁶ The pollution level of nitrogen dioxide in Seoul was 0.034 ppm in 2010, which was the worst among OECD countries, and the pollution level of powdery dust in Gyeong-gi province was $58 \mu\text{g}/\text{m}^3$, which was more than twice the average level in OECD countries (ibid).

²⁷⁷ Moreover, the vice president of a public corporation perceived that the shortage of accessible open space within cities in Korea was increasing traffic for leisure activities (interview in May 2012).

Agricultural Land, Forest, and Urban Land

Large-scale urban development in Korea is basically the transformation of agricultural land and forest into urban land.²⁷⁸ Two researchers from a national institute claimed that existing agricultural land and forest should be more actively transformed into urban land to relieve overcrowding in existing urban areas (interviews in May 2012).²⁷⁹ They prioritised the development of forest (mountainous land) over that of agricultural land. However, the findings of this research from interviews revealed, in the general perceptions of Korean people, from government officials to citizens, a deeply rooted belief: agricultural land and forest, but especially agricultural land, should be strongly protected from development.

Their reasons were: the development of agricultural land is irreversible; agricultural land should to some extent be preserved for the production of food; we can live without oil, but we cannot live without food; and so on. However, this argument is not supported by an economic perspective. The protection of rice paddy is prioritised over that of fields for vegetables by law, but the government, at the same time, has been subsidising non-cultivation of rice paddy to control the production of rice, which is being overproduced (MIFAFF, 2012). Also, from a perspective of environmental sustainability, there is the perception that agricultural land may be eco-friendly, but, in reality, agriculture destroys all other species except for the cultivated one by using toxic

²⁷⁸ The division of the total Korean territory by use in 2009 was: forest (mountainous land) 64.5%, agricultural land 20.3% (rice paddy 11.9%, fields for vegetables 7.8%), and urban land 6.6% (including residential land 2.7%) (MLTM, 2010a).

²⁷⁹ This opinion is in clear contrast with existing policy directions, which strictly control developments on agricultural land and forest. This sort of opinion is not found in the official stance of their institute, nor in related laws. This shows a perception in policy groups, but this sort of claim cannot have been discussed openly because of its political sensitivity.

chemicals (Kim, 2005). A government official who had been in charge of agricultural land policy in the Ministry of Agriculture said (November 2012):

In my experiences, the majority of landowners in rural areas want to develop their agricultural land into residential land, because, if they do so, the value of the land rises. Farmers may have not much sense of conservation. Rather, it is people whose jobs are related to agriculture, such as officials and researchers in governmental and agricultural organisations, who reproduce such claims.

The fundamental reasons underlying the strong protectionist attitude towards agricultural land and forest, which were suggested by the participants interviewed, included traditional oriental ideas, such as Taoism and Confucianism, and memories of starvation. The deeper analysis of these reasons is beyond the scope of this research; but at least this overview confirms that permitting mass transformation of agricultural land and forest into urban land through a sweeping planning system by a master plan (which is contrasted with incremental new settlement developments) is not politically acceptable in Korea.

From an equity perspective, and in a Western context, the compact city raises an issue between urban and rural areas: there is an imbalance between protected rural areas, which enjoy benefits from compact spatial structure, and compact urban areas, which pay the costs for them. Instead of this, a different question is raised in the Korean context: why do urban dwellers not compensate rural farmers for the restrictions placed on their properties, despite attaching a high value to protected rural areas, for example on aesthetic grounds (Kim, 2005). How the different contexts affect these issues will be more examined in the following paragraphs.

9.5.3 Economic Vitality

In the context of a developing country, appealing to expectations of economic development is regarded as necessary in initiating development projects. This subsection analyses the pro-growth arguments and their influences on current urban forms.

Economic Effects of Urban Development

An incidental but favourable argument for large-scale development in Korea is the fact that the construction industry has a larger production and job-creation effect than the average for manufacturing industry or industry as a whole (MLTM, 2009b).²⁸⁰ These are additional effects to the original policy goal: the mass provision of decent housing. Yong-in government officials had the perception that the economic effects of development projects are important for stimulating the local economy in that the projects belong to the construction industry, which has high forward and backward industrial spill-over effects in terms of creating more jobs, especially including the utilisation of a considerable amount of unskilled labour by low-income groups (interviews in May 2012).

The Growth-oriented Perceptions of Participants

A development consultant in Yong-in also showed a growth-oriented perception, pointing out that planning at least should not hinder a development project, even if it

²⁸⁰ For example, on the economic impact of large-scale residential site development, Woo (2005) analysed 36 HSD and NCD projects which have been implemented by the KLC, using an inter-industry input-output table, and concluded that the value-added effect of 2,116 billion won (1.02 won per cost unit of 1 won) and an employment creation effect of 37,117 persons (17.9 persons per billion won) were generated from development costs of 2,077 billion won, and that this was delivered through a 3,123 billion-won production inducement effect and a 2,024 billion-won import inducement effect.

cannot promote it (interview in May 2012). The perception which lays stress on economy and growth is dominant also in the central policy sphere. Many key participants in charge of related policies and projects in the MLTM and public corporations regarded income level as the most influential variable to cause changes in people's preferences for housing types, and further, for urban form and landscape (May 2012).²⁸¹ A government official from the Ministry of Finance mentioned that Korean people have been familiarised with rapid physical changes in their urban surroundings through the process of 'compact growth'²⁸² since the 1960s, and many people believe that 'creative destruction'²⁸³ is inevitable for economic development (November 2012). Apart from the validity or otherwise of the perception, it explains why rapid change and destruction for urban development are easily accepted by residents.

Some participants regarded the economics of development projects as being connected with inter-generational equity. An MLTM official argued that delaying urban developments which are necessary to present and future generations and leaving high-cost urban structure are shifting (fiscal) burdens onto future generations (May 2012). As the concept of sustainable development considers future generations equitably (WCED, 1987), such a shift of the burden is judged to be unsustainable.

²⁸¹ This implied that the need for professional intervention in the 'myopic' choices of residents, such as an aesthetic regulation for planning, would naturally disappear with growth in income level (May 2012).

²⁸² The term 'compact growth' implies that it has prioritised growth over other aspects of a society.

²⁸³ 'Creative destruction' is a term coined by Joseph Schumpeter (2010), who argued that it was required for innovation. In Korea, this attitude for the creative destruction is seen to be combined with the characteristics of a developing economy. On the other hand, advocates of this attitude, as an 'innovative entrepreneurial spirit', are criticised as having served for neo-liberalistic arguments which has flourished during the past two decades (Chang et al., 2012).

High-Density City and Urban Competitiveness

On the other hand, many academic experts and practitioners interviewed showed a perception that a high-density city contributes to urban competitiveness. This perception is partly based on the idea that a high density increases the opportunity for face-to-face social interactions between residents in the city. Hall (1997a: 89) mentions that, ‘the new world will largely depend, as the old world did, on human creativity; and creativity flourishes where people come together face-to-face’, which is connected to Jacobs’ argument (1962) on the positive relationships between active social interactions and urban competitiveness. The master commissioner for the Se-jong project stated that, ‘The competitiveness of Seoul is generated from the high-rise apartments of Seoul where 10 million people live in 605 square kilometres’. Also, basically, it is suggested that the high-density city delivers economies of scale by reducing urban maintenance costs and individual living costs.

The Apartment and Economic Motivation in a Developing Country

New settlement developments and the consequent building of apartments are inseparable from a dynamic social motivation in the Korean context. Jun (2009) argued that the working class in Korea in the hard era of industrialization shared a sense of personal fulfillment and domestic happiness by making money to buy their own decent apartments, which were supplied by a philanthropic housing policy for ordinary people. The apartment has grown in favour with the formation of the middle class in Korea, as a common housing space for them, as an asset for their capital incomes, and as a conservatizing force (Gelezeau, 2007). As for the recent recession in housing markets, a

development consultant regretted the situation, wondering if the social opportunity and vitality which had driven the past era were fading (interview in May 2012). To conclude, the apartment has functioned as an important motivator for social achievement in the Korean context and this explains an aspect of the strong preference for it.

9.5.4 Community Building in New Settlements

In large-scale developments, neighbourhoods are built which are composed of totally new residents with diverse backgrounds. This sub-section analyses the formation processes of new communities in apartment districts, and recent measures and trends towards building better communities.

In advance of the analysis, findings from the case studies are summarised below:

- Traditional rural communities have been dissolved and absorbed into new urban areas in the case-study cities.
- The majority of the participants interviewed, including ordinary residents, have not prioritized sustainable communities over other principles of sustainability.
- Before residents move into new settlements, they are already forming communities through online cafés, asserting their rights to better and flawless dwellings against suppliers (public organisations and construction companies), and creating a sense of belonging with each other.
- Though the patterns of community involvement are diverse, comparatively strong interest groups are organized in new settlements with regard to the issues of public facilities and development costs.
- In new settlements, community activities such as resident participation and voluntary services develop actively, creating a new local identity.

General Perceptions of a Local Community and its Activities

Though cohesive and active local communities are acknowledged in academia as an important factor constituting social capital (Jun, 2009), many participants interviewed did not have a particular perception of this. As one of the reasons for the lack of community cohesion, some participants suggested the high residential mobility of Koreans.²⁸⁴ People move easily from one place to another according to economic need, for example, pursuing profits from their dwellings. Further, this may cause instability in their lives (interview with a government official, November 2012).

Another feature identified in the case studies is that stimulating community activities in Yong-in, including in Gwang-gyo NC, tended to be a struggle against government and project promoters, while such activities tended to be created more collaboratively with them in Se-jong. The two cities are different in their governance schemes; and the different community situations were also attributed to the difference in project sizes, particularly in terms of development costs and public facilities. This will be addressed in the next sub-section.

Community Activities in New Settlements

Although ‘women’s societies’ in apartment districts organize many friendship activities and voluntary services, they are, at the same time, notorious for excessive engagement in profit seeking and, in some cases, collusion over apartment price-fixing, as presented

²⁸⁴ For example, 8.4% of total dwellings had changed hands in a year despite the recession in 2011 (it was 20% in 2006), whilst the average in developed countries was commonly around 5% (MLTM, 2012c).

in Chapter 7. Their activities differed according to sites. Women's societies were not active in large-scale HSD and NCD areas in Yong-in, in contrast with other common apartment complexes. This was attributed to the creation of strong, autonomous 'interest groups' as another type of resident organization focusing on their neighborhood issues, as noted in the case study of Yong-in.

Also, in the case of First Village in Se-jong, a women's society had not been organized until the second round of fieldwork in December 2012, despite this being a year after new residents moved in. This is ascribable to a new type of governance in Se-jong, which involves housewives in planning with government through a consultative 'housewives' monitoring group'. This contrasts with existing cities, including the first-stage NCs, where women's societies and 'resident representatives' committees' are the focus of neighborhood activities.

In conclusion, the patterns of community activities in new settlements are diverse, and also in new settlements which are just opened for residence, resident communities are actively formed.²⁸⁵ Many participants mentioned that they participated in community activities voluntarily for their own satisfaction, even though some of these were organised for selfish interests.²⁸⁶ In addition, it was found that long-term residence

²⁸⁵ For example, volunteer residents in First Village in Se-jong, in their first autumn after moving in, were making *kimchi* (usually made and stored in volume in late autumn) for old-aged residents in the week when the researcher visited. A president of the federation of neighborhood associations, who organised this activity, stated that it was not part of his duties but just a service for vulnerable neighbours (November 2012). In Yong-in, a movement for local food through urban agriculture was actively being promoted by a consumers' cooperative, operating weekend farms by urban dwellers. A representative of a civic group explained it as the one of merits of urban-rural integration of the city (May 2012).

²⁸⁶ Even in such cases, interest group members' activities are not just for personal interest, but for all residents and for a better place. An activist in an interest group in Yong-in expressed it as 'cultivating virtues' for himself (November 2012). He confessed that after deciding to live in Dong-baek for a long time, he started to devote himself to community activities 'for the public interest' as he expressed it.

affected community activity more positively than short-term residence.²⁸⁷ It was also found that community engagement was more active among owner-occupiers, who were interested in property prices, than among tenants.²⁸⁸ A further analysis of the selection of housing by residents and their social lives will be offered in the next section.

9.5.5 The Sustainability of Current Development Methods

No matter how desirable compact development is for sustainability, it would be useless if it were not attainable in practice. This sub-section analyses the feasibility of current development methods and the problems associated with them.

The Sustainability of the Urban Clearance Method

Large-scale development projects employ the urban clearance method, which involves the expropriation of properties and the destruction of existing communities. The percentages of former residents resettled on the project sites were very low. However, it was found from the case studies that the expropriation method was acceptable to former residents. A resident of First Village in Se-jong²⁸⁹ who had lead struggles against the Se-jong project stated (November 2012):

²⁸⁷ In relation to this, the majority of residents interviewed in Yong-in did not think of their residence as permanent, even if they were satisfied with their housing circumstances, while the majority of the residents interviewed in Se-jong had a greater sense of the permanence of their residence (May and November 2012).

²⁸⁸ The figure for home ownership among apartment dwellers in South Korea was 62.2% in 2010, which was higher than that for detached house dwellers, 46.7% (MLTM, 2011b).

²⁸⁹ Former rural communities in Se-jong were more stable than ones in Yong-in in the Capital region (interviews with residents and Se-jong city officials, May and November 2012).

The majority of former residents were old and small-scale farmers. I had a strong reaction against the development destroying our traditional villages. It would have been better if we could have lived without the development, as in former days when people were warm-hearted. But, I admitted the project was inevitable (in the public interest). And, now I find there is also merit in our present urbanised lives: we can find jobs that pay more.

A Merit of Large-Scale Development in the Sharing of Development Costs

From the Yong-in case study, it was found that disputes around a development project arose mainly over the sharing of development costs and the installation of public facilities. A developer can avoid the economic burden of installing public facilities through having a smaller development size. The developers and dwelling-purchasers have an incentive to free-ride on facilities in neighbouring (larger-scale) development areas. However, in districts constructed by larger-scale development projects, for example, in Dong-baek HS, residents object to neighbouring small-sized private developments, blaming them for free-riding and degrading the environment (interviews with representatives of residents' organisations, November 2012). A local councillor in Yong-in city believed that larger-scale developments encompassing scattered developments could solve the problem through the sharing of costs and would reduce extra coordination costs (transaction costs) (November 2012).

An activist in an interest group pointed out that installing a facility after the completion of project construction always generates a dispute (November 2012). Local government officials and public corporation staff recognised that a string of development projects

costs more than a single large-scale development project.²⁹⁰ Also, large-scale development is advantageous for installing facilities that people may not wish to be close to. This is because new residents choose the location of their dwelling knowing the location of such facilities. This can be called a type of 'location contest'. Scattered (central) commercial areas set up by scattered developments are also difficult to make viable when these require a larger supporting population, as was found in Dong-baek HS, where the commercial streets were hollowed out. Therefore, residents prefer larger-scale development, even if it raises the initial sale prices of dwellings, because it increases property prices more (interview with a market consultant, May 2012).²⁹¹

The Institutional Deficiency of the the Current Large-scale Development Method

However, as noted in the case studies, current large-scale development was criticised by many participants for having caused monotonous urban forms and landscapes. Particularly, professional experts pointed out that the mass provision of dwellings would require large-scale repairs at a certain time, but these would be an extremely difficult to organise and would generate enormous social costs. Government officials and a market expert expressed concern about super high-rise apartment complexes, in that they may become slums at some time in the future, when they cannot provide the additional floor space that makes redevelopment feasible by ensuring a certain level of profit.

²⁹⁰ In this regard, staff from KLHC claimed that the KLHC bore more costs in Yong-in due to incremental HS developments, because the KLHC had to install local (and regional) facilities after the completion of the HSDs without imposing the costs on residents moving in (interviews in November 2012). This was their response to criticism by other participants of 'tremendous development gains vested in the public corporation from promoting HSDs instead of a single NCD' in Yong-in.

²⁹¹ The preference is reflected in property (transaction) prices, and the difference in prices is generally confirmed by the comparison of real data from different development sites provided by MLTM (2013a).

Current market-oriented large-scale development has been employed due to its instrumental efficiency, making profits for almost all the participants. Development projects in a boom period in real estate markets can be continued even without a fundamental demand for the dwellings they produce, being based rather on speculation. Thus, a risk of overproduction exists. If the results are not supported by the demands of a future population, it could place a tremendous burden on the public such as slumism and a need for reconstruction.

This section has analysed current development patterns with diverse aspects of sustainable development. Large-scale urban developments have fulfilled the economic and social needs of the times at a certain degree, but a question about its sustainability remained as to whether current housing lifestyle can be sustained in the future, because the above concerns, ultimately, depend on the preferences and choices of the population. This will be addressed in the next section.

9.6 The Acceptability of Current Housing Patterns and Land Use

This section analyses the acceptability of current housing patterns and land use to the population, in order to answer the fifth research question:

Q5. To what extent are current housing types (and associated residential features such as density and open space) acceptable to residents?

This question is about whether a compact development pattern which is judged to be environmentally and socially desirable can actually become people's first choice. For this, diverse aspects around apartment living will be reviewed with reference to quality of life.

Figure 9.6 Apartment (May 2012)

Interior Space in an Apartment¹⁾



A Super High-rise Apartment²⁾



Note: 1) An apartment miniature (106 m²=32 pyeongs) in a model house for marketing in Se-jong site
2) A typical apartment residential district: a super high-rise apartment area (right), a conservation area and greenhouse agriculture (left), and a high-rise apartment area (in the distance) near Se-jong

9.6.1 Preferences for Apartments as a Housing Type

Apartments have already taken root in Korean society as a dominant housing type, and this is one of the important conclusions of the thesis. This sub-section analyses participants' experiences and their perceptions of the situation, and discusses the reasons for it – convenience, profitability, and benefits to social life – followed by statistical evidence. Among the reasons, the benefits to social life will be addressed in the next sub-section.

The Convenience of Apartment Living

To sum up, the reasons of those interviewed about what have made them choose an apartment are listed as follows: convenience in an apartment dwelling, such as convenience in the arrangement of an apartment's interior space and the inclusion of ubiquitous technologies; convenience in an apartment district, such as better access to stores and public facilities; economy in dwelling management; economy in the proximity of workplaces and connections to public transport; safety; and expectations of a rise in property prices (March, May, and November 2012). Convenience was also appreciated by the old.

The advantages of an apartment were connoted in the term 'convenience' by interviewees, whilst the disadvantages of houses were described as 'inconvenience'. In particular, Yong-in government officials pointed out that many private projects for complexes with houses with individual gardens in Yong-in had failed in the past few years and residents who had moved in had left again from there, citing inconvenience such as shortage of information and inadequate medical and cultural services (interviews in May 2012). A government official explained it as a difference in personal preferences for quality of life, mentioning that Western people favour suburban and rural life and privacy, while Koreans prefer the convenient use of facilities, while another government official attributed the preference to the subordination of Korean working people to their jobs (workplaces)²⁹² (interviews in November, 2012). However,

²⁹² The average annual working time of Koreans was 2,193 hours (per worker) in 2010, which was the second highest in OECD countries (OECD, 2013), while income support for the unemployed was 30.4% on average of the income paid when they were employed, which was the second lowest in OECD countries (OECD, 2011b).

this cannot be the whole explanation for the preference. Retired interviewees also favoured apartments, and many interviewees had chosen apartments even though they could afford detached houses near their residential areas.²⁹³ One of the significant trends in Korean housing types is that apartments is also increasing in rural areas,²⁹⁴ where land prices are low, commuting to workplaces is not critical, and expectations of a increase in property prices is also low. These facts show the strong preference of people for apartments, which is attributed to one advantage above all: convenience.

Economic Profitability of Apartment Ownership

Another reason why apartments are preferred by individuals is because they represent an asset of which the value is expected to increase no less than that of any other financial asset. As an apartment is comparatively standardized as a commodity, its liquidity is also appreciated as higher than that of any other housing types. Further, the reason why apartment prices are increasing is, naturally, because the majority of people prefer them. The spread of apartments in Korea has been accompanied by the naturalization of the apartment and innovations in its construction technology (Jun, 2009). For example, *ondol* (a traditional Korean floor heating system) was introduced in apartments as early as the 1970s (Kang and Han, 1999). Thus, the apartment has been recognized as modern and convenient housing.

²⁹³ The researcher interviewed 60 interviewees, including 6 pilot interviewees. Among them, at least 26 had experienced living in Western countries (mainly in the US and UK). Therefore, these interviewees could explain their preferences from a comparative point of view.

²⁹⁴ The statistics will be presented in the later part of this sub-section.

The rapid spread of the apartment as a new housing type is partly due to an apartment-oriented housing provision policy. Since the late 1980s, the policy objective for housing provision by the central government has been ‘more than 500,000 new dwellings annually’. Also, in the Long-term Comprehensive Housing Plan 2003-2012 of the MOCT (2003), the annual objective was 500,000 dwellings (5 million during the ten years).²⁹⁵ This mass production of new dwellings has been made possible by the mass construction of apartments.

The popularity of apartments and the pursuit of economic profit through their dwellings are also related to the high residential mobility of Koreans.²⁹⁶ The economic value of an apartment as a saleable property is not evaluated subjectively by the homeowner, but depends on the valuation of average transactors. If dwelling-owners considered selling their dwellings in the near future, they would select a standardized apartment rather than a characterful house. This is also related to the bland landscapes in new settlements in Korea. Koreans frequently move home, for example, because of their job, or for better housing after the realization of profits from their existing home. However, this high mobility can mean that residents lack a sense of belonging to their local communities and hinder the sustainability of communities. The social aspects of apartment living will be discussed in the following sub-section.

²⁹⁵ The annual objective was modified to 400,000 dwellings in 2011 and 450,000 in 2012, because of the recession in the housing market. Nevertheless, actual dwellings constructed in 2011 were 550,000 (MLTM, 2012c). The above plan anticipated that the annual demand for new dwellings would decrease after the late 2000s, and estimated it would be 370,000 dwellings in 2020 (MOCT, 2004).

²⁹⁶ In this respect, the words of Barbara Ward (1975 in Haughton and Hunter, 1994: 9) are better applied for Korean society: ‘settlement is a contradiction, because modern man is living with unsettlement’.

