

# **Neighborhood Urban Quality of Life**

Guidelines for Urban Planning and Development of New Assessment Tool

By

Sarah Abdel Moneim El Ariane

A Thesis Submitted to the  
Faculty of Engineering, Cairo University  
in Partial Fulfillment of the  
Requirement for the Degree of  
DOCTOR OF PHILOSOPHY  
in  
ARCHITECTURE

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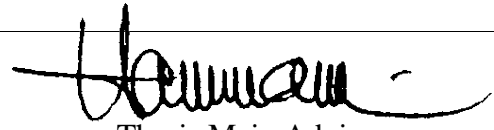
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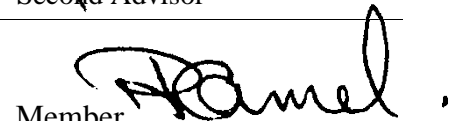
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**Summary :**

Quality of life is a notion that has been discussed recently in various studies as a response to many problems facing the new towns all over the world as well as in Egypt. The purpose of this study is to answer the question of how can urban planning contributes to improving individual quality of life within the neighborhood. On this basis this study introduced the notion of Urban Quality of Life that refers to the urban planning features that could enhance the individual quality of life. Further, the study develops an evaluation model and user-friendly assessment tool for residential neighborhoods based on recognized and agreed urban quality of life principles, which could be useful for planners and designers addressing the new development area and identifying possible weaknesses of developed area.



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## **Abstract:**

Urban Quality of life is a notion that has been discussed recently in various studies as a response to many problems facing the new towns all over the world as well as in Egypt. The purpose of this study is to answer the question of how can urban planning contributes to improving individual quality of life within the neighborhood. On this basis this study introduced the notion of Urban Quality of Life that refers to the urban planning features that could enhance the individual quality of life. To define the term “Urban Quality of Life” the study looks over the definitions of quality of life, urban planning and sustainable development.

Scientists and researchers have developed and improved a lot of sustainability assessment methods for the environmental impact of a building or a group of buildings, but the effect of urban planning design on individual quality of life is poorly questioned. So the objective of this study is to develop an evaluation model and user-friendly assessment tool for residential neighborhoods based on recognized and agreed urban quality of life principles, which could be useful for planners and designers addressing the new development area and identifying possible weaknesses of developed area.

The methodology used includes a number of steps as follows. Initially an analysis of contemporary urban planning theories and approaches raised in the late of twentieth was conducted through literature search. Methods like BREEAM Communities, CASBEE for urban development and LEED for neighborhood have been compared and integrated with new indicators. The results of this first exercise was the identification of a core set of urban quality of life indicators that represents the issues involved in the suggested urban quality of life assessment model. The latter is based on the Analytic Network Process (ANP), an advanced version of the Analytic Hierarchy Process, which

seems more appropriate for representing and supporting decision making in this field. The model consists of clusters, elements, interrelationship between clusters, and interrelationship between elements. It allows interactions and feedbacks within and between clusters and provides a process to derive ratio scales priorities from the elements.

The expected results consist in the creation of a fully-operative decision-making tool to support policy makers in designing and redeveloping residential neighborhood.

## Table of Contents

	<b>Abstract</b>	I
	Table of Contents	III
	List of Tables	VII
	List of Figure	VIII
1	Introduction	1
2	Research Problem	2
3	Research Objective	3
4	Research Hypothesis	3
5	The Approaches Used in the Research	4
6	Research Methodology	4
	<b>Chapter One: Urban Quality of Life</b>	7
1-1	Urban Quality of Life Definitions	8
1-1-1	Quality	8
1-1-2	Quality of Life	8
1-1-3	Quality of Life and Sustainable Development	13
1-1-4	Quality of Life Domains	14
1-1-5	Urban/ Urban Planning	16
1-1-6	Urban Quality of Life	17
1-2	Measuring Urban Quality of Life	21
1-2-1	Urban Quality of Life Indicators Definitions	21
1-1-1-1	Subjective Indicators	23
1-1-1-2	Objective Indicators	24
1-2-2	Reviewing Approaches for Measuring Urban Quality of Life	24
1-2-2-1	Hedonic Model Approach	24
1-2-2-2	Life Satisfaction Approach (LSA)	25
1-2-2-3	Combining the Hedonic & (LS) Approaches	26
1-2-2-4	Conjoint Analysis Approach	26
1-2-2-5	Analytic Hierarchy Process Approach (AHP)	28
1-2-2-6	Analytic Network Process Approach (ANP)	32
1-3	Contemporary Urban Planning Theories and Approaches	35
1-3-1	New Urbanism	36
1-3-1-1	New Urbanism Goals and Issues	36
1-3-1-2	New Urbanism Principles	37
1-3-2	Smart growth	41
1-3-2-1	Smart growth Goals and Issues	41
1-3-2-2	Smart growth Principles	42
1-3-3	Urban Village	51
1-3-3-1	Urban Village Goals and Issues	52
1-3-3-2	Urban Village Principles	53
1-3-4	Principles of Intelligent Urbanism	56
1-3-4-1	Intelligent Urbanism Goals and Issues	56
1-3-4-2	Principles of Intelligent Urbanism	56
1-3-5	Analysis of Urban Planning Theories and Approaches	60
1-4	Assessment Tools for Urban Planning Evaluation	62
1-4-1	LEED for Neighborhood Development - United States	63

1-4-2	BREEAM for Communities - Great Britain	66
1-4-3	CASBEE for Urban Development - Japan	69
1-4-4	The Pearl Community Rating System for Estidama - Emirate	73
1-4-5	Building for Life - Great Britain	75
1-4-6	Analysis of Assessment Tools for Urban Planning Evaluation	78
<b>Chapter Two: Neighborhood Urban Quality of Life Indicators</b>		<b>82</b>
2-1	Environmental Urban Quality of Life	85
2-1-1	Quality of Air	86
2-1-1-1	Atmospheric Quality	86
2-1-1-2	The Air Quality Health	87
2-1-1-3	Prevention Measures of Air Pollution	87
2-1-2	Quality of Water	88
2-1-2-1	Drinking Water Quality	88
2-1-2-2	Water Consumption	89
2-1-2-3	Water Bodies Quality	90
2-1-3	Quality of Land	91
2-1-3-1	Remediation of Contaminated Land	91
2-1-3-2	Biodiversity	91
2-1-3-3	