A government official pointed out that expectations of a rise in their dwellings' prices accelerate the rush to live in high-density urban centres where jobs, better schools, and more cultural facilities exist (director in charge of housing policy, MLTM, November 2012).²⁹⁷ These phenomena are, again, attributed to one fundamental reason: the majority of people favour urban centres rather than suburbs. For these reasons, almost every interviewee, including professional and academic experts, anticipated that the preference of people for apartments would continue in the long run.

Statistical Evidences of Preferences for Apartments

The following paragraphs present some statistics showing the popularity of apartments over other housing types and having additional implications.

Moving into Apartments from Detached Houses

More direct evidence of the popularity of apartments is the move from detached houses to apartments revealed by people's voting with their feet. In the most recent moving of individuals, the number of households moving into apartments from detached houses was about three times the number moving in the opposite direction (MLTM, 2011).²⁹⁸ People's aspirations for their future housing show a similar pattern (ibid).²⁹⁹

Apartments in Rural Areas

As mentioned before, another critical example which shows the popularity of apartments in Korea is the fact that apartments are being constructed in rural areas,

²⁹⁷ He added that schools are one of the most important considerations in selecting residential areas, and schools were institutionally equalised by districts in Korea, therefore, people were concentrated in urban centres where better schools were located.

²⁹⁸ The detailed statistics are presented in the Appendix 3-1.

²⁹⁹ The detailed statistics are presented in the Appendix 3-2.

between rice paddies and farm fields. In *Myeons* (rural local areas belonging to counties, excluding towns), there existed 322,657 apartments across the country in 2010, which represented 21 per cent of the detached houses in the area (NSA, 2011a). The reason why the apartment is popular in rural areas is, above all else, its convenience.

Housing Types by Income Level and Education Level

As people move into higher income groups, they tend to live in apartments rather than detached houses.³⁰⁰ This implies that as income increases in the future, preference for apartments may increase. Income was acknowledged as the most influential variable explaining changes in housing lifestyle by most practitioners interviewed. Further, interestingly, the correlation of housing types was stronger with education level than income level. In other words, highly educated people live in apartments in greater proportions than the rich. In addition, Apartment dwellers move more frequently than detached house dwellers.³⁰¹

Housing Satisfaction by Housing Types

The *Housing Status Survey of 2010* by MLTM conducted an investigation into satisfaction with different housing types. The researcher has re-categorised the results for simplification in Table 9.4.³⁰² The survey was performed with a total 15 items on the quality of life provided by different housing circumstances.

³⁰⁰ The detailed statistics are presented in the Appendix 3-3.

³⁰¹ The detailed statistics are presented in the Appendix 3-4.

³⁰² The table is presented as a simplified form of the contingency table, which can be used for a cross-tabulation analysis by a 'chi-square (χ^2) test' for analysing the association between two nominal variables.

Table 9.4 Housing Satisfaction by Housing Types

Data source: *Housing Status Survey in 2010* (MLTM, 2011b)

Unit: Households

Housing Types	(total)	Satisfaction (percentage)	Dissatisfaction (percentage)	Satisfaction (percentage)	Dissatisfaction (percentage)	Satisfaction (percentage)	Dissatisfaction (percentage)
		Accessibility to medical facilities		Accessibility to public organisations		Accessibility to cultural facilities	
House	7,004,422	4,386,502	2,617,511	4,804,587	2,199,835	3,572,002	3,432,420
		62.6%	37.4%	68.6%	31.4%	51.0%	49.0%
Apartment	8,162,588	5,885,354	2,274,292	6,207,482	1,954,210	5,398,385	2,762,104
		72.1%	27.9%	76.0%	23.9%	66.1%	33.8%
		Accessibility to public transport		Convenience of parking facilities		The burden of commuting time	
House	7,004,422	4,236,493	2,767,520	3,736,378	3,268,043	4,034,173	1,351,037
		60.5%	39.5%	53.3%	46.7%	57.6%	19.3%
Apartment	8,162,588	5,438,614	2,721,500	5,600,807	2,559,307	5,793,928	1,689,330
		66.6%	33.3%	68.6%	31.4%	71.0%	20.7%
		Satisfaction from the educational environment		Satisfaction from security		Noise in the area	
House	7,004,422	4,631,226	2,372,787	4,454,615	2,549,808	4,381,438	2,622,575
		66.1%	33.9%	63.6%	36.4%	62.6%	37.4%
Apartment	8,162,588	6,110,401	2,048,598	6,034,871	2,127,717	4,686,936	3,472,710
		74.9%	25.1%	73.9%	26.1%	57.4%	42.5%
		Cleanliness in the area		Air pollution in the area		A sense of fellowship with neighbours	
House	7,004,422	4,818,155	2,185,362	5,230,977	1,773,445	6,076,747	927,675
		68.8%	31.2%	74.7%	25.3%	86.8%	13.2%
Apartment	8,162,588	6,784,042	1,374,595	6,111,640	2,050,459	7,163,539	998,153
		83.1%	16.8%	74.9%	25.1%	87.8%	12.2%
		Satisfaction from the surrounding natural area		Overall satisfaction from the housing environment		Overall satisfaction from dwelling (housing type)	
House	7,004,422	5,468,120	1,535,893	5,429,416	1,575,006	5,306,601	1,697,412
		78.1%	21.9%	77.5%	22.5%	75.8%	24.2%
Apartment	8,162,588	6,649,093	1,509,543	7,037,971	1,122,519	7,012,497	1,146,140
		81.5%	18.5%	86.2%	13.8%	85.9%	14.0%

Note: The 33,000 samples collected were transformed to a complete enumeration form (representing the numbers of whole households).

The result shows that apartments were preferred to detached houses for almost all the items, from 'accessibility to public transport' even to 'satisfaction from the surrounding

natural area'. In the only item of 'noise in the area', apartments were less favoured. The answers for this item might be affected by their locations, for example, closeness to urban streets.³⁰³ Table 9.5 shows changes with time in the housing satisfaction. Though a clear longitudinal trend is not identified, it is confirmed that apartments have been preferred to houses.³⁰⁴

Table 9.5 Changes in Housing Satisfaction by Housing Types

Data source: *Housing Status Survey in 2006, 2008, and 2010* (MLTM, 2007; 2009c; 2011b)

Unit: Satisfaction percentage

year	2006	2008	2010	2006	2008	2010	2006	2008	2010
	Accessibility to medical facilities			Accessibility to public organisations			Accessibility to cultural facilities		
House	59.7%	63.4%	62.6%	63.0%	67.8%	68.6%	38.8%	54.2%	51.0%
Apartment	68.5%	75.2%	72.1%	72.0%	78.5%	76.0%	60.8%	72.7%	66.1%
	Accessibility to public transport			Convenience of parking facilities			The burden of commuting time		
House	62.8%	64.7%	60.5%	54.5%	58.3%	53.3%	73.3%	78.2%	57.6%
Apartment	65.0%	71.1%	66.6%	79.0%	76.5%	68.6%	79.7%	82.7%	71.0%
	Satisfaction from the educational environment			Satisfaction from security			Noise in the area		
House	56.8%	67.7%	66.1%	70.0%	70.9%	63.6%	-	68.5%	62.6%
Apartment	71.2%	82.0%	74.9%	81.8%	81.1%	73.9%	-	70.8%	57.4%
	Cleanliness in the area			Air pollution in the area			A sense of fellowship with neighbours		
House	76.1%	75.2%	68.8%	-	78.1%	74.7%	82.4%	82.2%	86.8%
Apartment	89.5%	89.3%	83.1%	-	81.7%	74.9%	82.5%	84.5%	87.8%
	Satisfaction from the surrounding natural area			Overall satisfaction from the housing environment			Overall satisfaction from dwelling (housing type)		
House	-	65.8%	78.1%	74.9%	67.6%	77.5%	-	-	75.8%
Apartment	-	81.4%	81.5%	86.6%	82.4%	86.2%	-	-	85.9%

Note: 1) some items had not been questioned in the past surveys (no data).
2) These surveys have been performed biennially since 2006.

³⁰³ In addition, there are two items in which the differences were minor, which implies they were insignificant. However, of them, 'air pollutions in the area' may be an appraisal made on a regional scale rather than one caused by a housing type. Also, in the case of 'a sense of fellowship with neighbours', if the question had been changed to a more value-neutral form, such as 'satisfaction from neighbourhood relations', the answer might have been more significantly different.

³⁰⁴ Among these items (housing circumstances), Korean were the most dissatisfied with 'accessibility to cultural facilities', particularly in the case of houses, while they were the most satisfied in relation to 'a sense of fellowship with neighbours'.

Housing Size per Capita by Housing Types, and Overcrowding

Housing size per capita was similar between the different housing types: an average of 23.8 m² for detached houses and 22.8 m² for apartments in 2005 (MLTM, 2010c). Housing size per capita for the population as a whole had more than doubled in two decades: from an average of 11.2 m² in 1985 to 22.8 m² in 2005 (ibid). This is very much due to the spread of apartments during the same period. Generally, overcrowding is related to housing size per capita rather than density. This change shows that apartment living is not necessarily connected to overcrowding, and, rather, it has contributed to solving overcrowding in Korean cities.

Home Ownership

The percentage of owner-occupiers in apartments, 62.2%, was higher than that for detached houses, 46.7%.³⁰⁵ As community involvement is greater among owner-occupiers than tenants, it is assumed that community involvement is more active in apartment areas than in detached house areas, as confirmed from a number of residents interviewed.

As for attitudes to owner-occupation, 83.6% of all respondents replied that owner-occupation would be 'necessary' for them: as reasons 77.9% gave 'stability in housing', and 5.3% gave 'property price increases'.³⁰⁶ Although this suggests that 'property price increases' were less important, a careful interpretation is required, because 'instability

³⁰⁵ The detailed statistics are presented in the Appendix 3-5.

³⁰⁶ The detailed statistics are presented in the Appendix 3-6.

in housing' is significantly generated by the lack of home ownership in the Korean context, as found in the interview responses: in the case of instability, a tenant cannot keep up with the rise in rent or the deposit needed for renting.

9.6.2 Social Life in Apartment Districts

Quality of life in housing includes diverse elements such as: convenience, including accessibility to facilities and services; social contacts in a neighborhood; and amenity. People decide on their housing (type and location), by considering the elements of quality of life provided by dwellings in combination with the constraints they have. This means that the majority of Koreans have already decided on apartments as the best choice in their circumstances. This section looks into the social aspects of apartment living. After the discussion, another meaningful category for explaining Korean housing lives, that of 'women in apartments', will be touched on. And in the next sub-section, the amenity aspect of apartments will be addressed to a limited extent, in terms of high-rise features and open spaces. The analyses will contribute to anticipating the acceptability of current housing patterns for the future.

The master commissioner of the Se-jong project pointed out that density and housing type are cultural phenomena (interview in May 2012).³⁰⁷ Jun (2009) explained the preferences of the current population for apartment living by the term, 'an easy open-and-shut lifestyle'. Many residents interviewed agreed that an apartment was advantageous for social contacts with neighbours, but did not hinder privacy, and this

³⁰⁷ In this regard, the interviewee mentioned, 'In the Korean context, if car noises are heard, the dwelling is appreciated, whilst, if birdsong is heard, the dwelling is depreciated'.

positive perception is seen as their liking for 'an easy open-and-shut lifestyle'. The above interviewee pointed out that people have an ambivalent attitude, hiding behind anonymity whilst at the same time enjoying getting on with their neighbours. To sum up, people have these twofold desires, and apartment living fulfills these in the Korean socio-cultural context.

In addition, many residents agreed that apartments were advantageous for building a neighborhood community with active social contacts. A resident stated that, in an apartment complex or district where many people were living together in a small area, common concerns were easily discussed between residents and could be turned into community issues (November 2012).

Social Differentiation in Apartment Living

Consumption behaviour in housing needs to be examined more deeply in search for social implications and anticipating future behaviours. An apartment is a comparatively standardised housing type, but even in apartments there is social differentiation. Weber (1978) pointed out that social discrimination also appears in consumption, and Saunders (1981: 110-148) argued that the world is composed of diverse 'housing classes' and these reveal people's different economic interests and reinforce differences in social status. Though there exists in Korea a general preference for apartments that is beyond class and occupation, Jun (2009) identified a social distinction in luxury apartment complexes in urban centres owned by high income groups whose behaviour

demonstrated ‘conspicuous consumption’.³⁰⁸ The conspicuous consumption in apartments appears in its location (proximity to urban centres), large size, and super high-rise structure (ibid). Such closed communities composed of luxury apartments are also observed in Yong-in.

However, such consumption behavior is also changing. Jun anticipated in 2009 that Koreans’ pursuit of larger apartments would continue until more than 60 per cent of people lived in apartments of 40 pyeongs (132 m²) and over,³⁰⁹ but the preferences of people for bigger sizes have been dramatically reversed during the recession in real estate markets and against the trend towards family divisions.³¹⁰ This is another example that shows that anticipating future demands in Korea, which is experiencing rapid socio-economic changes, is difficult, and, therefore, a careful analysis is important for policy prescriptions. Another present trend – that goes towards super high-rise apartments – will be analysed in the next sub-section.

Apartments and Women

‘Women in apartments’ was suggested as a meaningful category by a number of interviewees for explaining housing choice and drawing a social implication. Apartment

³⁰⁸ The term ‘conspicuous consumption’ was used by Thorstein Veblen (1899) to describe the consumption behaviour of the new rich social class buying luxury goods to display economic power in the late 19th century.

³⁰⁹ In general, ‘apartments of 40-pyeongs in favourable locations’ are perceived as a standard for the middle class (income group) in Korea.

³¹⁰ According to a press report (Choi, 2011), a ‘price reversal’, which meant ‘prices per pyeong’ (3.3 m²) of small-sized apartments were greater than those of larger-sized apartments, started to appear in 2010. In the case of rental housing markets (with a rental deposit system rather than monthly rents), more extraordinary cases were observed: in some cases, rental deposits for small-sized apartments were greater than ones for larger-sized apartments in the same place. The press stated that people did not want to live in unnecessarily large apartments anymore which require the larger maintenance fees.

lives in Korea needs to be examined from the perspective of power relations in families. Interestingly, the male participants interviewed all stated that affairs related to their housing were determined by their wives (interview in May and November 2012). A professor and member of the planning committee for Se-jong explained it as below (May 2012):

The reason why the apartment is favoured by Koreans is because their housing is decided by their wives. As husbands are dominated by their work, many wives assume most of the responsibility for domestic work. Thus, women pursue convenience within their dwellings rather than amenity around their dwellings.³¹¹

As the construction of apartments has spread in Korea, the arrangement of the interior space of apartments has followed the more equal relations developing between family members, for example, reducing the space for adult men (Jun, 2009). Women's position is reflected in the fact that community activities in apartment complexes are led by women (housewives). As observed in the two rounds of fieldwork, 'women's societies' have dominated official 'residents' representative committees' in many cases, and semi-governmental 'residents' associations' have also been operated exclusively by housewives, though the roles of adult men (husbands) are increasing in certain cases given recent changes, such as increasing online interactions.

9.6.3 Super High-rise Apartments and Open Space

One of the significant trends in dwelling construction in Korea is that apartments are rising higher and higher. Many academic and professional interviewees were concerned

³¹¹ In this regard, an MLTM official in charge of housing policy mentioned that looking into housing market as an asset market is about a psychological phenomenon, and thus it is crucial for market experts to grasp the psychology of housewives, particularly in key housing market areas (May 2012).

about the sustainability of this. This sub-section discusses the issues of super high-rise apartments and open space in relation to sustainability and compactness.

The Trend towards Super High-rise Apartments

By 2011, 44.6% of Korean apartment dwellers lived in apartment buildings with 16 storeys or more, and 20.2% in buildings of 21 storeys or more (MLTM, 2012).³¹² Among 23 buildings in four apartment complexes, which had been completed on the Gwang-gyo site by 2012, 20 buildings were 18 storeys high or more, and most of these were between 25 and 30 storeys. This high percentage of super high-rise apartments is similar to those in other recent new settlement sites, including Se-jong.³¹³ The researcher collected, from MLTM data (2013a),³¹⁴ all the prices of apartments in Gwang-gyo sites transacted for a year in 2012, and these revealed a clear preference for high-rise. In a total of 20 transactions, without exception, the higher the dwellings were, the higher the prices were. In the past, ‘royal floors’, which is the term given to the most sought-after apartment floors, were the middle and slightly higher floors; but now this term designates the highest floors (a real estate broker, May 2012).

³¹² Though a general standard does not exist for the categorization of apartment buildings by storeys, many municipal governments apply the following standard to their Residential Zones.

Table: A categorization of apartment buildings by storeys

Storeys	4 and under	5-7	8-12	13-18	19 and over
The Classification of multi-unit dwellings	Terraced and multiplex dwellings	Low-rise apartment building	Mid-rise apartment building	High-rise apartment building	Super high-rise apartment building

³¹³ The apartments which are highly favoured by high income groups are commonly more than 50-60 stories (mixed with stores on the lower floors).

³¹⁴ The MLTM website, *Real Estate Real Transaction Prices*, provides all the prices for dwellings transacted in the whole country, along with details of the properties, such as size of dwelling and number of storeys in the case of apartments.

However, many professionals interviewed raised the question of whether the current trend reflects the real desires of residents in terms of housing lifestyle. A senior planner pointed out that open space bordered by super high-rise buildings is difficult to turn into a vibrant space (to create social contacts across), because it is surrounded and overshadowed by the super high-rise buildings, and he called it an illusion based on the Radiant City of Le Corbusier (director, GRI, May 2012). He added that the current super high-rise trend may be a choice forced by high-rise competition rather than real preferences. Two KLHC staff members suggested from their marketing experiences that the real maximum height preferred by residents would be 10-15 storeys (November 2012). Jun (2009) perceived it as a case of conspicuous consumption by a social group that looks on appearance and view (from inside the apartment) as important.

Whether the taste for high rise apartments is a failure of market coordination or the result of distorted consumption, it also runs a risk from changes in trends, as seen in the case of the sudden fall in popularity of large-sized apartments. Moreover, super high-rise buildings are not sustainable for the following reasons: high construction and maintenance costs, disadvantages in visibility and ventilation, and difficulties in the case of redevelopment on account of the unavailability of additional floor space. The experts interviewed were unanimous in mentioning that high density does not necessarily mean high rise (May 2012).³¹⁵

³¹⁵ In respect to this, they claimed that regulations on the pitch of buildings and stereotyped designs for sunshine and direction of buildings need to be liberalised for a compact development design (May 2012).

Open Space, Health, and the Use Patterns of Open Space

The importance of open and green space in a residential area for the health and leisure activities of residents is being increasingly stressed in Korea. The aspiration for more open and green spaces within cities reflects a consciousness of current environmental deterioration and the way it threatens residents in existing cities. Environmental conditions such as air pollution in the Capital region make participants wonder about the appropriateness of densification in the compact city (interviews with two KRIHS researchers, May 2012). One of the solutions to the problem is high-density through high-rise apartments, which allows more open space within the development sites, though the majority of participants expressed concern in the case of excessive (super) high-rise building. And it is considered that open space and amenity are normal goods for income level, and demands for open space have been growing.³¹⁶

A planning professor explained the choice of Korean residents, stating that they have chosen to live in apartments constructed by compact developments for convenience, and for the ease with which they can go out to enjoy relaxation and repose which does not involve private gardens (interview in May 2012). They go out to gardens in their apartment complexes,³¹⁷ parks in their districts, and natural spaces outside their districts (development sites). A resident stated that he preferred a garden in an apartment complex to a private garden in a house, because the former was managed by better landscape gardening and was large enough for children to play on (November, 2012).

³¹⁶ However, continuously increasing open space in development sites is contrary to the ideal of the compact city, which pursues the minimization of environmental damage on the surrounding natural area.

³¹⁷ In general, a garden in an apartment complex is not included in open space in urban planning. The quantitative analysis for this thesis also excluded it from 'land for open space'.

Also, residents make use of gardens in neighboring complexes for a walk. Interviewees appreciated natural open space such as mountainous and riverside areas outside their districts as well as parks on sites. Many of them were using the former more frequently than the latter, and they regarded the former as important in locating their housing (May and November 2012). These perceptions and use patterns of open space imply that gardens in apartment complexes and green space outside development sites should be considered as being important, as well as parks within the sites, even though they are not included in the land use plans for the sites.

From the analysis of this section, it was found that apartments, in combination with more open space and adequate neighborhood relations, have already been accepted to Korean as a dominant housing type, but a recent trend towards higher apartments was concerned about as being unsustainable by many participants interviewed.

9.7 Implications and Policy Suggestions

This section discusses the implications of the analysis so far and suggests relevant policy alternatives for the final, sixth, research question:

Q6. What implications can be drawn from the case studies for the future development of South Korean cities?

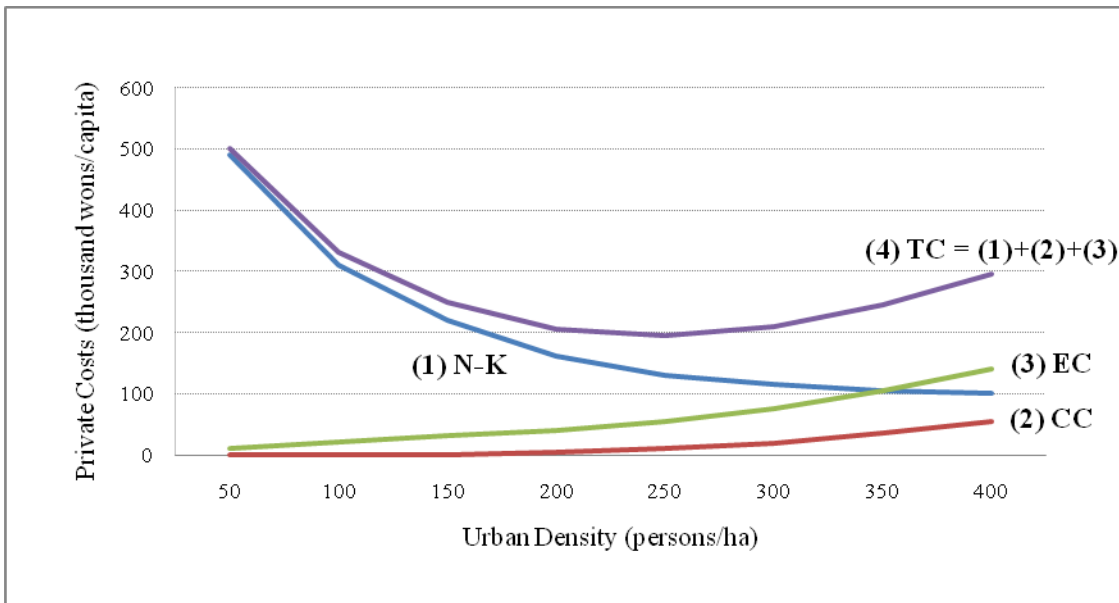
This section will draw up a compact city approach which fits the Korean context, and, through the comparison between the two different approaches employed in the two case studies, will suggest strategies required in promoting a compact city approach.

9.7.1 A Compact City Approach in the Korean Context

The compact city has been promoted in the sphere of Korean urban development to a certain degree, although the exact term has not been used in practice. However, the circumstances around it were quite different from the ones in Western countries. This sub-section analyses the advantageous and disadvantageous factors of the compact city for Korea, and suggests a compact city model suitable for the Korean context drawing on the appraisal by the thesis of current large-scale development patterns.

Figure 9.7 illustrates the theoretical relationships between relevant variables which have been identified from the case study analysis. The Figure is a new version of the graph of the compact city modified in the Korean context. (1) The N-K (Newman and Kenworthy) curve indicates 'private transport energy use costs per capita' by 'urban densities', which is the same as in Figure 3.1 and has been the strongest evidence for the compact city. This curve is an empirical result based on data from cities across the world, while other curves are based on virtual data explaining theoretical relationships. (2) The CC curve represents an increase in transport costs per capita due to congestion, such as time costs. The curve shows the effects of congestions start to occur once a density of 150 persons per hectare is reached. (3) The EC curve stands for environmental costs by overcrowding. Overcrowding and congestion exceeding an environmental capacity degrade the urban environment and damage the health of residents by concentrating pollutants such as car emissions in a limited area. Considering the size of the city, the EC curve may shift upward, as in the case of the Capital region of Korea, which, as a megacity, is environmentally more vulnerable.

Figure 9.7 A Conceptual Graph for the Compact City in the Korean Context



- (1) N-K (Newman and Kenworthy curve): private transport energy costs
 (2) CC (Congestion Cost curve): additional transport costs from congestion, such as time costs
 (3) EC (Environmental Cost curve): costs due to environmental degradation, including health costs
 (4) TC (Total Cost curve) = (1) + (2) + (3)
 Note: numerical data presented in the graph are virtual data created to illustrate the relationships.

(4) The TC curve represents the total of the above three costs. With just the N-K curve, it is impossible to find a solution for urban density. However, with the TC curve, it is possible to calculate the level of density needed to minimize total costs.³¹⁸ Nevertheless, this is not sufficient to obtain the optimal solution for density, because the graph considers only economic and environmental costs, not the social perspective. Further, the solution should be acceptable in the political process, feasible for promoting itself, and likely to be selected in the market. When all the conditions are fulfilled, the solution for a sustainable urban form can be delivered.³¹⁹ Below, conditions for actualizing the compact city will be examined.

³¹⁸ It is 250 persons per hectare in the above graph, even though the number is just a hypothetical one.

³¹⁹ Obviously, other elements of the compact city besides density should be considered together to arrive at sustainable urban forms and functions.

The Fulfillment of Conditions for the Compact City

Large-scale urban developments in Korea have been employed, above all, as a response to the shortage of decent housing. Mass provision of dwellings from these developments has caused huge changes in lifestyle across the whole nation over the past few decades. However, surprisingly, the residential densities of the new settlements have been maintained at a similar level to those of existing city areas which had been blamed for the overcrowding. Instead, the high-rise apartments have been enthusiastically embraced by people of every condition, solving the overcrowding by providing a bigger living space per person and more open space.

Current large-scale developments are evolving towards the compact city: they are creating more public-transport-dependent cities with self-sufficient functions, as found in Gwang-gyo and Se-jong NCs, and even in Dong-baek HS, through continuous improvements. These show that large-scale urban developments with high-rise apartments have fulfilled the conditions for the success of the compact city in the Korean context, particularly in terms of feasibility and acceptability for promoting them.

Advantageous Conditions for the Compact City in Korean Urban Development

The key characteristic of Korean urban developments is the mass production of multi-unit dwellings by the large-scale urban clearance method. Many dwellings were constructed following urbanization after the 1960s, and a fair number of them were redeveloped again in about a generation, accompanied by gentrification. In these processes, traditional rural communities have been dissolved and absorbed into new urban communities. Thus, the following are the strengths and opportunity factors of the

compact city: a large amount of physical urban development around existing cities is currently proceeding; and current development methods and housing types (apartments) reflect people’s preferences. Further, the development method of urban clearance facilitates: a mix of dwellings of diverse sizes and rental dwellings in a residential district; and the application of eco-friendly innovative technologies in constructing buildings and designing transport systems on a large scale. Table 9.6 presents the SWOT (strengths, weaknesses, opportunities, and threats) factors for achieving the compact city by integrating findings from the analyses so far.³²⁰

Table 9.6 SWOT Analysis Table: Korean Large-scale Development for the Compact City

<ul style="list-style-type: none"> • Strong preference for high-rise apartments • Little resistance to large-scale urban clearance development method • Advantages in the share of development costs and benefits • General understanding on strict land use regulations 	<ul style="list-style-type: none"> • The destruction of traditional communities and residential areas (perceived as not significant by participants)
Strengths	Weaknesses
<ul style="list-style-type: none"> • Continuous abundant demand for urban development (dwellings) • The development of institutional capacity in urban planning through diverse projects • The reinvention of the merits of the Korean compact city development 	<ul style="list-style-type: none"> • Significant slowdown in economic growth (housing market) and a sudden change in people’s preferences for housing (perceived as not plausible by participants)
Opportunities	Threats

Dependence on a market-oriented system and its limitations

The critical reason why Korean large-scale developments are feasible is because they mainly depend on a market-oriented system to attract diverse participants by economic

³²⁰ The SWOT analysis is a strategic management method which considers the factors of organization and environment under the four headings. The SWOT strategy can be summarized as maximizing strengths and opportunities, and minimizing weaknesses and threats (Pickton and Wright, 1998: 102).

incentives. It was found in the above analysis that the majority of participants have made economic gains from development projects, though there is concern about a possible failure of market coordination, for example, a series of bubbles in asset markets. This type of development can be operated smoothly in the up phase of real estate markets, that is, when the economy is fundamentally growing. Another merit of the market-oriented approach is that private developers (construction companies) are specialists and do their best to anticipate the future demands of residents in pursuit of their profits.

However, interviewees did not consider that the selections of the market were always correct: for example, they were concerned about super high-rise dwellings and monotonous architectural compositions in the new settlements. Therefore, it was thought necessary to involve diverse participants in the planning process, in order to consider more carefully the preferences and wellbeing of future generations. Many participants suggested that green space in urban areas should be more extensive, and, at the same time, that surrounding non-urban areas should be strictly protected from sprawl. They took a serious view of the health of urban dwellers and their need for leisure activities, criticizing current environmental degradation.

On the other hand, it may not be possible for market-dependant development to be used as fully in the future as it is currently, due to a slowdown in growth. In addition, from a social perspective, it is argued that direct policy instruments such as housing welfare services should be used more. The strategies for promoting the compact city in Korea will be detailed in the last sub-section.

The Korean compact city model should involve a process to create resilient settlements for future change. Though future change is difficult to anticipate, and taking it into serious consideration is beyond the scope of the research, some future challenges have already been addressed in terms of housing types and land use in the previous section. The following paragraphs will try to distinguish comparatively solid cultural characteristics from changeable elements, being based on the results of the analysis so far. From the analysis, a compact city model with modified standards to fit for Korean urban situations is presented at the end of the sub-section.

Future Changes around Current Development Patterns

Academic interviewees were concerned that changes in demand for an urban form and housing type should be carefully anticipated, because an urban form cannot be readjusted without huge economic and environmental costs after it has been created. Otherwise, slum areas might be created, with significant social costs for a city, for example, if super high-rise apartment districts were abandoned by future residents. Therefore, new settlements should be carefully planned. Recently, the creation of large-scale projects in Korea has slowed down, due to the recession in real estate markets. The rate of population growth has slowed, from an annual 1.0% (UK 0.3, US 1.1) for 1990-95 to 0.5% (UK 0.6, US 0.9) for 2005-2010, and the rate of population growth in the Capital region has also slowed (NSA, 2012b).³²¹ However, many professional experts and senior government officials argued that large-scale developments would

³²¹ The NSA calculated that population increases in the Capital region had slowed down significantly in recent years, although the percentage of the population living in the Capital region (48.2% in 2005) would pass the halfway mark for the total national population by 2016 (NSA, 2012c). NSA attributed the slowdown in the concentration of population in the Capital region to balanced regional development policies (including the Se-jong project) (ibid).

continue to provide decent dwellings in quantity, with better residential circumstances, because there are still not enough of these, and the prices of dwellings are still high, as shown by statistics in the above sections, and demands for redevelopment are also high.³²²

Many participants mentioned that the demands of people for housing would change as their income levels increased, for example, in terms of amenity and aesthetic aspects. However, they did not apply this opinion to housing types, because they believed the current preference for apartments had taken root in Korea. This contrasted with many reports from the 1990s, such as a KLC report (2000), which repeatedly predicted that people's enthusiasm for apartments would decrease and the popularity of houses would gradually increase, as has been experienced in many Western countries and Japan. However, such a trend reversal has not occurred in Korea yet. Rather, in the case studies, the perceptions of participants showed that the merits of the apartment were seen as matching the principles of sustainability to a considerable extent. In addition, it was found that approbation for the large-scale urban clearance method was solid in general, and that residents tended to prefer larger projects.³²³

To sum up, the preferences for apartment complexes with multi-unit dwellings, and for large-scale development methods, are relatively solid, even though pursuing convenience and profit from living there would be mitigated by income growth and social stabilization. These conditions will mean the compact city approach in Korea is

³²² Jang (2010) claimed as an important lesson from his review of 30 years of the housing market that housing should be provided continuously, even when the housing market was in recession.

³²³ There have certainly been many cases of intense resistance to destructive developments, in order to protect traditional villages, but the details are beyond the scope of the research, which concentrates on the general perceptions of participants.

still feasible and acceptable in the future. At the same time, some elements will change: for example, residents will not put up with environmental degradation anymore.³²⁴ Concerns for governance and participation also will increase. Table 9.7 summarises the future changes analysed so far. ‘Solid features’ are those where no changes or only slight changes are anticipated over the next ten years.³²⁵

Table 9.7 Summary of Anticipated Changes in the Future

Classification	Anticipated changes	Anticipated resulting changes	Reversal factors	Solid features
Changes in the urban environment	Slowdown in (urban) population growth (urbanization)	Slowdown in the real estate market	Shortage of decent and affordable dwellings	Supply of new dwellings will continue, but at a slightly decreased rate Popularity of convenient high-rise apartment complexes Usefulness of large-scale development method
	Slowdown in population concentration in Capital region, and slowdown in residential mobility			
	Fragmentation (increases) in households	Demand for small-sized dwelling near workplaces		
Changes in aspirations	Increases in concern of residents about health, amenity, leisure activities, aesthetic landscaping, and historical architecture	Demand for expansion of open and green space	Demand for conservation of natural environment	
		Decline in super high-rise apartments, and demand for diversification of housing types		
	Increases in desire and demand for resident participation and governance	Resistance to large-scale urban clearance	Need for cost-saving development	

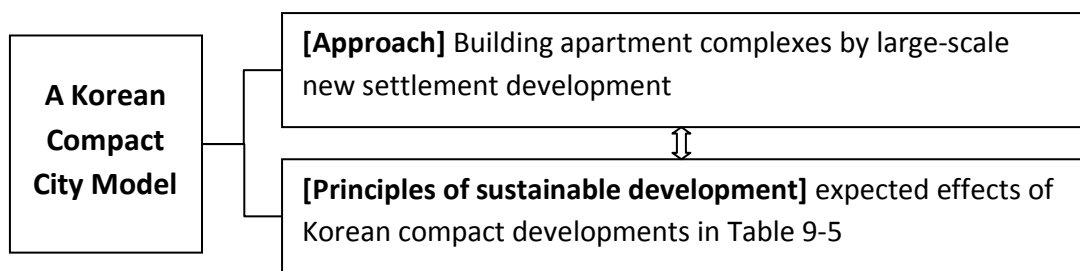
³²⁴ This is partly because it also affects property prices, as confirmed in the Dong-baek district case.

³²⁵ A slight decrease in the supply of new dwellings in the ‘solid features’ accords with the MLTM’s long-term housing plan (MLTM, 2004), but it depends on whether the real estate market sustains demand, in other words, whether this market can continue to be sufficiently viable to utilise the large-scale development method, even though the method itself is useful.

A Compact City Model for Korea

One of the important conclusions of the thesis is that an apartment-oriented lifestyle in Korea has contributed to delivering similar effects to those intended by the compact city. As new settlements in Korea have been constructed away from existing large cities, they are different from the sprawl observed in some Western suburbs, in that they are highly compact or, at least, highly densified.

On the other hand, the standards (sub-principles) of sustainable development which have been argued in disputes about the compact city and suggested in the Western context should be reconsidered from the Korean context. For example, ‘accessibility of facilities’ is strongly emphasized in Korea, where residents prioritise convenience in living; while ‘sustainable communities’ are not perceived as one of the crucial requirements for sustainable development when considered against the desire for high mobility.



From the analysis so far, a Korean model for the compact city is suggested which encompasses the approach to, and principles of, sustainable development as applied in Korean urban developments. The ‘approach’ is related to the feasibility and acceptability of compact developments, while the ‘principles’ are about the sustainable

goals which should be achieved by the developments. The compact development approach of large-scale development is not innately desirable, but it is an instrument which is available in the Korean context for sustainable urban development. In addition, the development methods employed in the two case-study cities can be divided into two different approaches: incremental development, including 27 large-scale projects, in Yong-in; and a single new city project in Se-jong. This will be compared in the next section.

Table 9.8 summarises the expected effects of the Korean compact city approach. These are the expected benefits of the successful promotion of large-scale new settlement developments. The first column shows the principles of sustainable development which were reviewed in Chapter 2, and the second column summarises the theoretical and empirical benefits argued for the compact city, mainly in the context of Western countries, which were reviewed in Chapter 3. And, the last column shows the expected effects of Korean compact urban development. These are benefits that were observed in both case studies. Also, this column reflects the elements of the principles of sustainable development which were regarded (or perceived to be regarded) as important in current Korean urban development by participants. Thus, these are ‘applied standards’ for the principles of sustainable development. Though the contexts are different, the basic pattern in Western arguments created by the compact city and its expected effects is also found in the Korean case.³²⁶

³²⁶ The analysis method employed in Table 9.7 is a type of ‘pattern matching’ for case studies (Trochim, 1989 in Yin, 2009).

Table 9.8 Expected Effects of the Korean Compact City Development Model

Principles of Sustainable Development	Benefits of the Compact City	Expected Effects of the Korean Compact City Development Model
Conservation of the environment	Low energy consumption and fuel emissions through the reduction of car travel and promotion of public transport	The same effects
	The conservation of greenfield land	Similar effects through strict regulations on the use of agricultural and forest land
Sustainable economic development	The efficient use of infrastructure and land; low cost of living	The same effects
	The revitalisation of urban centres; enhanced economic activities	The competitiveness of new cities; maintenance of the vitality of existing urban centres (many jobs remain there); and, further, economic development in developing countries and growth of middle class
Enhancement of social equity	Accessibility of local services; a feeling of safety	The same effects
		The improvement of housing (welfare) for working class as a main policy objective of large-scale development projects; additionally, a possibility of pursuing greater social mix
Improvement of the quality of life	Positive changes to individual lifestyles, such as more exercise	The same effect: additionally, by relieving overcrowding and congestion in existing cities, the improvement of amenity and health, for instance, through the enlargement of open space
Sustainable community and participatory democracy	More social interaction	The same effect: through individual choices of the types of interaction in harmony with privacy
		As for sustainable community, large-scale development destroys traditional villages, but the context is quite different. Some interviewees appreciated community activities in new settlements more highly than ones in traditional villages for the above reason (individual choice of the types of social interaction).
		As for participatory democracy, some interviewees agreed that a compact urban form (apartment) had more positive effects on active community involvement.

Another reason why the expected effects of compact development are the principles of sustainable development (which should be fulfilled for the success of the compact city) is because the compact city approach cannot be accepted by participants if the principles (expected effects) are not promised: in other words, it is because these are the principles of sustainability which were perceived as important by the Korean participants. Thus, this is a model of Korean compact city development, and this will be complemented in the following sections by the strategies used to promote it.

The above expected benefits can be delivered when additional measures and efforts are combined with the large-scale new developments: for example, redevelopments in urban centres (an original suggestion for the compact city); a governance system promoting the projects; and the creation of a new community culture. These will be considered below with regard to the strategies for promoting sustainable compact development.

9.7.2 Comparison of Two Different Approaches Employed in the Case-study Cities

In the previous sub-section, the common features of large-scale urban developments in the two case-study cities were examined. This section will compare the two development approaches in detail to draw out the implications for establishing promotion strategies, which will be suggested in the next sub-section. Table 9.9 presents a comparison between the Yong-in and Se-jong urban development approaches, based on the findings of the case studies and the analysis undertaken so far, by four comparison categories: the background and aims of the developments; development methods; appraisal of sustainability; and applicability. The first and last categories are

about the question: In what circumstances can the approach be applied? The second and third categories are related to the question: Which one is preferred (more desirable)?

Table 9.9 Comparative Table of the Two Case-study Developments

Comparison Categories	Comparison Items	Yong-in Case	Se-jong Case	Preferability
Background and Aims of Developments (In what circumstances can it be applied?)	Background	Influx of population and disorderly development in 1990s	Concentration of population and industry in Capital region, and need for national balanced development	-
	Motivator	Power (trend) of housing market	Government decision (will)	-
	Location and Effects	Capital region; urban spread in the region, and continuous accumulation of urban functions in region	Non-capital region; decentralization of national functions into the region, and formation of an innovative urban cluster	-
	Direct Objectives	Mass provision of dwellings	Construction of a model multi-functional new city	-
	Similar Projects	Many HSD and NCD projects, and other private projects in the Capital region	Non-capital Innovative Cities	-
Development Methods (Which one is preferred?)	Development Periods	Incremental and sequential developments after 1990s, but rapid promotion of individual projects	2006-2030; completion of first stage of First Village in Dec. 2011; and installation of central government organizations in Dec. 2012	Se-jong
	Public or private development	Many public and private projects	Public development (direct intervention of state)	Se-jong
	Number of Projects	Large number of projects including 27 large-scale projects (without master plan in early stage)	Single project	Se-jong
	Regional Considerations	Shortage of self-sufficiency (dependant on Seoul-Bundang line)	Concerns about hollowing-out of neighboring cites	Mixed
	Method of Securing Land	Expropriation, re-plotting, and purchasing on the market	Expropriation	Yong-in
	Project Management	Management mainly by national public corporations in case of HSDs	Additional establishment of a national agency; and promotion over comparatively ample time	Se-jong

Appraisal of Sustainability (Which one is preferred?)	Compactness	Compact urban form; but mixed appraisal on public transport; and negative appraisal on self-sufficiency	Compact urban form; huge open space in center of site; high dependency on public transport; and extraordinary efforts for self-sufficiency	Se-jong
	The Environment	Environmental degradation in Capital region	Environmental conservation through high rate of green spaces and public transport	Se-jong
	Economy	Market-oriented approach and many privately initiated developments; but additional public burden for curing disorderly development	Also market-oriented approach; but special input from national budget	Se-jong
	Social Equity	General considerations of housing for low income groups	Special consideration for housing for low income groups	Se-jong
	Quality of Life	Inconvenience from insufficient facilities (especially in early stages) and continuous construction work	Convenience of self-sufficient urban functions; but shortage of facilities in non-Capital region	Se-jong
	Governance	Gradual improvement in governance in promoting developments	Extensive participation of experts and residents in planning issues	Se-jong
	Community Building	Active civil movements by interest groups	Autonomous activities for building new communities; and support by a planning system	Se-jong
Applicability (In what situations can it be applied?)	Feasibility	An advantage from utilizing various-scale development methods	Too large scale to apply to other areas	Yong-in
	Market Acceptability	Promotion of projects depends mainly on power (trend) of real estate markets	Residents prefer larger-scale development; but demand for dwellings is not so large in non-Capital region (weak market power)	Yong-in
	Political Acceptability	Relatively easily accepted (Development can bring profits for many participants) except environmental groups	Difficulty in consensus-building around political issues such as concentration of resources on a super large-scale project	Yong-in

The Yong-in development was carried out by many public and private projects focusing on the mass provision of dwellings in the Capital region after the mid-1990s, while the Se-jong development has been promoted by a single national project emphasizing multifunctionality (self-sufficiency) in a non-Capital region since the mid-2000s. The Yong-in development was implemented passively, to cope with a shortage of housing for

people flooding into the area; whilst the Se-jong development was planned to play a leading role in balanced regional development and the provision of innovative regional clusters.

Although the judgment as to preferability (desirability or strength) by items cannot be objectively confirmed, simplification is given in the last column of Table 9.8 by integrating findings from the analyses so far. The results show that the Se-jong approach is superior on most items in the categories of ‘development methods’ and ‘appraisal of sustainability’ except for two items, while the Yong-in approach is rated more highly in relation to all the items in the category of ‘applicability’.

The two items in the category of ‘development methods’ on which the Se-jong approach is not preferred to the Yong-in approach, are ‘regional considerations’ and ‘method of securing land’. The appraisal of the two items is complex. As concerns ‘regional considerations’, the Se-jong development is negatively appraised in that it could cause the hollowing-out of neighbouring cities; but, on the other hand, there is also an affirmative opportunity: such a large and innovative new city could stimulate neighbouring areas and they might prosper in a win-win relationship. As for the ‘method of securing land’, the Yong-in development is more highly appreciated simply because it was able to use diverse methods for securing land. However, this appraisal is related to other essential appraisals, particularly to the items of ‘economy’ and ‘social equity’ as two sides of a coin, because private methods for securing land, such as re-plotting and purchasing in the market by negotiation, allow for the privatization of development gains.³²⁷

³²⁷ Development gains are generated intrinsically from land rather than apartments (buildings on the land).

Overall Appraisal and Discussion for Future Development

The verdict as to Yong-in's approach being generally inferior is partly due to the fact that the Yong-in development started more than ten years ahead of the Se-jong development, which means comparatively inadequate institutional and technological capacity, and also due to the fact that Yong-in is located in a megacity, the Capital region, and is subject to the economy of Seoul and Bun-dang, which causes a lack of self-sufficiency. In addition, as the performance of the Se-jong project has not yet been fully realised, a considerable portion of the appraisal was based on the visions and expected outcomes for the plans if they were successfully implemented. Nevertheless, the superiority of Se-jong on most items was due substantially to one essential feature: the large size of the project. This, with the single plan involved, made it possible to consider the self-sufficiency of the city comprehensively. However, in the category of 'applicability', it is judged that the Se-jong project would be difficult to apply to other cases in comparison with the Yong-in development, because of its large size and the huge costs required. Though housing consumers prefer larger developments, the Se-jong project was judged to go beyond that level, and to depend on a political decision rather than the power of the market. These properties of the Se-jong project hinder the feasibility and acceptability of its application elsewhere.

Therefore, in conclusion, the Se-jong approach, combined with more careful regional considerations, is substantively more desirable for future urban development; but, considering its feasibility and acceptability, it is anticipated that gradual development which is complemented by a reinforcing master plan and regeneration projects in existing urban areas, like an evolved version of the Yong-in development or a combined

version of the Yong-in and Se-jong developments, will dominate future development in Korea.

9.7.3 The Promotion Strategies of the Compact City

The Korean compact city model has now been presented; but in order to achieve the principles of sustainable development the model has to be strategically implemented, in the Korean urban and institutional context, and in harmony with other policy goals. This sub-section suggests promotion strategies for the compact city based on the case study analysis.

The Combination of Large-scale New Development with Inner-city Redevelopment

One of the findings from the case studies, as a distinctive feature in Korean urban development, is that inner-city redevelopment does not conflict with out-of-city new settlement development. Out-of-city large-scale development by the public sector does not suppress financially the promotion of inner-city redevelopment, because the former does not depend on support from a government budget. Thus, promoting both developments is financially feasible. Rather, from the analysis so far, it is suggested that large-scale new development should be continued, and, at the same time, inner-city redevelopment should be also be promoted.

The majority of professional participants, including public corporation employees, argued that inner-city redevelopment should be increasingly emphasised in future policy, as jobs were still more abundant in urban centres than in out-of-city new settlements in

non-Capital large cities as well as in the Capital area. An MLTM official in charge of housing policy described it as a strong centripetal force toward urban centres accompanied by densification (interview in November 2012). Thus, many redevelopment projects in old urban centres are focusing on the physical improvement of poor dwellings, unlike the regeneration projects in Western countries.

A non-Capital area development, as exemplified in the case study of Se-jong

On the other hand, as new settlements with better housing conditions have been built outside existing urban centres, and as people have moved into the new settlements (enduring long commuting distances), the hollowing-out of old urban centres has also increased, particularly in non-Capital small and medium-sized cities.

A critical reason why out-of-city new settlement developments have been actively implemented is because cheaper land which is comparatively free from complicated interests in properties is available.³²⁸ From this, two urban problems have emerged: firstly, lack of self-sufficiency in out-of-city new settlements, and, secondly, the decline of old urban centres accelerated by the creation of adjacent new settlements. As old city centres are vulnerable to neighbouring large-scale new settlements, they need to be protected from new developments, in addition to a need to improve their housing. Therefore, new settlement development, particularly in non-Capital areas, should be combined with inner-city redevelopment.

³²⁸ Cheaper land guarantees participants development gains and makes them participate in development projects. In particular, simplified interest relationships on properties are secured by the urban clearance method under the HSDPA enacted for HSDs in 1980.

This strategy is also called for by the argument for regional growth management. Large-scale new development should consider the situation of existing urban areas. The Se-jong project is a national-level strategy of regional growth management intended to disperse population and urban functions that have been excessively concentrated in the Capital area, under the banner of ‘Symbiosis’. Nevertheless, the Se-jong project has aroused concern that it may aggravate the decline of old urban centres in neighbouring cities. Such projects should be supplemented by careful efforts for redevelopment in affected areas.³²⁹ Inner-city redevelopment in non-Capital areas also contributes to the compact city by suppressing non-essential out-of-city developments.

A Capital area development, as exemplified in the case study of Yong-in

In addition, in the Capital area, new settlements (in Yong-in) outside of the core city (Seoul) have raised concerns with regard to their dependence on the central city, as economic and cultural urban functions are still concentrated in the core. However, as inner-city redevelopments commonly transform houses into apartments, the provision of new dwellings is limited,³³⁰ because redevelopment pursues more pleasant housing conditions through gentrification and alleviating overcrowding rather than more number of dwellings. This partly explains the reason why out-of-city developments are continuously needed for the provision of dwellings. And it also raises a need for policy consideration of low-income groups who cannot resettle in the redeveloped areas, though this need also applies to out-of-city new developments.

³²⁹ When the researcher visited Dae-jeon city, which is the largest city contiguous to Se-jong city, for the second round of fieldwork, on 21th November 2012, the Dae-jeon Development Institute, in collaboration with the Korean Planners’ Association, was conducting a seminar on ‘Smart urban regeneration’. As an urgent task, they were seeking solutions to the problem of regenerating decaying old urban centres.

³³⁰ For example, ‘New Town developments’ as redevelopment projects in Seoul city reduced the number of dwellings (MLTM, 2010c).

The Protection of Agricultural Land and Forest, and a Pleasant Housing Environment

Large-scale out-of-city development has been based on a strict containment policy to protect agricultural land and forest surrounding existing urban areas. This is because the basic motivator of large-scale development is development gains from building new apartment districts and thus transforming cheap agricultural land and forest into urban land. Thus, a strong containment policy was a condition for the success of such development projects. Strict containment has been maintained based on the population's belief in conservation: agricultural land and forest should be preserved and urban land should be used with great economy. The conservation of rural and natural land is one of the important purposes of the compact city. Therefore, it is argued that strict regulations on the use of agricultural land and forest should be adhered to, and, in order to harmonize with conservation needs, large-scale projects should be carefully and selectively promoted.

On the other hand, the majority of participants perceived that Korean cities, including new cities, were excessively dense, threatening the health of residents. Many employees of public corporations, who were the strongest advocates for densification in the planning process for the sake of profitability, are now of the opinion that there should be more green space in the future. A civil activist organizing a struggle for more public facilities on their site agreed that the future direction of development should be directed toward the environment at a regional level, and that this would be more advantageous for property values (interview in November 2012). Residents lay more and more stress on health, leisure activities, and a pleasant environment. Echoing this perception, academic and professional experts took it for granted that new developments would

include more open and green space within the site. If a new settlement does not secure ample open space, it is not sustainable in that it will not be selected by future residents. In addition, in planning the land use of new settlements, it should be considered that residents regard highly and utilize actively the surrounding natural and agricultural land as well as the open space on their site.

The Modification of Market-oriented Schemes into Sustainable Development

The three perspectives on sustainable development are perceived as having conflicted with each other in the past, but it is understood that they will need to be integrated for future development. For example, interviewees perceived that a new settlement combined with the well-conserved environment is more economically valued. The economic principle is important in that, if it is not fulfilled, no matter how desirable the project is, it cannot be realised. Also, it has a thread of connection with the stance of the WCED (1987), who pointed out that poverty is the largest obstacle to sustainable development. A couple of interviewees from market backgrounds even pointed out that the economic motivations driving current development schemes are connected with the vitality of life through self-accomplishment and active social mobility, and, further, the value of social opportunity.

The present large-scale development schemes have developed as a result of market mechanism where all the participants are involved in a project to share the development gains. Through such schemes, the state can provide well-designed new settlements equipped with necessary facilities without incurring a considerable fiscal burden. Ordinary people purchasing new apartments have a chance to build up their assets and

move into the middle class. However, this market-oriented approach is available in a booming period of real estate markets. The overheating of asset markets without sustainable fundamentals may lead to asset bubbles and financial crises. Moreover, large-scale projects alone cannot solve the housing problem of low-income urban dwellers. Therefore, out-of-city development and inner-city redevelopment should be combined with a social housing policy supported by a state budget. ‘Happy apartments’ in the Se-jong project may be an example: the provision of 500 permanent-rental apartments for low-income original residents beside the new central government complex (MACCA, 2012a).

Harmonizing the three perspectives of sustainable development

To conclude, the current approach, with its economic driver, should be balanced with other perspectives of sustainable development, such as more consideration for environmental conservation and housing for low-income groups, and it is heading in this direction, with economy as an instrument and the environment and social wellbeing as purposes. In addition, the compact city strategy affecting urban form should be integrated with other strategies for sustainability, such as a direct energy policy to reduce energy consumption and a welfare policy for the disadvantaged.

Governance and resident participation

Another point to remember in promoting compact development is that the advantages of the current development schemes should not be lost in the search for a new approach. The rapid mass provision of decent dwellings for ordinary people, which has been the policy objective, has been made possible through intensive reviews by diverse

participants and timely decision-making for achieving democratic responsiveness and responsibility. As for governance and resident participation, the Korean urban context, which was suggested by participants as an important consideration, is summarised below:

- The expansion of resident participation is prone to delay the implementation of projects, and such delay may be crucial to the projects, because time costs are significantly high, particularly in a developing country. In rapidly changing circumstances, the delay in decision-making in itself may cause a serious problem. Given this, rapid decision-making and implementation, even if it is somewhat inconsistent with other policies, tends to be preferred to a delay.
- As time is crucial to a project, a delay is apt to be used for strategic behaviours by participants. Participants rarely reveal their real interests. They use strategies to maximise their individual profits and deal with each other on the basis of their own interests.
- This situation may cause an equity problem, because there are two separate groups: those who have sufficient resources and can employ these strategies, and those who do not. A participation method that is not carefully thought out may result in the interests of the former being over accommodated.
- In resident participation, it is difficult to reflect the opinions of non-residents, even though these may be potential future residents. In large-scale new settlement developments, in the initial planning stage, there are no residents decided to live on the site. Urban development that promotes the interests of current non-residents and future generations may be opposed by existing residents who behave strategically according to their own vested interests.

In establishing a new governance system and increasing the participation of residents, it should be kept in mind that building trust as social capital and enhancing institutional

capacity may be more difficult and time-consuming than physical development. Along with the above statements, it should be also be remembered that participatory governance and community involvement is, in itself, another purpose – one from a social perspective – of sustainable development, rather than an instrument.

Managerial Suggestions

Managerial suggestions for sustainable urban development are about administrative measures for public promoters: the government and public organisations. Large-scale developments need to be promoted with ample time and with sufficient professional staff, in order to consider carefully the needs of new residents.³³¹ This should be coordinated with the above demands for rapid development. And the time span of a project needs to be extended until it is necessary for settlement management (services) for new residents. In the Se-jong project, as new residents have settled into their new homes, they have engaged in community issues collaboratively and actively. This is attributable to a close dialogue between residents and the government (MACCA). The establishment of a new agency (MACCA) in charge of this project is one of the features that distinguishes it from other NCD projects and it is judged to have reduced overall social costs. Tasks requiring more personnel include extra measures for self-sufficiency as well as customized services for residents. With regard to governance, large-scale development needs to be more closely reviewed by residents, and, thus, it should be implemented in collaboration with residents. A civic audit and evaluation will be a chance for a joint investigation into better practice, and, further, it will facilitate

³³¹ Many public corporation employees claimed unanimously that, if ample time were given, more self-sufficient and environmentally well-designed new settlements could be delivered.

negotiations and communications between the government (promoters) and residents on necessary services and resources which may require more charges on residents.

In addition, the organisations that implement development projects should be ‘learning organisations’ pursuing continuous innovations for sustainable development. In the fields of expertise and its application,³³² the learning process should be internalised, and the successful cases of innovative experiments should be diffused to other developments. For this, close liaison between local public corporations needs to be facilitated. Table 9.10 summarises the promotion strategies and policy suggestions for the compact city discussed so far. The last two columns show the actual approaches and measures employed in the two cases.

Table 9.10 Promotion Strategies and Policy Suggestions for the Compact City

Categories	Current State in General	Promotion Strategies and Policy Suggestions	Cases	
			Yong-in	Se-jong
Regional Growth Management	Strong tendency towards concentration in urban centres in large cities	Large-scale new settlement developments that are self-sufficient	27 large-scale developments with weak self-sufficiency	A multi-functional administrative city
	Hollowing-out of old urban centres particularly in non-Capital cities	In combination with inner-city redevelopment and regeneration projects	11 renewal (redevelopment) projects	Regeneration strategy in old urban centres in neighbouring cities
Housing Policy	Jobs are abundant in urban centres. Mass provision of decent dwellings from large-scale development, and the improvement of dwellings by redevelopment	Housing welfare policy for low-income groups should be reinforced with more input from state budget.	Provision of reasonable amounts of public-rental dwellings and small-sized dwellings in individual large-scale development sites	More consideration of dwellings for low-income groups

³³² These, for example, include not only the fields of spatial information and transportation engineering, but also the fields of social services for new residents.

Land Use	General perceptions of the need for strict regulations on use of agricultural land and forest	Maintenance of strict regulations on use of agricultural land and forest surrounding urban land, for conservation of environment	General land use regulations on agricultural land and forest, but partly spoiled by disorderly development	Special measure of strict land use regulations on surrounding areas
	Demands of residents for more open space, and increasing concern about health, leisure, and the quality of the environment	Securing more and accessible open and green space within and outside residential sites, as suggested from the 'green infrastructure' concept	Comparatively smaller sizes of open space within development, but surrounded by abundant and accessible green space	High rate of open and green space on the site, and provision of grand central green space
Sustainability Principles	Perception of conflict between three perspectives of sustainability Environment is gradually being prioritized.	Three perspectives of sustainable development should be integrated and balanced for quality of life; and economic feasibility is still important for development.	Gradual development by market mechanism	Environmental and social values are exceptionally prioritised.
Large-scale development method	Market-oriented approach by urban clearance	Should be modified with more consideration of needs of low-income dwellers	Market-dependant approach by diverse development methods	Single large project directly promoted by government
	Residents prefer larger development projects	Diverse projects should be coordinated under a master spatial plan.	Many middle and small-sized development projects without a master plan in early stages	Development project by a grand plan including regional facilities
	Strong demands of residents for speed and responsiveness	Merits of current development scheme (rapid and mass provision of decent dwellings) should be maintained and the scheme should fit Korean context.	Rapid developments, but it has incurred huge costs for additional facilities and coordination between participants	New governance system with active resident participation has been experimented with.
Managerial measures	Physical construction-oriented development	Securing sufficient personnel and time to cope with diverse demands of residents. Learning organisations promoting continuous innovation	Diverse participants involved in many projects, but HSDs have been promoted mainly by national public corporations	Government agency (MACCA) was established and coordinated project with sufficient professionals.

9.8 Conclusion

This chapter has analysed the two case studies. From the analysis, the compact urban features of the case study cities were presented. The urban densities were high irrespective of the development methods employed. Larger projects included more public land in their sites. And, through investigation into the planning processes and substantive considerations in implementing the development projects, the diverse aspects which had formed the current development patterns were identified and discussed. Larger-sized projects were solving the issues around public facilities and self-sufficient urban functions in new settlements by internalising them into the planning processes. Then, the feasibility and acceptability of the apartment-oriented development scheme were appraised. From this, it was suggested that this Korean large-scale development pattern, which had created apartment districts in new settlements, would continue being favoured by residents, and that this provides a condition for promoting the compact city approach in Korea. Thus, a Korean compact city model and related policy suggestions were presented. The next chapter provides key findings emerging from this analysis and the overall conclusion for the thesis.

CHAPTER 10

CONCLUSION

10.1 Introduction

This research analysed urban developments in two case-study cities in South Korea, using the framework of the compact city and the principles of sustainable development, in order to answer the underlying questions: How have the Korean cities been shaped with such high compactness? And what implications does this have in terms of urban sustainability? The two cases offered a contrast in the approaches employed: Yong-in had a large number of development projects; and Se-jong consisted of a single large project. This made it possible to investigate diverse development methods, which are one of the key variables to explain current urban form and land use but have been rarely explored. However, the cases did share a common feature: a strong dependence on large-scale public development. Yong-in, though it had encouraged private developments through deregulation of land use in the initial period of development, found that this led to a problem of disorderly development, and so it changed direction towards large-scale public projects. Thus, the case study focused on the apartment-oriented development patterns created by large-scale urban clearance, and shed new light on the features of the compact city in Korean urban developments. From the analysis, a Korean compact city model was drawn, and strategies for it were suggested. In searching for sustainable urban form and land use, diverse arguments and suggestions from the literature review were widely employed: for example, the Garden City idea by Ebenezer Howard was considered in analysing the case-study cities, spanning from its community-oriented approach to a conurbation structure connected by railway transport, and further to its financial and land ownership scheme.

This chapter summarises the conclusion of the research and highlights the contributions it makes. And the thesis will be evaluated, along with an indication of its limitations.

10.2 The Main Conclusions on the Research Topics and Discussions

The Korean government did not choose the compact city intentionally as a policy for urban development, but it – or Korean society to be precise – just chose apartment building by large-scale development for the mass provision of dwellings. This was inevitable, to some extent, against the background of massive increase in urban population and traditionally strict regulations on non-urban land. The factors involved led inescapably to the generation of the physical features of the compact city.

The research confirmed that urban developments in the case-study cities demonstrate the features of the compact city. For example, the Dong-baek housing site development, and Gwang-gyo and Se-jong new city developments, have been developed with the concept of transit-oriented development (TOD). Though the Dong-baek project was completed in 2006, continuous progress towards TOD has been made since then: during the second round of fieldwork in November 2012, light rail transit was being tested on the railway. Though Yong-in has been criticized for lack of self-sufficiency, it is being improved. Another feature of Korean cities is that a considerable amount of jobs are still located in the existing urban centres, unlike in the Western context, and this is, at the same time, one of the reasons for the compactness of existing cities. Thus, out-of-city developments to deal with housing shortage caused by urbanisation, such as the projects in the case-study cities, have not diminished the vitality of existing urban centres, particularly in the Capital area.

As a result of quantitative analysis, it was found that development sites in the case-study cities shared a feature of high density irrespective of the development method by which they had been constructed; and the larger development projects were, the larger the open space and land for self-sufficiency functions. The popularity of larger-scale development sites was confirmed from interviews. The interviewees explained this by the advantage that larger-sized developments secure more self-sufficient urban functions, such as accessibility to public facilities.

The critical reason why large-scale development has been promoted is because the majority of participants make economic gains from such projects and, also, it is effective in delivering public sharing of economic gains and equitable sharing of economic costs. Large-scale development was preferred by residents on account of the various convenient facilities that derive from its size. However, larger single developments such as the Se-jong project have a weakness in feasibility and acceptability in that they need huge financial and political supports.

Economic considerations have been crucial in determining physical density and in explaining the popularity of apartments. Ultimately, the creation of high urban density and the dominance of the apartment as a housing type follow the demands of residents. Residents select apartments due to their convenience and profitability as an asset.

On the other hand, the economic perspective of sustainable development needs to be harmonized with other perspectives. In the Korean context, the securing of sufficient open space has been perceived as one of the environmental requirements, contributing to the health of residents and solving the problem of overcrowding in existing cities.

The response to this demand has been the apartment-oriented development: high-rise dwellings combined with larger open spaces and, further, greater housing size per capita. Apartments have been prioritized also from a social perspective, being seen as providing convenient social contacts but not disturbing privacy.

Thus, apartments have taken root in Korea as the dominant type of new housing, though some scholars and architects who have despised collective apartment living and its high-rise appearance are embarrassed by this and are reluctant to believe in it. In reality, Korean people favour apartments over other housing types, as proved by their voting with feet to an extent that is obvious in housing statistics and higher prices.

The participants interviewed perceived that the current development methods of expropriation and urban clearance would be also available in the future. This was because they were seen as having overcome overcrowding in existing urban areas against the background of dissolving traditional communities in rural areas. Also, in organizing large projects for the building of new apartment communities, changes and new possibilities had been found. These factors had secured the feasibility and acceptability of current large-scale development methods, along with continuous demand for the mass provision of dwellings and the preferences of people for larger-sized developments. These form the conditions for promoting the compact city approach in Korean cities.

As there is already a strong tendency towards urban densification and intensification in Korean cities, this raises a question: does the compact city need to be promoted strategically in Korea? The answer would be yes, because Korean compact development

can contribute to delivering the principles of sustainable development. The compact city should be employed for overall sustainability purposes, not just as an environmental goal. The compact city strategy of constructing new settlements outside existing urban centres should be combined with inner-city redevelopment and regeneration projects within a long-term master spatial plan drawn up from a regional perspective. Economy is important in that it is the main driver of current development methods and it can provide for the preferences and aspirations of people for housing; but the market-oriented development scheme, also, should be complemented by more deliberate customised housing services for vulnerable groups, because the large-scale development method was not designed to solve all problems. Thus, the Korean compact city model is considering its own local context, even if it is far from the original arguments and strategies of the compact city in the Western context which emerged from the needs of preventing sprawl and reducing car travel distances.

10.3 Contribution of the Thesis

The contribution of the research is comprised of the following three aspects of its approach to the compact city: methodological contribution, through delving into the internal processes of urban development and the underlying factors shaping current development patterns; theoretical enlargement, by developing a Korean compact city model which draws on the local context and fits within the greater framework of a development pattern focusing on the preferences of people for various housing types; and practical contribution through policy suggestions which are not only feasible, but

acceptable to Korean residents, and, further, applicable to other Oriental countries which share similar contexts.

Much empirical research has been done about the relationships between the elements of urban compactness and the reduction in car travel and energy consumption (Newman and Kenworthy, 1989b; Jenks et al., 1996; OECD, 2012), while little empirical research has been done on development processes which have affected urban compactness in connection with the compact city. Also, existing research on Korean cities has focused on quantitative analysis of the environmental effects of urban features such as density (Woo, 2003; Kim et al., 2009; Jo, 2009; Choi et al., 2010). This thesis extended its examination to other important aspects of the compact city in Korea: development methods, and housing provision schemes. And, in order to establish the causes of these, it employed qualitative analysis of decision-making processes through in-depth interviews with 54 participants. From this, the thesis identified the causes underlying current development patterns and people's preferences.

Since the 1990s there has been a consensus both in academia and among practitioners that urban compaction is desirable to a certain degree, in order to achieve sustainability (Dempsey and Jenks, 2010), though the compact city, at the same time, has not generally been admitted to be a necessary and sufficient condition for sustainable development (Neuman, 2005). Existing research has paid attention to Asian states with high densities, such as Hong Kong and Singapore (Jenks and Burgess, 2000); but these are states the size of a single city, which rely highly on the states surrounding them for raw materials and food. The thesis tried to examine a country with a population of 50 million on a territory of 100 thousand square kilometres, through two case studies of

cities, where large-scale compact urban developments have proceeded on a national scale.

From the analysis, the thesis explained how such high densities had been formed and why apartments had been selected as the major housing type, with the large-scale development method employed for the mass provision of dwellings, not overtly, in order to create a compact city. This was an attempt to investigate the socio-economic context that made such development possible. Further, the thesis argued that the preference for apartments would be maintained in the long-run, and was not a transient trend, by showing that it was also favoured from a social aspect, through harmonising neighbourhood relations with privacy, as well as from a convenience aspect that included accessibility to facilities and services. These features, also, have formed a key condition for the success of the compact city in Korea. This is the first explanation that has been attempted in the field of research on the compact city in Korea. The thesis delved into the liveability of the compact city, not only with the indirect surveys on which most relevant research had relied so far (Howley et al., 2009), but also drawing on direct evidence, with the real dwellings selected for metropolitan-city-level case studies, and this presented a counter-intuitive result: high-density apartment living generally improved individuals' quality of life and neighbourhood satisfaction.

Existing Korean cities are highly dense physically, but they are difficult to describe as sustainable, due to their overcrowding, congestion, and pollution. The research contributes to the development of compact city theory in developing countries by suggesting a Korean compact city model which combines compact development

methods with practical principles of sustainable development in a way that fits the local context.

From a policy aspect, although many large-scale development methods have been implemented to solve the severe housing problems in Korean cities, such types of development have been regarded as a physical housing policy, which is far from a planning system. The research considered them in combination with a wider framework of planning by bringing in the promotion strategies of the compact city.

Finally, the reinvention of the Korean compact city will have practical applicability for other East Asian countries which have similar development experiences and cultural backgrounds.³³³ This is important given that in these countries live a substantial portion of the world's population and many megacities are emerging.

10.4 Evaluation and Future Research

The thesis pursued the theoretical development of the compact city in the Korean context, mainly drawing on process-driven qualitative research methods, because it tried to identify underlying reasons which had shaped current urban form and land use. For this, it focused on a large-scale urban clearance development method and apartment-

³³³ For example, the Korean MLTM and the Chinese Ministry of Housing and Urban-rural Development signed an MOU to cooperate on an urbanisation project for the Chinese government, including new city construction, in January 2013. The Chinese government anticipated that urban dwellers in China would increase from 51% of the population in 2012 to more than 60% in 2020 (MLTM, 2013b). In another example, a Korean construction company, Posco, has been building a new town (264 ha) near Hanoi, Vietnam, since 2007, and this shares a very similar development pattern with Korean new settlements. Of the total dwellings (7,686 households) 82% are apartments (6,335 households) (Posco, 2011).

oriented lifestyle, and highlighted urban conditions which were applicable for the compact city approach. High context-dependence is judged to be inherent in a study of the compact city, as pointed out by Dempsey and Jenks (2010).

The Limitations of this Research and the Need for Future Research

This research did not attempt a strict evaluation of the cases by using criteria of sustainability. Thus, optimum densities and land uses for the compact city were not quantified. First, the following research directions are suggested, particularly for study using a quantitative method. Among the aspects of transport as a traditional research topic for the compact city, travel patterns for leisure activities need to be studied in addition to travel for commuting (to workplaces and schools) and for shopping. Some interviewees mentioned that high-density settlements might cause more leisure traffic in Korean cities, but this has not yet been studied. Also, recently, there has been greater consumption of energy in cities by buildings than by transport (Neuman, 2005). The relationships between buildings and energy consumption need to be highlighted in future studies. A compact megacity may be advantageous for securing urban competitiveness under the contemporary globalised economy, but it increases car traffic as people's range of activities expands. This raises a need for the study of a sustainable urban size for Korea, particularly in the Capital region including Yong-in.

There is also still plenty of room for the development of theory about the compact city, and for drawing further on qualitative research methods. For example, the following proposition may be posited: a culturally and aesthetically inferior city is not sustainable.

Some experts interviewed pointed out that the monotony and lack of history in Korean

modern cities was attributable to the 'forest of apartments' supplied 'in a lump' by large-scale developments, including Se-jong. Various questions still remain to be investigated in relation to whether current development patterns, such as super high-rise settlements, reflect the likely future demands of residents. Also, the thesis did not address in earnest the impacts of compulsory urban clearance on the lives of residents and communities. The small number of interviews carried out on the issue did not permit a generalized conclusion. This issue should be examined from the perspective of people's lives, rather than, simply, the availability of a development method.

The thesis endeavoured to identify the causes underlying current urban forms, but the fundamental reasons for these were not taken any further: for example, the reasons why residents pursue convenience in housing so avidly, making land use highly mixed, or why some groups, for example, male office workers, are not concerned about the issues of their local communities. These could be explained by more fundamental socio-economic and cultural factors, and by institutional development. But this was left for future research. The case study on Korean urban development has raised many issues besides those of compact urban form, and these will require a great deal of research in the future.

APPENDICES

Appendix 1: Interviewees and Other Sources for the Case Studies³³⁴

1-1 List of Interviewees in the Yong-in Case Study

[The First Fieldwork]

1. A senior deputy director of the Ministry of Land, Transport and Maritime Affairs (MLTM)
 - 1) Role: a central government official who has involved in housing and land policy and has specialised in HSD in the Capital area including Yong-in
 - 2) Time & Place: 9:30-10:30, 15th May 2012, meeting room in the Gwa-cheon Government Complex

2. A senior deputy director of the Ministry of Land, Transport and Maritime Affairs (MLTM)
 - 1) Role: a central government official who has been in charge of urban policy and has addressed urban issues in Yong-in such as disorderly development
 - 2) Time & Place: 12:00-13:00, 15th May 2012, restaurant near the Gwa-cheon Government Complex

3. A deputy director of the Ministry of Land, Transport and Maritime Affairs (MLTM)
 - 1) Role: a central government official who has involved in urban policy and has specialised in land acquisition and compensation for large-scale development by urban clearance
 - 2) Time & Place: 11:00-11:30, 15th May 2012, café in the Gwa-cheon Government Complex

4. A team leader of the Gyeong-gi Provincial Government
 - 1) Role: a provincial government official who has involved in urban development and is now in charge of 'district unit planning' in Gyeong-gi Province, and who had involved in Yong-in urban development as a director of Urban Planning Division and Urban Development Division in the Yong-in Local Government
 - 2) Time & Place: 14:00-15:00, 18th May 2012, café in a Gyeong-gi Provincial Government office in Su-won

5. A director of the Yong-in Local Government
 - 1) Role: a local government official who has been in charge of Urban Planning Division in the Yong-in Local Government
 - 2) Time & Place: 11:00-11:40, 18th May 2012, interviewee's office room in the Yong-in Local Government Complex

³³⁴ The first round of fieldwork was performed from 13th to 29th May in 2012 for 17 days, and the second round of fieldwork was from 17th November to 2nd December in 2012 also for 17 days.

6. A team leader of the Yong-in Local Government
 - 1) Role: a local government official who has been in charge of land development in Urban Development Division in the Yong-in Local Government
 - 2) Time & Place: 10:20-10:50, 18th May 2012, office room in the Yong-in Local Government Complex

7. A member of Yong-in Urban Planning Committee
 - 1) Role: a member of Yong-in Urban Planning Committee in the Yong-in Local Government and a professor in Kangnam University in Yong-in, who are a former member of Seoul Metropolitan Urban Planning Committee
 - 2) Time & Place: 12:00-13:00, 17th May 2012, restaurant near Kangnam University in Yong-in

8. A director general of Korea Land and Housing Corporation (KLHC)
 - 1) Role: a director general of a national public corporation who has implemented many HSD and NCD projects in the Capital area including Yong-in and is now in charge of 'housing planning'
 - 2) Time & Place: 11:00-11:30, 17th May 2012, interviewee's office room of KLHC in Seong-nam

9. A director general of Gyeong-gi Urban Innovation Corporation (GUIC) (group interview with the 10th interviewee)
 - 1) Role: a director general of a provincial public corporation who is in charge of Gwang-gyo NCD project, who had worked for the Gyeong-gi Provincial Government
 - 2) Time & Place: 14:00-15:40, 16th May 2012, Gwang-gyo NCD field office of GUIC in Su-won

10. A team manager of Gyeong-gi Urban Innovation Corporation (GUIC) (group interview with the 9th interviewee)
 - 1) Role: a team manager of a provincial public corporation (Project Administration Team of Gwang-gyo NCD), who had worked for a private construction company
 - 2) Time & Place: 14:00-15:40, 16th May 2012, Gwang-gyo NCD field office of GUIC in Su-won (the same as the 9th interview)

11. A senior manager of an engineering company (urban planner)
 - 1) Role: an urban planner in an engineering company, Woodae E&P, who has involved in 'urban master planning' of Yong-in and many development projects such as HSDs by ordering of the Yong-in Local Government and the KLHC as project promoters
 - 2) Time & Place: 15:00-16:00, 17th May 2012, conference room of Woodae E&P in Seong-nam

12. An executive director of a development consulting company
 - 1) Role: an expert in a development consulting company, Korea Construction Institute, who has researched and advised on many development projects such as UDs and private land

- and housing developments in Yong-in
- 2) Time & Place: 16:00-16:30, 18th May 2012, interviewee's office room of Korea Construction Institute in Yong-in
13. A CEO of a real estate company
- 1) Role: a market expert in a real estate company, Green Home Korea, which is specialised for real estate brokerage, asset management and development consulting in Yong-in
- 2) Time & Place: 16:00-16:30, 23th May 2012, office room of Korea Construction Institute in Yong-in
14. A resident living in Yong-in city
- 1) Role: a 70-year-old resident who has lived in an apartment in Su-ji borough in Yong-in city since 2004, which was developed by the private sector in 1990s, being called disorderly development, and who has experienced diverse housing types in his life
- 2) Time & Place: 20:00-21:00, 24th May 2012, interviewee's apartment in Yong-in
15. A president of neighborhood association
- 1) Role: a 38-year-old resident and president of neighborhood association who has lived in an apartment district in Yong-in city since 2007, which had been developed by the public sector by HSD in 1990s
- 2) Time & Place: 17:00-17:40, 28th May 2012, café near interviewee's apartment in Yong-in
16. A housing manager of an apartment complex
- 1) Role: a state-authorized housing manager of an apartment district in Yong-in city, who is attached to a housing management company
- 2) Time & Place: 15:00-16:00, 28th May 2012, apartment management office in Yong-in
17. A secretary general of a civic and environmental group
- 1) Role: a full-time activist in a civic and environmental group, Yong-in Movement for Environmental Justice, which has been involved in community issues related to urban development in Yong-in city
- 2) Time & Place: 11:00-12:20, 23th May 2012, office room of Yong-in Movement for Environmental Justice in Yong-in
18. An executive managing director of an urban development company (group interview with the 19th interviewee)
- 1) Role: a professional in a developer company in Yong-in, KoRED HOUSING (Korea Real Estate Development and Housing), which was also a member of UD Association for Dong-cheon UD project as a landowner
- 2) Time & Place: 13:30-14:20, 23th May 2012, office room of KoRED HOUSING in Yong-in

19. A general manager of an urban development company (group interview with the 18th interviewee)
- 1) Role: an professional in a developer company in Yong-in, KoRED HOUSING (Korea Real Estate Development and Housing), which was also a member of an UD association for Dong-cheon UD project as a landowner
 - 2) Time & Place: 13:30-14:20, 23th May 2012, office room of KoRED HOUSING in Yong-in (the same as the 18th interview)
20. A director of Korea Research Institute for Human Settlements (KRIHS)
- 1) Role: a researcher of a national policy research institute who has involved in planning many development projects in the Capital area including Yong-in and research on urban form and land use, who is now a director of Urban Research Division of the institute
 - 2) Time & Place: 10:00-11:30, 16th May 2012, office room of KRIHS in An-yang
21. A researcher of a public institute
- 1) Role: a researcher of a public institute, Architecture and Urban Research Institute, who has specialised in urban design and spatial structure, and a manager of Green City Research Centre of the institute
 - 2) Time & Place: 14:00-15:40, 15th May 2012, conference room of Architecture and Urban Research Institute in An-yang
22. A director of Gyeong-gi Research Institute (GRI)
- 1) Role: a researcher of a provincial public policy research institute who has involved in planning many development projects in Gyeong-gi province including Yong-in and research on urban form and land use, and who is now a director of Department of Urban Planning and Housing Policy of the institute
 - 2) Time & Place: 16:00-17:30, 24th May 2012, conference room of GRI in Su-won

[The Second Fieldwork]

1. A director of the Ministry of Land, Transport and Maritime Affairs (MLTM)
- 1) Role: a central government official who is in charge of housing welfare policy in MLTM, and who have involved in policy coordination between relevant policies such as housing and urban policies in MLTM and PMO
 - 2) Time & Place: 16:30-18:00, 26th November 2012, meeting room in the Gwa-cheon Government Complex
2. A senior deputy director of the Ministry of Strategy and Finance (MOSF)
- 1) Role: a central government official who is in charge of regional development investment and associated budgeting, and who has involved in reviews of large-scale development projects
 - 2) Time & Place: 14:00-15:00, 27th November 2012, meeting room in the Gwa-cheon Government Complex

3. An inspector of the Board of Audit and Inspection (BAI)
 - 1) Role: a central government official who has implemented national audit and inspection for diverse development projects which had been promoted by central and municipal governments and public corporations
 - 2) Time & Place: 18:30-20:00, 28th November 2012, a café near BAI office

4. A member of Yong-in City Council and Urban Planning Committee
 - 1) Role: a local politician who has worked as a member of Yong-in City Council, who was elected from an electoral district including Dong-baek HSD area, and has addressed many development issues as a member of Urban Affairs and Construction Committee in the City Council, and, at the same time, who has involved in planning and reviewing development projects as a member of Yong-in Urban Planning Committee
 - 2) Time & Place: 14:00-14:30, 22th November 2012, interviewee's office room in Yong-in City Council building

5. An expert advisor of Korean Land and Housing Corporation (KLHC; group interview with the 6th interviewee)
 - 1) Role: an expert advisor of KLHC who have involved in many HSD and NCD projects (including the first-period NCDs in late 1980s) in the Capital region including Yong-in and in Chung-cheong region including Dae-jeon since the 1980s
 - 2) Time & Place: 14:30-15:20, 23th May 2012, meeting room in Gwang-gyo Project Unit of KLHC, Yong-in

6. A general manager of Korean Land and Housing Corporation (KLHC; group interview with the 5th interviewee)
 - 1) Role: a general manager in KLHC Gwang-gyo Project Unit who is in charge of the marketing of public rental housing in Gwang-gyo NC site, and has involved in many other HSD and NCD projects in the Capital region including Yong-in
 - 2) Time & Place: 14:30-15:20, 23th May 2012, meeting room in Gwang-gyo Project Unit of KLHC, Yong-in (the same as the 5th interview)

7. A president of a resident interest group in Dong-baek HS district
 - 1) Role: a president of a resident interest group in Dong-baek HS district, Dong-baek Citizens' Solidarity (with 1,057 members) and a manager of its online café, who has initiated a citizen movement by community involvement for a better Dong-baek HS district
 - 2) Time & Place: 14:00-16:10, 21th November 2012, restaurant in Dong-baek HS district, Yong-in

8. A former president of the Federation of Resident Committees in Gwang-gyo NC
 - 1) Role: the first president of the Federation of Resident Committees in Gwang-gyo NC and now a manager of its online café (with 8,293 members)
 - 2) Time & Place: 16:30-17:20, 22th November 2012, office room of a real estate broker, Su-won

9. A president of the Federation of Resident Committees in Dong-baek HS district (group interview with the 10th interviewee)

1) Role: a president of the Federation of Resident Committees in Dong-baek HSD district and a president of a resident committee of a village in the district

2) Time & Place: 15:00-15:30, 22th November 2012, office room in Yong-in City Council building

10. A vice-president of the Federation of Resident Committees in Dong-baek HS district (group interview with the 9th interviewee)

1) Role: a vice-president of the Federation of Resident Committees in Dong-baek HS district and a president of a resident committee of a village in the district

2) Time & Place: 15:00-15:30, 22th November 2012, office room in Yong-in City Council building (the same as the 9th interview)

11. A real estate broker in Gwang-gyo NC (group interview with the 12th interviewee)

1) Role: a real estate broker and a resident in Gwang-gyo NC

2) Time & Place: 17:30-18:00, 22th November 2012, interviewee's office room, Su-won

12. A resident in Gwang-gyo NC (group interview with the 11th interviewee)

1) Role: a 55-year-old resident who was newly moved into Gwang-gyo NC

2) Time & Place: 17:30-18:00, 22th November 2012, a real estate broker's office room, Su-won (the same as the 11th interview)

1-2 List of Other Sources related to the Yong-in Case Study

[The First Fieldwork]

1. Site Visits

- 1) Type of Source: direct observation in project sites (sub-cases), of which some have completed physical developments and some are still under construction
- 2) Purpose: to observe development project sites in Yong-in city accurately and to get relevant documents
- 3) Attendants: some staff members of the Yong-in Local Government and public corporations, and professional experts from developing and consulting company
- 4) Time & Place: 12:30-14:00, 16th; 15:30-16:30, 18th; and 14:30-15:30, 23th in May 2012; Gwang-gyo NCD, Dong-baek HSD, and Dong-cheon UD sites, and Sang-hyeon-dong area in Yong-in

2. Presentation

- 1) Type of Source: listening to the historical outline of Yong-in development and the actual planning processes of development projects
- 2) Purpose: to get information through a briefing from an urban planner who participated in these planning
- 3) Time & Place: 14:00-15:00, 17th May 2012, conference room of Woodae E&P in Seong-nam

[The Second Fieldwork]

1. Site Visits

- 1) Type of Source: additional direct observation in project sites (sub-cases)
- 2) Purpose: to observe development project sites in Yong-in accurately
- 3) Time & Place: 16:30-17:30, 21th; 10:30-12:00, 22th; 15:30-17:00, 23th in November 2012; Gwang-gyo NCD, Dong-baek HSD, and Dong-cheon UD sites, and Sang-hyeon-dong area in Yong-in

2. Observation of a Negotiation Meeting between Representatives of Residents and Local Councillor

- 1) Type of Source: direct observation of a stakeholders' meeting
- 2) Purpose: to observe participants' behaviour and to experience the atmosphere of unofficial negotiations
- 3) Issues for Discussion: measures for the improvement of roads and transport systems in Dong-baek HS district, and exchanges of opinions on new small-scale developments which are implemented near the district

- 4) Participants: two members from a presidential group of the Federation of Resident Committees in Dong-baek HS district, a local councillor, and two local government officials
- 5) Time & Place: 14:30-15:00, 22th November 2012, office room in Yong-in City Council building

[Photos]

Gwang-gyo NC Construction Sites (May and November 2012)



Gwang-gyo NC Aerial Views

Source: GUIC (<http://www.gwanggyonewtown.or.kr/>)

Aerial View of Gwang-gyo NC



A Complex for Residential, Cultural, and Commercial Functions



1-3 List of Interviewees in the Se-jong Case Study

[The First Fieldwork]

1. Members of Urban Design Division of Multifunctional Administrative City Construction Agency (MACCA) (group interview with total 8 interviewees)
 - 1) Role: eight central government officials and planners, including a director of the division, who are in charge of urban design and planning of Se-jong MAC development project
 - 2) Time & Place: 10:00-11:30, 22th May 2012, office room of MACCA in Se-jong

2. A deputy director of Multifunctional Administrative City Construction Agency (MACCA)
 - 1) Role: a central government official who has been involved in planning Se-jong MAC development project since its inception, and who had worked for MOCT in the departments of urban and regional policy
 - 2) Time & Place: 17:00-19:00, 19th May 2012, café near interviewee's apartment in Se-jong

3. A master commissioner of Se-jong MAC development project
 - 1) Role: a master commissioner (master planner) of Se-jong MAC development project who chairs Se-jong Urban Planning Committee in MACCA, and who is a president of Urban Design Institute of Korea and professor in Ajou University
 - 2) Time & Place: 11:40-12:20, 25th May 2012, interviewee's office room in Ajou University in Su-won

4. An advisory member of Se-jong Urban Planning Committee
 - 1) Role: an advisory member of Se-jong Urban Planning Committee which addresses the coordination and review in planning and implementing the Se-jong project, and who is a professor in Mokwon University
 - 2) Time & Place: 15:00-16:20, 21th May 2012, interviewee's office room in Mokwon University in Dae-jeon

5. A research member of Se-jong Urban Planning Committee
 - 1) Role: a regular member of Se-jong Urban Planning Committee which addresses the coordination and review in planning and implementing the Se-jong project, and who is a professor in Mokwon University
 - 2) Time & Place: 17:00-18:30, 21th May 2012, interviewee's office room in Mokwon University in Dae-jeon

6. A general manager of Korea Land and Housing Corporation (KLHC)
 - 1) Role: a general manager of a public corporation which implements the Se-jong project, who has been involved in the project since its inception and is now a general manager of Project Strategy Department in Se-jong City Project Bureau of KLHC
 - 2) Time & Place: 14:00-14:40, 22th May 2012, Se-jong city project office of KLHC in Se-jong

7. A member of Housewives' Monitoring Group
 - 1) Role: a 29-year-old resident who moved into First Village in Se-jong city in December 2011, a member of Housewives' Monitoring Group, and a member of residents committee as a representative of an apartment building
 - 2) Time & Place: 11:00-12:00, 21th May 2012, café near interviewee's apartment in Se-jong

8. A resident in Se-jong city
 - 1) Role: a 68-year-old resident who had lived in near Se-jong city and moved into First Village in Se-jong city in February 2012, and who has experienced diverse housing types in her life
 - 2) Time & Place: 20:00-20:30, 19th May 2012, interviewee's apartment in Se-jong

9. A researcher of Korea Research Institute for Human Settlements (KRIHS)
 - 1) Role: a researcher of a national policy research institute who has involved in planning Se-jong and many other Innovative cities development projects in non-Capital areas and research on urban form and land use
 - 2) Time & Place: 10:00-11:00, 24th May 2012, office room of KRIHS in An-yang

[The Second Fieldwork]

1. A director of Se-jong City Government
 - 1) Role: a director of City and Architecture Division in Se-jong Special Self-governing City Government (a provincial-level municipality), who had worked for Yeon-gi County (local) Government, and Se-jong City Establishment Preparation Unit in the Ministry of Public Administration and Security
 - 2) Time & Place: 17:00-17:40, 19th November 2012, interviewee's office room in Se-jong city hall

2. A head of a *Dong* office (Resident Autonomy Centre) in Se-jong City (group interview with the 3th interviewee)
 - 1) Role: a Se-jong city government official as a head of a *Dong* (administrative district in urban area) office which has jurisdiction over First Village in Se-jong city
 - 2) Time & Place: 15:00-15:50, 20th November 2012, office room in Han-sol-dong office, Se-jong

3. A president of the federation of neighborhood associations (group interview with the 2th interviewee)
 - 1) Role: a 67-year-old resident and a president of the federation of neighborhood associations, which consists of 20 *Tong* (neighborhood unit) in Han-sol-dong, who has lived in the area since before the MAC development project, and had been a farmer and activist struggling against and negotiating with the government on project issues
 - 2) Time & Place: 15:00-15:50, 20th November 2012, office room in Han-sol-dong office, Se-jong (the same as the 3th interview)

4. A director of Dae-jeon Development Institute
 - 1) Role: a researcher of a provincial public policy research institute who has involved in planning many urban development projects in Dae-jeon metropolitan city and establishing regional urban plans including Se-jong area, and research on the effects of Se-jong development, and who is now a director of Department of Urban Infrastructure Research of the institute
 - 2) Time & Place: 16:00-17:20, 29th November 2012, conference room of Dae-jeon Development Institute in Dae-jeon

1-4 List of Other Sources related to the Se-jong Case Study

[The First Fieldwork]

1. Site Visits
 - 1) Type of Source: direct observation in fields of construction work and a completed village in the project site
 - 2) Purpose: to observe the construction fields of Se-jong MAC development project and the urban design of First Village, and to get relevant documents
 - 3) Attendants: some staff members of MACCA and KLHC
 - 4) Time & Place: 13:00-14:00, 21th and 15:00-16:00, 22th in May 2012; several construction fields and First Village in Se-jong

2. Visit to Information Centres and Listening to a Presentation
 - 1) Type of Source: getting information in official information centres and listening to a presentation
 - 2) Purpose: to get visual and presented information on the outline of Se-jong development history and other relevant development projects
 - 3) Presenter: a staff member for public relations
 - 4) Time & Place: 13:00-14:00, 22th May 2012; Multifunctional Administrative City Information Centre and Centre for Balanced National Development in Se-jong

[The Second Fieldwork]

1. Site Visits
 - 1) Type of Source: direct observation in fields of construction work and a completed village in the project site
 - 2) Purpose: to observe the construction fields of Se-jong city development project and community activities in First Village
 - 3) Time & Place: 14:30-16:30, 19th; 13:30-14:30, 20th in November 2012; construction fields and First Village in Se-jong

[Photos]

(May and November 2012)

**Se-jong MAC Miniature
in the MAC Information Centre**



**Bicycle Path outside the Se-jong Site
with Solar Power Roofs**



First Village

Source: Asia Business Daily (21-06-2012)



Aerial View of Se-jong MAC

Source: MACCA (<http://www.macc.go.kr/>)



Aerial View of First Village (first-stage area)

Source: MACCA (<http://www.macc.go.kr/>)



Appendix 2: Interview Topic Guide for the Case Studies³³⁵

2-1 Topic Guide for the Yong-in Case Study: First Round of Fieldwork

[For Interviewees from the Public Sector]

1. Features of Land Use

These questions aim to ascertain how an interviewee understands and recognizes urban compactness and associated land use.

1.1 Have you heard about the concept of the compact city? What do you feel about the concept of the compact city?

1.2 Do you think that Yong-in city is compact?

1.2.1 If it is compact, do you think an effort has been made intentionally to achieve compact development? Or, was the compactness inevitable? If it is compact, what do you think are the reasons? Further, do you have any ideas about the background to, or the origins of, these reasons?

2. Determination of Development Methods and Land Use Plans

These questions aim to check what the roles of participants were, and what they took into consideration, in determining a development method and land use plan in the process of a development project.

2.1 What type of development method was employed in the development project you were involved in?

2.1.1 What were the reasons for, and the background to, the institutional introduction of the various types of development methods employed?

2.2 Who initiated the development project and with what purposes?

³³⁵ Interviewees were classified into the following three groups: 'interviewees from the public sector', including government officials, members of urban planning committees, staff from public corporations, and urban planners; 'people from outside the public sector', including local residents and members of civic and environmental groups; and 'academic and professional experts', such as researchers from relevant institutes involved in development projects. Different topic guides were prepared for different categories of interviewees. This is an example of a topic guide for the interviewees from the public sector. In contrast, for the second round of fieldwork, a topic guide was prepared where interviewees and relevant projects were indicated in front of each individual question.

- 2.2.1 Who determined the development method for the project and at what stage in the development process? If diverse participants were involved in the selection process, what was their individual role?
- 2.3 What was the reason that determined the selection of the development method? What were the considerations (advantages and disadvantages) for selecting the development method?
- 2.3.1 In the selection process of the development method, what motivations did individual participants have?
- 2.4 What was the concrete process in land use planning for the development project?
- 2.5 By whom and by what standards were the densities of the project determined?
- 2.6 Who determined the land uses of the project, including their total extents and layouts?
- 2.6.1 What were the considerations in determining land use? What considerations were given importance by individual participants? Can you describe the decision-making process in land use planning and the factors that exerted an influence, such as policy objectives, the diverse motivations of participants, institutional advantages and disadvantages, conflicts between stakeholders, and power dynamics?
- 2.6.2 By whom and on what basis were the standards determined?
- 2.6.3 If the standards had not been compulsory, would a specific land use have been provided with a much smaller or larger amount of land?
- 2.6.4 In establishing a land use plan for the project (for example, Yong-in A site residential land development), were there any cases that were referred to or benchmarked?

3. Acceptability of Current Development Patterns

These questions aim to examine how an interviewee evaluates current housing types and associated features of land use such as density and open space.

- 3.1 Do you expect that current housing types and densities will be maintained in the future? Why do you think so?
- 3.1.1 Do you think urban forms and land uses in current development projects are adequate, considering densities and overcrowding, the number of floors, housing types and extents, open space?

- 3.2 Do you expect that current land use will be maintained in the future? Why do you think so?
- 3.2.1 If more open space were provided, where do you think it should be located: in residential areas (as private yards or within residential complexes); outside residential areas, but within the urban area; or in a non-urban area (this means the protection of green space surrounding the urban area)?
- 3.3 Do you expect that current development methods will be maintained in the future? Why do you think so?
- 3.3.1 What are the opportunity factors and threat factors for current development methods?
- 3.3.2 What do you think of the idea that out-of-city large-scale development should be avoided for promoting redevelopment (regeneration) of an urban area?
- 3.4 What do you think are the problems of current development patterns in Yong-in city in comparison with the disorderly development of the 1990s?
- 3.4.1 What is your opinion of the residential conditions of Yong-in city, which are generally perceived as city sprawl that only provides residences (this means that work places are far from homes and necessary facilities are insufficient)?

4. Implications for Sustainable Urban Development

These questions look into how an interviewee understands and accommodates the principles of sustainable development in a project in which he or she has been involved.

- 4.1 In promoting and implementing the development project, how were the principles of sustainable development considered in the practical guidelines provided?
- 4.1.1 How does the current development pattern take social equity into consideration? Can you evaluate the current development pattern by social equity criteria? What strategy is needed for improving social equity?
- 4.1.2 How does the current development pattern take environmental aspects into consideration? Can you evaluate the current development pattern by environmental criteria? What strategy is needed for conserving the environment better?
- 4.1.3 How does the current development pattern take economics into consideration? Can you evaluate the current development pattern by economic criteria? What strategy is needed for achieving economic prosperity?

- 4.1.4 How does the current development pattern take residents' quality of life into consideration? Can you evaluate the current development pattern by quality of life criteria? What strategy is needed for improving quality of life? What do you think about the relationship between the sustainability of community and a high-mobility society?
- 4.1.5 How does the current development pattern take resident participation into consideration? Can you evaluate current development patterns by participatory democracy criteria? What strategy is needed for improving participatory democracy?
- 4.1.6 Which of the above sustainable development principles are most effectively delivered through South Korean-style compact development? What principles should be prioritized in South Korean urban development in the future? And, what are the reasons for this?
- 4.2 Do you have any other suggestion for sustainable urban development?
- 4.2.1 What are the important factors that should be considered at a managerial level: for example, local finance and tax arrangements; local politics, governance and conflict management; legal and institutional procedures? Can you evaluate current development pattern by these criteria? What strategy at a managerial level is needed for improving urban sustainability?
- 4.3 Do you think that compact urban development policy should be promoted in the future? If the answer is no, what are your expectations for the development pattern in South Korea in the future?
- 4.3.1 If large-scale development methods should be maintained, what aspects of policy direction do you think should be changed?
- 4.3.2 If large-scale development methods should be avoided, would you suggest that deregulation of land use and low-rise spread-out building should be allowed?

2-2 Topic Guide for the Se-jong Case Study: First Round of Fieldwork

[For Interviewees from the Public Sector]

1. Features of Land Use

1.1 Have you heard about the concept of the compact city? What do you feel about the concept of the compact city?

1.2 Do you think that Se-jong city is compact?

1.2.1 If it is compact, do you think an effort has been made intentionally to achieve compact development? Or, was the compactness inevitable? If it is compact, what do you think are the reasons? Further, do you have any ideas about the background to, or the origins of, these reasons?

2. Determination of Development Methods and Land Use Plans

2.1 In the Se-jong city development, what were the reasons for selecting a large-scale new city development method, even though the urban function of central administration did not need such a large scale?

2.1.1 By whom and how were the location and extent of the project determined?

2.2 What was the concrete process in land use planning for the development project?

2.3 By whom and by what standards were the densities of the project determined?

2.4 By whom and on what basis were the land uses of the project, including the total extents and layouts, determined?

2.4.1 What were the considerations in determining land uses? Which considerations were given importance by individual participants?

2.5 In establishing a land use plan for the Se-jong city project, were there any cases that were referred to or benchmarked?

3. Acceptability of Current Development Patterns

3.1 Do you expect that current housing types and densities will be maintained in the future? Why do you think so?

- 3.1.1 Do you think urban forms and land uses in current development projects are adequate, considering densities and overcrowding, the number of floors, housing types and extents, open space?
- 3.2 Do you expect that current land use will be maintained in the future? Why do you think so?
- 3.2.1 If more open space were provided, where do you think it should be located: in residential areas (as private yards or within residential complexes); outside residential areas, but within the urban area; or in a non-urban area (this means the protection of green space surrounding the urban area)?
- 3.3 Do you expect that current development methods will be maintained in the future? Why do you think so?
- 3.3.1 What are the opportunity factors and threat factors for current development methods?
- 3.3.2 What do you think of the idea that out-of-city large-scale development should be avoided for promoting redevelopment (regeneration) of an urban area?
- 3.4 Do you think that land use in Se-jong city reflects the demands (preferences) of the future in comparison with that of other cities?

4. Implications for Sustainable Urban Development

- 4.1 In promoting and implementing the Se-jong project, how were the principles of sustainable development considered in the practical guidelines provided?
- 4.1.1 How does the development pattern take social equity into consideration? Can you evaluate the current development pattern by social equity criteria? What strategy is needed for improving social equity?
- 4.1.2 How does the development pattern take environmental aspects into consideration? Can you evaluate the current development pattern by environmental criteria? What strategy is needed for conserving the environment better?
- 4.1.3 How does the current development pattern take economics into consideration? Can you evaluate the current development pattern by economic criteria? What strategy is needed for achieving economic prosperity?
- 4.1.4 How does the current development pattern take residents' quality of life into consideration? Can you evaluate the current development pattern by quality of life criteria? What strategy is needed for improving quality of life? What do you think

about the relationship between the sustainability of community and a high-mobility society?

- 4.1.5 How does the current development pattern take resident participation into consideration? Can you evaluate the current development pattern by participatory democracy criteria? What strategy is needed for improving participatory democracy?
- 4.1.6 Which of the above sustainable development principles are most effectively delivered through the Se-jong development project? What principles should be prioritized in South Korean urban development in the future? And, what are the reasons for this?
- 4.2 Do you have any other suggestion for sustainable urban development?
- 4.2.1 What are the important factors that should be considered at a managerial level: for example, local finance and tax arrangements; local politics, governance and conflict management; legal and institutional procedures? Can you evaluate the current development pattern by these criteria? What strategy at a managerial level is needed for improving urban sustainability?
- 4.3 Do you think that compact urban development policy should be promoted in the future? If the answer is no, what are your expectations for the development pattern in South Korea in the future?
- 4.3.1 If large-scale development methods should be maintained, what aspects of policy direction do you think should be changed?
- 4.3.2 If large-scale development methods should be avoided, would you suggest that deregulation of land use and low-rise spread-out buildings should be allowed?

2-3 Topic Guide for the Second Round of Fieldwork

1. Features of Urban Form and Land Use in relation to the Compact City

- 1.1 (All participants; Dong-baek HSD) How do you evaluate the transport system and other urban functions of Dong-baek district? Are they well connected with urban functions in other districts? And what degree of connection is required?
- 1.2 (Project staff and Experts) How do you understand the relationship between the self-sufficiency of individual cities and regional car traffic in the Capital region? Which

should be prioritized: urban self-sufficiency or regional transport? What do you think about urban self-sufficiency in the global economic environment and in mega cities? Do you think that car traffic can be reduced by securing self-sufficiency in cities in the Capital region, and is this desirable?

- 1.3 (All participants; Dong-baek HSD) How has the Dong-baek housing site been maturing as a new settlement recently?
- 1.4 (All participants; Dong-baek HSD) How do you evaluate the affordability of housing in the site, in terms of prices, sizes, and ownership/rental?
- 1.5 (Experts) In what contexts is current research on the compact city in South Korea performed?

2. Negotiation and Governance Features in Forming Development Patterns

- 2.1 (Project staff and residents; Gwang-gyo NCD) What types of issues are currently negotiated in Gwang-gyo NC after the arrival of new residents?
- 2.2 (Project staff; Gwang-gyo NCD) How could the prices of dwellings in Gwang-gyo have been reduced?
- 2.3 (Members of civic group, and experts) Do you think that current environmental arguments about urban development are harmonized with the other aspects of sustainability, such as social equity?
- 2.4 (Members of civic group for growth, and experts) How do you understand the sustainability of large-scale development? And could you give me details of your recent activities?
- 2.5 (Members of civic group, and experts) Do you think that the arguments for growth in urban development are sustainable? Why do you think this?
- 2.6 (All participants; Gwang-gyo and Se-jong NCDs) What has been your experience of the current governance system in developing NCs?
- 2.7 (All participants; Gwang-gyo NCD) Has there been any difference in the governance system (changes in the roles of government and the division of work between participants) used in the promotion of the Gwang-gyo project by municipal governments?
- 2.8 (All participants) How do you perceive the regulations on agricultural and forest land? Do you think that they should continue to be maintained strictly in the future?

- 2.9 (Project staff, and experts) What is your opinion about the development of agricultural and forest land (on priority and approach)?
- 2.10 (Project staff, and experts) How have the effect of large-scale development on the local economy been considered in promoting the projects (including HSDs and UDs)?

3. Sustainability of Current Housing Patterns and Communities

- 3.1 (All participants) How do you expect demand for various housing types and, particularly, for apartments, to develop in the future?
- 3.2 (Residents, and experts) How do you perceive the role of women in community activities in apartment complexes?
- 3.3 (All participants) What do you think about the current manhattanization of apartments?
- 3.4 (All participants) How do you evaluate current residential features in your district in terms of density, open space, transport, and other urban conditions (such as jobs, shopping and medical services)?
- 3.5 (Project staff, and residents; Dong-baek HSD, Dong-cheon UD, Gwang-gyo NCD, and First Village) What has been your experience of community building and involvement in new settlements?
- 3.6 (Project staff, and residents; First Village) How have community activities been developing in First Village in Se-jong city recently?

4. Implications for Future Urban Development

- 4.1 (Project staff, and experts) What do you think is the most important task for the compact city in South Korean urban development?
- 4.2 (Project staff, and experts) What are your opinions about current housing policies and development methods, considering the changing environment (such as population structure)?
- 4.3 (Project staff, and experts) Do you think that small NC projects (HSD level) combined with regeneration (redevelopment) projects could be an alternative to the compact city in South Korea?

Appendix 3: Quantitative Data

3-1 Moving between Housing types

Source (3-1 ~ 3-6): 2010 Housing Status Survey (MLTM, 2011b)

Unit: Households

	Housing types						
	Total	Detached house	Apartment	Terraced house	Multiplex house	Non-residential building	Other
Nationwide	17,339,558	7,004,422	8,162,588	786,728	970,922	182,016	232,882
Previous Housing types							
Detached house	7,244,663	4,267,799	2,143,885	312,804	361,469	87,068	71,637
Apartment	5,443,158	705,945	4,353,240	147,403	151,700	36,584	48,285
Terraced house	906,269	204,314	443,323	176,207	65,458	7,085	9,881
Multiplex house	888,080	186,711	356,819	61,154	269,228	5,993	8,176
Non-residential building	122,689	48,597	33,232	6,691	6,405	25,645	2,118
Other	247,822	95,441	67,327	9,336	23,107	3,023	49,588

3-2 Hoped-for Housing types

Unit: Households

	hoped-for housing types					
	Total	Detached house	Apartment	Terraced and Multiplex house	Non-residential building	Other
Nationwide	3,438,132	758,619	2,315,008	251,361	12,234	100,909
Present housing types						
Detached house	1,116,775	456,108	480,142	128,116	2,368	50,042
Apartment	1,796,968	201,799	1,539,630	39,826	6,433	9,280
Terraced house	164,631	30,073	106,494	24,178	863	3,023
Multiplex house	252,828	57,825	131,221	54,730	1,685	7,367
Non-residential building	33,661	11,219	16,709	3,504	687	1,541
Other	73,268	1,595	40,813	1,006	198	29,657

3-3 Housing types by Income level and Education level

Unit: Households; Income: thousand won/month

	Housing types						
	Total	Detached house	Apartment	Terraced house	Multiplex house	Non-residential building	Other
Nationwide	17,339,558	7,004,422	8,162,588	786,728	970,922	182,016	232,882
Income							
690 and less	1,633,019	1,131,333	346,493	56,511	55,209	16,317	27,155
690-1,010	1,832,668	1,108,977	460,630	95,912	111,024	19,560	36,565
1,010-1,990	2,839,581	1,535,200	885,893	157,463	188,559	30,273	42,192
1,990-2,980	3,734,504	1,492,899	1,719,916	193,414	236,693	36,937	54,646
2,980-4,000	4,118,283	1,139,606	2,446,003	194,317	253,545	42,995	41,818
4,000 over	3,181,503	596,406	2,303,654	89,112	125,891	35,934	30,506

	Housing types						
	Total	Detached house	Apartment	Terraced house	Multiplex house	Non-residential building	Other
Nationwide	17,339,558	7,004,422	8,162,588	786,728	970,922	182,016	232,882
Householder's Education level							
Middle school and under	5,022,567	3,187,900	1,258,345	239,950	239,949	61,703	34,721
High school	6,181,933	2,474,826	2,741,980	366,793	449,837	70,796	77,701
University and over	6,135,058	1,341,696	4,162,263	179,985	281,136	49,518	120,460

3-4 Length of residence in present dwelling

Unit: Households

	Length of residence in present dwelling									
	Total	less than 1 year	1-2 year	2-3 year	3-5 year	5-10 year	10-15 year	15-20 year	20-25 year	25 year and more
Nationwide	17,339,558	1,820,070	2,407,572	1,875,735	2,607,443	3,491,036	2,071,066	1,205,176	746,496	1,114,964
Housing types										
Detached house	7,004,422	759,784	834,966	584,398	815,078	1,170,054	826,556	495,764	506,154	1,011,670
Apartment	8,162,588	762,474	1,240,327	1,019,458	1,460,957	1,855,601	1,029,220	562,124	179,177	53,250
Terraced house	786,728	80,502	110,941	87,379	106,148	181,955	92,456	74,086	31,810	21,451
Multiplex house	970,922	120,788	154,498	142,175	169,437	212,267	87,272	55,942	17,493	11,049
Non-residential building	182,016	21,540	25,907	15,639	23,821	36,946	24,199	13,281	9,812	10,872
Other	232,882	74,983	40,933	26,686	32,003	34,213	11,364	3,979	2,049	6,672

3-5 Housing Tenure types

Unit: Households

	Housing tenure types					
	Total	Owner occupation	Rental housing by deposit without rent	Rental housing by rent and deposit	Rental housing by rent without deposit	Other
Nationwide	17,339,558	9,406,893	3,755,576	3,148,344	341,584	687,161
Detached house	7,004,422	3,268,678	1,322,031	1,705,351	277,685	430,676
Apartment	8,162,588	5,080,575	1,857,148	1,032,893	23,199	168,772
Terraced house	786,728	444,537	223,516	81,399	9,640	27,636
Multiplex house	970,922	503,916	273,316	152,886	10,985	29,819
Non-residential building	182,016	69,229	30,637	48,858	14,034	19,260
Other	232,882	39,958	48,928	126,957	6,042	10,996

3-6 Perceptions on Housing Ownership

Unit: Households

	Perceptions on housing ownership									
	Total	Ownership is necessary				Ownership is not necessary				
		Subtotal	The stabilisation of housing	Property price increase	Other	Subtotal	Low need in comparison to necessity	No more instrument for property price increase	No inconvenience for living	other
Nationwide	17,339,558	14,504,464	13,502,662	910,401	91,401	2,835,094	906,789	678,990	1,187,691	61,624

3-7 Land Use by Development Projects

Data source: development plans from 43 development project (2010b; 2010c; 2010d; MACCA, 2010; Gyeong-gi Province, 2012; Yong-in City, 2012); Calculated by the author

Project Outline and density Unit: persons, persons/hectare, households, and households/hectare

Project	Development method	Plan Year	Completion Year	Planned Population	Population Density (on residential land)	Planned Households	Household Density (on residential land)	Household Density (on private land)
Bun-dang	NCD	1989	1996	390,320	614.7	97,580	153.7	122.1
Dong-tan	NCD	2001	2013	124,326	462.9	40,921	152.4	104.2
Do-an	NCD	2003	2012	68,706	344.2	24,538	122.9	113.9
Gwang-gyo	NCD	2005	2016	77,883	373.3	31,113	149.1	101.1
Se-jong	NCD	2006	2030	500,000	316.5	200,000	126.6	112.4
Dong-tan2	NCD	2008	2015	285,878	371.3	115,323	149.8	114.8
Goo-gal	HSD	1989	1991	9,316	699.9	2,329	175.0	175.0
Yeong-deok	HSD	1989	2000	2,304	300.0	640	83.3	83.3
Su-ji	HSD	1994	2002	24,349	741.2	6,581	200.3	188.7
Goo-gal2	HSD	1995	2000	12,576	514.1	3,399	139.0	131.1
Sang-gal	HSD	1995	2001	13,908	745.7	3,759	201.6	201.6
Yeok-buk	HSD	1995	1998	3,074	883.3	809	232.5	232.5
Dong-cheon	HSD	1998	2003	5,808	487.7	1,874	157.3	157.3
Sin-bong	HSD	1998	2004	8,905	546.7	2,873	176.4	164.7
Goo-gal3	HSD	1999	2004	14,130	453.0	4,558	146.1	137.3
Dong-baek	HSD	1999	2008	51,646	375.1	16,660	121.0	106.8
Sin-gal	HSD	1999	2005	10,955	545.8	3,533	176.0	176.0
Juk-jeon	HSD	1999	2007	57,290	387.7	18,479	125.1	108.3
Goo-seong	HSD	2001	2010	16,190	453.1	5,222	146.2	131.9
Bo-ra	HSD	2001	2007	13,340	387.2	4,303	124.9	120.4
Seo-cheon	HSD	2004	2011	13,315	402.8	4,161	125.9	104.5
Heung-deok	HSD	2004	2010	28,748	362.9	9,274	117.1	99.6
Dong-cheonU	UD	2004		8,259	338.1	2,664	109.0	109.0
Sin-bongU	UD	2004		9,960	390.7	3,213	126.0	117.9
Jung-dongU	UD	2007		8,650	355.8	3,089	127.1	127.1
Nam-saU	UD	2008		16,131	377.5	5,761	134.8	134.8
Lee-dongU	UD	2008		3,460	360.4	1,236	128.8	128.8
Bo-raU	UD	2009		2,212	365.0	790	130.4	130.4
Mo-hyeonU	UD	2009		10,951	271.3	3,911	96.9	92.2
Yeok-samU	UD	2009		10,579	0.0	3,778	0.0	95.8
Nam-sa2U	UD	2009		2,730	0.0	975	0.0	204.0
Goo-gal-staU	UD	2010		10,600	0.0	3,800	0.0	252.7
Yong-in7R	HR (RD)	2008				326	205.0	205.0
Yong-in5R	HR (RD)	2009				563	208.5	208.5
Yong-in8R	HR (RD)	2009				1,066	291.3	291.3
Mo-hyeonR	HR (RD)	2010				497	287.3	287.3
Sin-galC	HR (RC)	2007				612	220.1	220.1
Yong-in1C	HR (RC)	2009				500	233.6	233.6
Yong-in2C	HR (RC)	2011				366	224.5	224.5
Yang-jiH	HR (HEI)	2009				215	86.7	86.7
Yong-in9H	HR (HEI)	2009				322	138.2	138.2
Yong-in10H	HR (HEI)	2009				368	174.4	174.4
Po-gokH	HR (HEI)	2009				144	148.5	148.5

Private Land

Unit: hectare

Project	(1) Land for Detached Houses	(2) Land for Multi-unit dwellings	(3) Land for Dwellings	(4) Land for Neighbour- hood facilities	(5) Residential Land	(6) Commer- cial and Business Land	(7) Industrial Land	(8) NL+CBL+ IL	(9) Private Land
Bun-dang	72.42	549.73	622.15	12.87	635.02	163.98	0.00	176.85	799.00
Dong-tan	60.05	204.06	264.11	4.47	268.58	36.77	87.52	128.76	392.87
Do-an	53.50	130.34	183.84	15.75	199.59	15.90	0.00	31.64	215.48
Gwang-gyo	23.72	173.98	197.70	10.92	208.62	51.06	48.02	110.03	307.73
Se-jong	431.06	1114.09	1545.15	34.58	1579.73	113.33	85.55	233.46	1778.62
Dong-tan2	81.27	667.58	748.85	21.11	769.96	112.03	122.77	255.93	1004.78
Goo-gal	1.24	11.80	13.04	0.27	13.31	0.00	0.00	0.27	13.31
Yeong-deok	1.12	6.56	7.68	0.00	7.68	0.00	0.00	0.00	7.68
Su-ji	3.46	28.94	32.40	0.45	32.85	2.04	0.00	2.48	34.88
Goo-gal2	3.98	20.48	24.46	0.00	24.46	1.47	0.00	1.47	25.93
Sang-gal	2.55	15.56	18.11	0.54	18.65	0.00	0.00	0.54	18.65
Yeok-buk	0.25	2.83	3.08	0.40	3.48	0.00	0.00	0.40	3.48
Dong-cheon	2.76	8.36	11.12	0.78	11.90	0.00	0.00	0.79	11.91
Sin-bong	1.34	14.34	15.68	0.62	16.30	1.15	0.00	1.76	17.44
Goo-gal3	7.07	23.71	30.78	0.41	31.19	2.00	0.00	2.42	33.20
Dong-baek	37.50	99.71	137.21	0.48	137.69	18.35	0.00	18.83	156.04
Sin-gal	0.00	19.20	19.20	0.87	20.07	0.00	0.00	0.87	20.07
Juk-jeon	31.60	112.84	144.44	3.31	147.75	17.23	5.63	26.17	170.61
Goo-seong	5.35	29.57	34.92	0.80	35.72	1.43	2.43	4.67	39.59
Bo-ra	6.11	25.54	31.65	2.80	34.45	0.00	1.30	4.10	35.75
Seo-cheon	9.14	22.58	31.72	1.34	33.06	1.75	5.00	8.09	39.81
Heung-deok	23.13	54.19	77.32	1.89	79.21	7.74	6.18	15.81	93.13
Dong-cheonU	1.06	21.37	22.43	2.00	24.43	0.00	0.00	2.00	24.43
Sin-bongU	1.69	23.66	25.35	0.13	25.48	1.77	0.00	1.91	27.26
Jung-dongU	0.00	21.14	21.14	3.16	24.30	0.00	0.00	3.17	24.31
Nam-saU	0.18	41.53	41.71	1.03	42.74	0.00	0.00	1.02	42.73
Lee-dongU	0.54	8.67	9.21	0.39	9.60	0.00	0.00	0.39	9.60
Bo-raU	0.00	4.77	4.77	1.27	6.04	0.00	0.00	1.29	6.06
Mo-hyeonU	12.90	27.46	40.36	0.00	40.36	2.05	0.00	2.04	42.40
Yeok-samU	0.00	0.00	0.00	0.00	0.00	39.45	0.00	39.45	39.45
Nam-sa2U	0.00	0.00	0.00	0.00	0.00	4.78	0.00	4.78	4.78
Goo-gal-staU	0.00	0.00	0.00	0.00	0.00	15.04	0.00	15.04	15.04
Yong-in7R	0.00	1.59	1.59	0.00	1.59	0.00	0.00	0.00	1.59
Yong-in5R	0.00	2.70	2.70	0.00	2.70	0.00	0.00	0.00	2.70
Yong-in8R	0.00	3.66	3.66	0.00	3.66	0.00	0.00	0.00	3.66
Mo-hyeonR	0.00	1.73	1.73	0.00	1.73	0.00	0.00	0.00	1.73
Sin-galC	0.00	2.78	2.78	0.00	2.78	0.00	0.00	0.00	2.78
Yong-in1C	0.00	2.14	2.14	0.00	2.14	0.00	0.00	0.00	2.14
Yong-in2C	0.00	1.63	1.63	0.00	1.63	0.00	0.00	0.00	1.63
Yang-jiH	0.00	2.48	2.48	0.00	2.48	0.00	0.00	0.00	2.48
Yong-in9H	0.00	2.33	2.33	0.00	2.33	0.00	0.00	0.00	2.33
Yong-in10H	0.00	2.11	2.11	0.00	2.11	0.00	0.00	0.00	2.11
Po-gokH	0.00	0.97	0.97	0.00	0.97	0.00	0.00	0.00	0.97

(1) + (2) = (3); (3) + (4) = (5); (5) + (6) + (7) = (9);

(4) + (6) + (7) = (8) = (9) - (3)

Open Space and Land for Public Facilities

Unit: hectare

Project	(10) Parks	(11) Green space	(12) Parks and Green space	(13) River and River- side Land	(14) Other Open space	(15) Open space	(16) Land for Public offices	(17) Land for Schools	(18) Land for Medical facilities	(19) Land for Welfare and Cultural facilities	(20) Land for Sports facilities	(21) Land for Public Facilities
Bun-dang	266.55	148.61	415.16	152.99	0.00	568.15	16.58	73.20	15.90	16.78	10.64	133.10
Dong-tan	174.37	51.65	226.02	6.28	63.20	295.50	1.14	31.74	2.19	6.16	0.00	41.23
Do-an	110.08	22.20	132.28	27.79	7.89	167.96	8.67	28.69	4.70	11.66	2.77	56.49
Gwang-gyo	375.44	76.66	452.10	28.00	14.66	494.76	26.08	40.87	2.14	15.07	0.00	84.16
Se-jong	1873.74	600.03	2473.77	1272.60	80.11	3826.48	100.58	292.57	21.46	66.05	125.95	606.61
Dong-tan2	374.81	202.31	577.12	112.67	64.91	754.70	12.12	72.04	31.65	8.93	6.70	131.44
Goo-gal	0.98	0.00	0.98	0.00	0.00	0.98	0.10	1.12	0.00	0.00	0.00	1.22
Yeong-deok	1.82	0.00	1.82	0.00	0.00	1.82	0.00	0.05	0.00	0.00	0.00	0.05
Su-ji	12.09	0.00	12.09	2.96	2.15	17.20	0.45	4.97	0.00	1.39	0.39	7.20
Goo-gal2	12.03	0.00	12.03	0.00	0.12	12.15	1.74	5.15	0.00	0.41	0.45	7.75
Sang-gal	3.81	0.00	3.81	0.00	0.09	3.90	0.13	3.22	0.00	0.08	0.14	3.57
Yeok-buk	0.34	0.00	0.34	0.00	0.00	0.34	0.00	1.20	0.00	0.00	0.00	1.20
Dong-cheon	2.61	0.00	2.61	0.00	0.00	2.61	0.00	2.44	0.00	0.04	0.00	2.48
Sin-bong	17.67	0.00	17.67	1.41	0.79	19.87	0.09	2.78	0.00	0.07	0.00	2.94
Goo-gal3	30.56	0.00	30.56	0.00	0.04	30.60	0.36	5.71	0.00	0.20	0.00	6.27
Dong-baek	61.01	16.41	77.42	0.92	14.05	92.39	0.00	14.86	0.00	0.75	0.00	15.61
Sin-gal	8.85	0.00	8.85	0.00	0.00	8.85	3.20	2.59	0.00	0.00	0.00	5.79
Juk-jeon	42.13	26.74	68.87	10.79	0.88	80.54	0.00	17.05	0.00	8.83	0.67	26.55
Goo-seong	25.59	6.36	31.95	2.26	0.00	34.21	0.17	5.08	0.00	0.57	0.36	6.18
Bo-ra	19.44	0.00	19.44	0.29	0.07	19.80	0.40	5.12	0.00	2.61	0.37	8.50
Seo-cheon	22.79	10.71	33.50	2.06	0.00	35.56	1.44	9.85	1.11	0.71	0.00	13.11
Heung-deok	50.91	14.08	64.99	2.82	0.16	67.97	0.22	9.63	0.00	2.46	0.00	12.31
Dong-cheonU	4.76	5.58	10.34	1.21	0.05	11.60	0.16	3.81	0.00	0.18	0.00	4.15
Sin-bongU	4.10	4.11	8.21	2.83	0.19	11.23	0.00	3.57	0.00	0.17	0.00	3.74
Jung-dongU	5.22	0.03	5.25	0.37	0.05	5.67	0.00	2.62	0.00	0.00	0.00	2.62
Nam-saU	10.23	0.67	10.90	0.00	1.57	12.47	0.20	4.14	0.00	0.56	0.00	4.90
Lee-dongU	1.29	0.64	1.93	0.00	0.84	2.77	0.13	0.00	0.00	0.00	0.00	0.13
Bo-raU	0.48	0.57	1.05	0.00	0.00	1.05	0.00	0.00	0.00	0.09	0.00	0.09
Mo-hyeonU	15.88	9.14	25.02	3.57	0.00	28.59	0.18	4.01	0.00	0.43	0.00	4.62
Yeok-samU	6.11	1.45	7.56	2.91	0.20	10.67	0.00	0.00	0.00	0.00	0.00	0.00
Nam-sa2U	0.89	0.00	0.89	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.00	0.00
Goo-gal-staU	0.66	3.68	4.34	0.00	0.00	4.34	0.00	0.00	0.00	0.00	0.00	0.00
Yong-in7R	0.19	0.00	0.19	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00
Yong-in5R	0.15	0.12	0.27	0.00	0.15	0.42	0.00	0.00	0.00	0.00	0.00	0.00
Yong-in8R	0.32	0.00	0.32	0.00	0.00	0.32	0.16	0.00	0.00	0.33	0.00	0.49
Mo-hyeonR	0.05	0.15	0.20	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00
Sin-galC	0.16	0.00	0.16	0.00	0.10	0.26	0.00	0.00	0.00	0.00	0.00	0.00
Yong-in1C	0.03	0.00	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Yong-in2C	0.10	0.00	0.10	0.00	0.11	0.21	0.00	0.00	0.00	0.00	0.00	0.00
Yang-jiH	0.05	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Yong-in9H	0.03	0.00	0.03	0.00	0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00
Yong-in10H	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Po-gokH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

(10) + (11) = (12); (12) + (13) + (14) = (15);

(16) + (17) + (18) + (19) + (20) = (21)

Land for Infrastructure and Land for Self-sufficiency functions

Unit: hectare

Project	(22) Land for Roads	(23) Land for Railway facilities	(24) Land for Transport facilities	(25) Land for Markets	(26) Land for Other Infra- structure	(27) Land for Infra- structure	(28) Land for Public facilities and Infra- structure	(29) Reserved Land	(30) Public land	(31) Land for Self- sufficiency functions	(32) Total Site Size
Bun-dang	387.11	2.62	22.46	11.12	40.36	463.67	596.77	0.00	1164.92	226.11	1963.92
Dong-tan	147.67	0.00	8.61	0.00	16.48	172.76	213.99	1.25	510.74	139.50	903.61
Do-an	153.63	0.00	7.12	0.60	5.29	166.64	223.13	4.37	395.46	61.04	610.94
Gwang-gyo	164.62	13.25	43.99	4.78	17.16	243.80	327.96	0.00	822.72	153.32	1130.45
Se-jong	826.33	0.00	92.08	4.18	81.30	1003.89	1610.50	75.23	5512.20	496.78	7290.82
Dong-tan2	403.80	0.36	36.70	12.18	9.98	463.02	594.46	47.55	1396.71	356.18	2401.49
Goo-gal	6.14	0.00	0.00	0.00	0.00	6.14	7.36	0.00	8.34	0.37	21.65
Yeong-deok	1.90	0.00	0.07	0.00	0.00	1.97	2.02	0.00	3.84	0.00	11.52
Su-ji	27.29	0.00	0.85	1.90	5.45	35.49	42.69	0.00	59.89	4.32	94.77
Goo-gal2	18.20	0.00	0.50	0.00	0.00	18.70	26.45	0.00	38.60	3.62	64.53
Sang-gal	6.58	0.00	0.31	0.00	0.00	6.89	10.46	0.00	14.36	0.75	33.01
Yeok-buk	0.83	0.00	0.05	0.00	0.02	0.90	2.10	0.00	2.44	0.40	5.92
Dong-cheon	4.28	0.00	0.12	0.00	0.00	4.40	6.88	0.00	9.49	0.83	21.40
Sin-bong	4.67	0.00	0.32	0.00	0.00	4.99	7.93	0.00	27.80	1.92	45.24
Goo-gal3	20.21	2.86	1.68	0.83	0.06	25.64	31.91	0.00	62.51	2.98	95.71
Dong-baek	60.07	0.00	2.55	0.00	1.82	64.44	80.05	0.00	172.44	19.58	328.48
Sin-gal	6.07	0.00	0.42	0.00	0.00	6.49	12.28	0.00	21.13	4.07	41.20
Juk-jeon	57.04	0.69	2.75	0.72	1.66	62.86	89.41	0.00	169.95	35.00	340.56
Goo-seong	17.92	0.00	0.89	0.00	0.65	19.46	25.64	0.00	59.85	5.41	99.44
Bo-ra	14.86	0.00	0.67	1.46	0.49	17.48	25.98	0.00	45.78	7.11	81.53
Seo-cheon	20.88	0.00	0.71	0.00	4.05	25.64	38.75	0.00	74.31	11.35	114.12
Heung-deok	36.75	0.00	1.54	0.00	2.93	41.22	53.53	0.00	121.50	18.49	214.63
Dong-cheonU	6.83	0.00	0.37	0.00	0.00	7.20	11.35	0.00	22.95	2.34	47.38
Sin-bongU	12.04	0.00	0.23	0.00	0.00	12.27	16.01	0.00	27.24	2.08	54.50
Jung-dongU	5.95	0.00	0.23	0.00	0.00	6.18	8.80	0.00	14.47	3.17	38.78
Nam-saU	9.85	0.00	0.44	0.00	0.00	10.29	15.19	0.00	27.66	1.78	70.39
Lee-dongU	2.82	0.00	0.09	0.00	0.07	2.90	3.03	0.00	5.80	0.52	15.40
Bo-raU	1.28	0.00	0.13	0.00	0.16	1.57	1.66	0.00	2.71	1.38	8.77
Mo-hyeonU	18.75	0.00	0.68	0.00	0.90	20.33	24.95	0.00	53.54	2.65	95.94
Yeok-samU	17.98	0.60	0.51	0.00	0.00	19.09	19.09	0.00	29.76	39.45	69.21
Nam-sa2U	1.14	0.00	0.04	0.00	0.00	1.18	1.18	0.00	2.07	4.78	6.85
Goo-gal-staU	5.22	0.30	0.00	0.00	0.00	5.52	5.52	0.00	9.86	15.04	24.90
Yong-in7R	0.19	0.00	0.00	0.00	0.29	0.48	0.48	0.00	0.67	0.00	2.26
Yong-in5R	0.34	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.76	0.00	3.46
Yong-in8R	0.44	0.00	0.00	0.00	0.00	0.44	0.93	0.00	1.25	0.49	4.91
Mo-hyeonR	0.35	0.00	0.00	0.00	0.00	0.35	0.35	0.00	0.55	0.00	2.28
Sin-galC	0.12	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.38	0.00	3.16
Yong-in1C	0.08	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.11	0.00	2.25
Yong-in2C	0.14	0.00	0.00	0.00	0.00	0.14	0.14	0.00	0.35	0.00	1.98
Yang-jiH	0.36	0.00	0.00	0.00	0.00	0.36	0.36	0.00	0.41	0.00	2.89
Yong-in9H	0.71	0.00	0.04	0.00	0.00	0.75	0.75	0.00	0.81	0.00	3.14
Yong-in10H	0.26	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.28	0.00	2.39
Po-gokH	0.32	0.00	0.00	0.00	0.00	0.32	0.32	0.00	0.32	0.00	1.29

(22) + (23) + (24) + (25) + (26) = (27); (21) + (27) = (28); (15) + (21) + (27) + (29) = (30);
 (8) + (16) + (18) + (19) + (29) = (31); (9) + (30) = (32)

The Ratios of Land Use

Project	(33) The Ratio of Land for Multi- unit Dwellings	(34) The Ratio of Residen- tial Land	(35) The Ratio of Private Land	(36) The Ratio of Parks and Green space	(37) The Ratio of Open Space	(38) The Ratio of Public facilities	(39) The Ratio of Infra- structure	(40) The Ratio of Public facilities and Infra- structure	(41) The Ratio of Reserved Land	(42) The Ratio of Public Land	(43) The Ratio of Land for Self- sufficiency functions
Bun-dang	88.4%	31.7%	40.7%	21.1%	28.9%	6.8%	23.6%	30.4%	0.0%	59.3%	11.5%
Dong-tan	77.3%	29.2%	43.5%	25.0%	32.7%	4.6%	19.1%	23.7%	0.1%	56.5%	15.4%
Do-an	70.9%	30.1%	35.3%	21.7%	27.5%	9.2%	27.3%	36.5%	0.7%	64.7%	10.0%
Gwang-gyo	88.0%	17.5%	27.2%	40.0%	43.8%	7.4%	21.6%	29.0%	0.0%	72.8%	13.6%
Se-jong	72.1%	21.2%	24.4%	33.9%	52.5%	8.3%	13.8%	22.1%	1.0%	75.6%	6.8%
Dong-tan2	89.1%	31.2%	41.8%	24.0%	31.4%	5.5%	19.3%	24.8%	2.0%	58.2%	14.8%
Goo-gal	90.5%	60.2%	61.5%	4.5%	4.5%	5.6%	28.4%	34.0%	0.0%	38.5%	1.7%
Yeong-deok	85.4%	66.7%	66.7%	15.8%	15.8%	0.4%	17.1%	17.5%	0.0%	33.3%	0.0%
Su-ji	89.3%	34.2%	36.8%	12.8%	18.1%	7.6%	37.4%	45.0%	0.0%	63.2%	4.6%
Goo-gal2	83.7%	37.9%	40.2%	18.6%	18.8%	12.0%	29.0%	41.0%	0.0%	59.8%	5.6%
Sang-gal	85.9%	54.9%	56.5%	11.5%	11.8%	10.8%	20.9%	31.7%	0.0%	43.5%	2.3%
Yeok-buk	91.9%	52.0%	58.8%	5.7%	5.7%	20.3%	15.2%	35.5%	0.0%	41.2%	6.8%
Dong-cheon	75.2%	52.0%	55.7%	12.2%	12.2%	11.6%	20.6%	32.1%	0.0%	44.3%	3.9%
Sin-bong	91.5%	34.7%	38.5%	39.1%	43.9%	6.5%	11.0%	17.5%	0.0%	61.5%	4.2%
Goo-gal3	77.0%	32.2%	34.7%	31.9%	32.0%	6.6%	26.8%	33.3%	0.0%	65.3%	3.1%
Dong-baek	72.7%	41.8%	47.5%	23.6%	28.1%	4.8%	19.6%	24.4%	0.0%	52.5%	6.0%
Sin-gal	100.0%	46.6%	48.7%	21.5%	21.5%	14.1%	15.8%	29.8%	0.0%	51.3%	9.9%
Juk-jeon	78.1%	42.4%	50.1%	20.2%	23.6%	7.8%	18.5%	26.3%	0.0%	49.9%	10.3%
Goo-seong	84.7%	35.1%	39.8%	32.1%	34.4%	6.2%	19.6%	25.8%	0.0%	60.2%	5.4%
Bo-ra	80.7%	38.8%	43.8%	23.8%	24.3%	10.4%	21.4%	31.9%	0.0%	56.2%	8.7%
Seo-cheon	71.2%	27.8%	34.9%	29.4%	31.2%	11.5%	22.5%	34.0%	0.0%	65.1%	9.9%
Heung-deok	70.1%	36.0%	43.4%	30.3%	31.7%	5.7%	19.2%	24.9%	0.0%	56.6%	8.6%
Dong-cheonU	95.3%	47.3%	51.6%	21.8%	24.5%	8.8%	15.2%	24.0%	0.0%	48.4%	4.9%
Sin-bongU	93.3%	46.5%	50.0%	15.1%	20.6%	6.9%	22.5%	29.4%	0.0%	50.0%	3.8%
Jung-dongU	100.0%	54.5%	62.7%	13.5%	14.6%	6.8%	15.9%	22.7%	0.0%	37.3%	8.2%
Nam-saU	99.6%	59.3%	60.7%	15.5%	17.7%	7.0%	14.6%	21.6%	0.0%	39.3%	2.5%
Lee-dongU	94.1%	59.8%	62.3%	12.5%	18.0%	0.8%	18.8%	19.7%	0.0%	37.7%	3.4%
Bo-raU	100.0%	54.4%	69.1%	12.0%	12.0%	1.0%	17.9%	18.9%	0.0%	30.9%	15.7%
Mo-hyeonU	68.0%	42.1%	44.2%	26.1%	29.8%	4.8%	21.2%	26.0%	0.0%	55.8%	2.8%
Yeok-samU	- ¹⁾	0.0%	57.0%	10.9%	15.4%	0.0%	27.6%	27.6%	0.0%	43.0%	57.0%
Nam-sa2U	- ¹⁾	0.0%	69.8%	13.0%	13.0%	0.0%	17.2%	17.2%	0.0%	30.2%	69.8%
Goo-gal-staU	- ¹⁾	0.0%	60.4%	17.4%	17.4%	0.0%	22.2%	22.2%	0.0%	39.6%	60.4%
Yong-in7R	100.0%	70.4%	70.4%	8.4%	8.4%	0.0%	21.2%	21.2%	0.0%	29.6%	0.0%
Yong-in5R	100.0%	78.0%	78.0%	7.8%	12.1%	0.0%	9.8%	9.8%	0.0%	22.0%	0.0%
Yong-in8R	100.0%	74.5%	74.5%	6.5%	6.5%	10.0%	9.0%	18.9%	0.0%	25.5%	10.0%
Mo-hyeonR	100.0%	75.9%	75.9%	8.8%	8.8%	0.0%	15.4%	15.4%	0.0%	24.1%	0.0%
Sin-galC	100.0%	88.0%	88.0%	5.1%	8.2%	0.0%	3.8%	3.8%	0.0%	12.0%	0.0%
Yong-in1C	100.0%	95.1%	95.1%	1.3%	1.3%	0.0%	3.6%	3.6%	0.0%	4.9%	0.0%
Yong-in2C	100.0%	82.3%	82.3%	5.1%	10.6%	0.0%	7.1%	7.1%	0.0%	17.7%	0.0%
Yang-jiH	100.0%	85.8%	85.8%	1.7%	1.7%	0.0%	12.5%	12.5%	0.0%	14.2%	0.0%
Yong-in9H	100.0%	74.2%	74.2%	1.0%	1.9%	0.0%	23.9%	23.9%	0.0%	25.8%	0.0%
Yong-in10H	100.0%	88.3%	88.3%	0.0%	0.8%	0.0%	10.9%	10.9%	0.0%	11.7%	0.0%
Po-gokH	100.0%	75.2%	75.2%	0.0%	0.0%	0.0%	24.8%	24.8%	0.0%	24.8%	0.0%

1) 'Land for multi-unit dwellings' (denominator) is zero.

(33) = (2) / (3); (34) = (5) / (32); (35) = (9) / (32); (36) = (12) / (32); (37) = (14) / (32); (38) = (21) / (32);

(39) = (27) / (32); (40) = (28) / (32); (41) = (29) / (32); (42) = (30) / (32); (43) = (31) / (32);

(35) + (42) = (35) + (37) + (38) + (39) + (41) = 100%

Land Use by Development Methods

Unit: persons, persons/hectare, households, households/hectare, and hectare

Average	Projects	Planned Population	Population Density (on residential land)	Planned Households	Household Density (on residential land)	Household Density (on private land)
Average NCD	Total 6 NCD projects	241,186	395.2	84,913	139.1	113.3
Average HSD	Total 16 HSD projects	17,866	441.3	5,528	136.5	122.6
Average UD	Total 10 UD projects	8,353	344.7	2,922	119.5	123.8
Average HR	Total 11 HR projects (4 RD, 3 RC, and 4 HEI)	-	-	453	206.4	206.4
Average NCD - Se-jong	Total 5 NCD projects except for Se-jong	189,423	455.0	61,895	148.7	113.8
Average HSD after 2000	Total 4 HSD projects after 2000	17,898	392.4	5,740	125.8	110.2
Average UD - extreme 4	Total 6 UD projects except for 4 extreme cases	8,112	367.0	2,792	126.3	124.7
Average HR - HEI	Total 6 HR projects except for 4 HEI	-	-	561	242.1	242.1

Average	(1) Land for Detached Houses	(2) Land for Multi-unit dwellings	(3) Land for Dwellings	(4) Land for Neighbourhood facilities	(5) Residential Land	(6) Commercial and Business Land	(7) Industrial Land	(8) NL+CBL+IL	(9) Private Land
Average NCD	120.34	473.30	593.63	16.62	610.25	82.18	57.31	156.11	749.75
Average HSD	8.54	31.01	39.55	0.94	40.49	3.32	1.28	5.54	45.09
Average UD	1.64	14.86	16.50	0.80	17.30	6.31	0.00	7.11	23.61
Average HR	0.00	2.19	2.19	0.00	2.19	0.00	0.00	0.00	2.19
Average NCD - Se-jong	58.19	345.14	403.33	13.02	416.35	75.95	51.66	140.64	543.97
Average HSD after 2000	10.93	32.97	43.90	1.7075	45.61	2.73	3.73	8.1675	52.07
Average UD - extreme 4	0.58	20.19	20.77	1.33	22.10	0.30	0.00	1.63	22.40
Average HR - HEI	0.00	2.32	2.32	0.00	2.32	0.00	0.00	0.00	2.32

Average	(10) Parks	(11) Green space	(12) Parks and Green space	(13) River and Riverside Land	(14) Other Open space	(15) Open space	(16) Land for Public offices	(17) Land for Schools	(18) Land for Medical facilities	(19) Land for Welfare and Cultural facilities	(20) Land for Sports facilities	(21) Land for Public Facilities
Average NCD	529.17	183.58	712.74	266.72	38.46	1017.93	27.53	89.85	13.01	20.78	24.34	175.51
Average HSD	19.54	4.64	24.18	1.47	1.15	26.80	0.52	5.68	0.07	1.13	0.15	7.55
Average UD	4.96	2.59	7.55	1.09	0.29	8.93	0.07	1.82	0.00	0.14	0.00	2.03
Average HR	0.10	0.02	0.12	0.00	0.04	0.16	0.01	0.00	0.00	0.03	0.00	0.04
Average NCD - Se-jong	260.25	100.29	360.54	65.55	30.13	456.21	12.92	49.31	11.32	11.72	4.02	89.28
Average HSD after 2000	29.68	7.79	37.47	1.86	0.06	39.39	0.56	7.42	0.28	1.59	0.18	10.03
Average UD - extreme 4	4.35	1.93	6.28	0.74	0.45	7.47	0.08	2.36	0.00	0.17	0.00	2.61
Average HR - HEI	0.14	0.04	0.18	0.00	0.05	0.23	0.02	0.00	0.00	0.05	0.00	0.07

Average	(22) Land for Roads	(23) Land for Railway facilities	(24) Land for Transport facilities	(25) Land for Markets	(26) Land for Other Infra- structure	(27) Land for Infra- structure	(28) Land for Public facilities and Infra- structure	(29) Reserved Land	(30) Public land	(31) Land for Self- sufficiency functions	(32) Total Site Size
Average NCD	347.19	2.71	35.16	5.48	28.43	418.96	594.47	21.40	1633.79	238.82	2383.54
Average HSD	18.98	0.22	0.84	0.31	1.07	21.42	28.97	0.00	55.76	7.26	100.86
Average UD	8.19	0.09	0.27	0.00	0.11	8.65	10.68	0.00	19.61	7.32	43.21
Average HR	0.30	0.00	0.00	0.00	0.03	0.33	0.38	0.00	0.54	0.04	2.73
Average NCD - Se-jong	251.37	3.25	23.78	5.74	17.85	301.98	391.26	10.63	858.11	187.23	1402.08
Average HSD after 2000	22.60	0.00	0.95	0.37	2.03	25.95	35.98	0.00	75.36	10.59	127.43
Average UD - extreme 4	6.46	0.00	0.25	0.00	0.04	6.74	9.34	0.00	16.81	1.88	39.20
Average HR - HEI	0.24	0.00	0.00	0.00	0.04	0.28	0.35	0.00	0.58	0.07	2.90

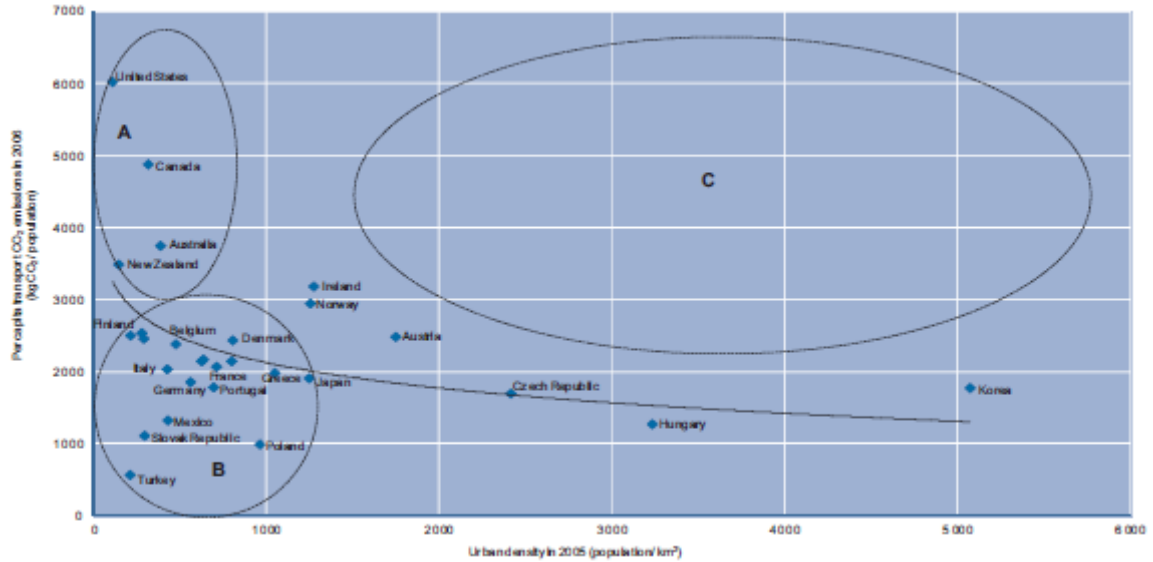
Average	(33) The Ratio of Land for Multi- unit Dwellings	(34) The Ratio of Residen- tial Land	(35) The Ratio of Private Land	(36) The Ratio of Parks and Green space	(37) The Ratio of Open Space	(38) The Ratio of Public facilities	(39) The Ratio of Infra- structure	(40) The Ratio of Public facilities and Infra- structure	(41) The Ratio of Reserved Land	(42) The Ratio of Public Land	(43) The Ratio of Land for Self- sufficiency functions
Average NCD	79.7%	24.9%	31.5%	29.9%	42.7%	7.4%	17.6%	24.9%	0.9%	68.5%	10.0%
Average HSD	78.4%	39.2%	44.7%	24.0%	26.6%	7.5%	21.2%	28.7%	0.0%	55.3%	7.2%
Average UD	90.1%	38.2%	54.6%	17.5%	20.7%	4.7%	20.0%	24.7%	0.0%	45.4%	16.9%
Average HR	100.0%	80.4%	80.4%	4.5%	5.9%	1.6%	12.1%	13.8%	0.0%	19.6%	1.6%
Average NCD - Se-jong	85.6%	28.8%	38.8%	25.7%	32.5%	6.4%	21.5%	27.9%	0.8%	61.2%	13.4%
Average HSD after 2000	75.1%	34.5%	40.9%	29.4%	30.9%	7.9%	20.4%	28.2%	0.0%	59.1%	8.3%
Average UD - extreme 4	97.2%	53.0%	57.1%	16.0%	19.0%	6.6%	17.2%	23.8%	0.0%	42.9%	4.8%
Average HR - HEI	100.0%	80.0%	80.0%	6.3%	8.0%	2.4%	9.6%	12.0%	0.0%	20.0%	2.4%

3-8 Economic Benefits from the Compact City

Source: OECD (2012: 57-61)

CO2 emissions per capita in transport and urban density, 2005-2006

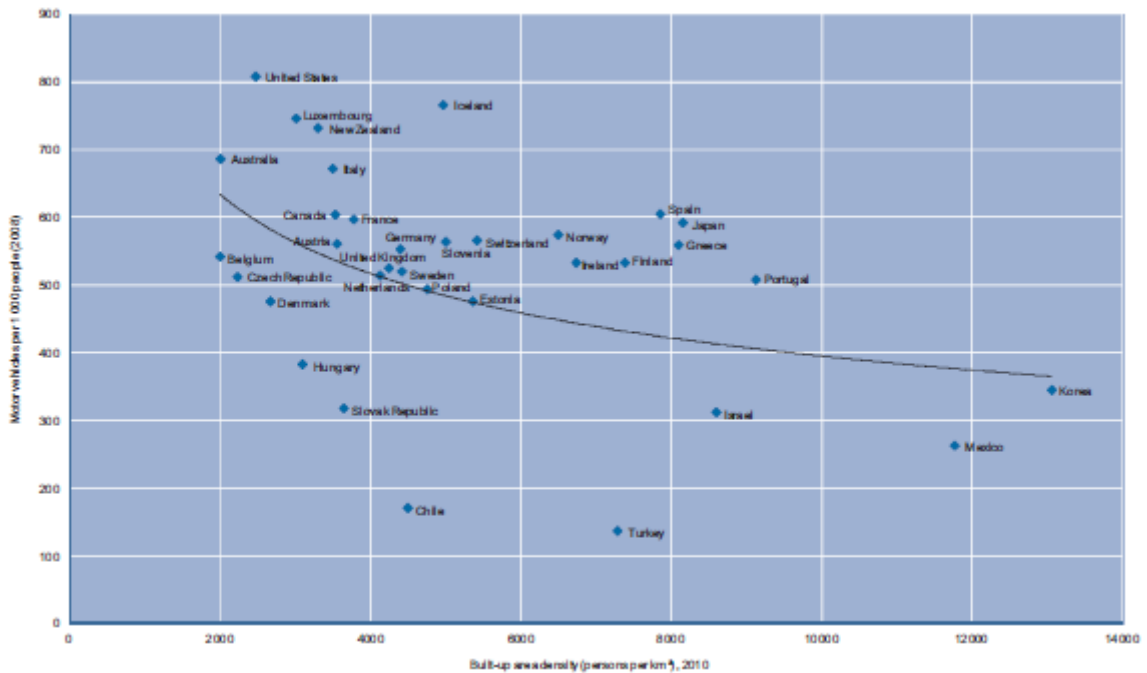
Predominantly urban areas



Notes: 1) A = low-density urban areas with high emissions; B = low-density urban areas with low emissions; C = densely populated urban areas with high emissions. 2) Urban density is calculated based on the OECD definition of 'predominantly urban areas'.

Population density¹ in built-up areas² and motor vehicles per 1 000 population

Population density (2010), motor vehicles (2008)

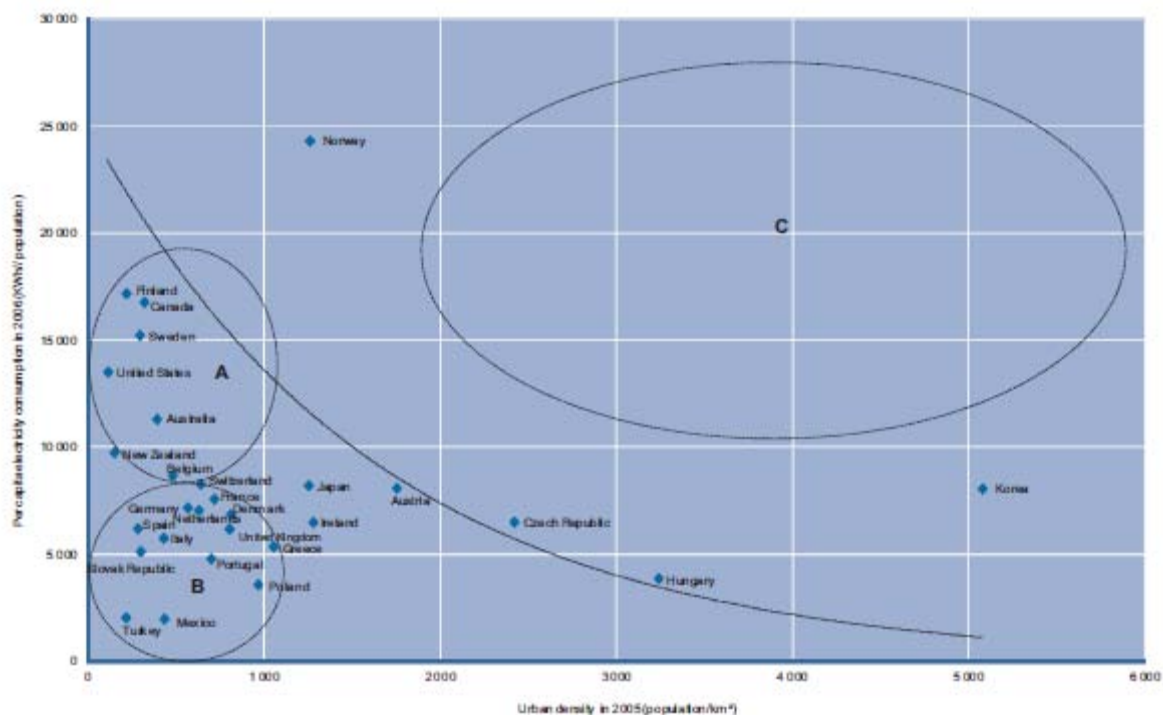


Notes: 1) Total population density in built-up areas is computed using total population data from UN *World urbanization prospects: the 2009 revision* and built-up area data from the Lincoln Institute of Land Policy's *Atlas of Urban Expansion*.

2) Built-up area is computed by using GIS techniques. It is defined as the area occupied by built-up pixels within the set of administrative boundaries defining the city.

Electricity consumption per capita and urban density, 2005-2006

Predominantly urban areas



Notes: 1) A = low-density urban areas with high electricity consumption;

B = low-density urban areas with low electricity consumption;

C = densely populated urban areas with high electricity consumption.

2) Urban density is calculated based on the OECD definition of 'predominantly urban' areas.

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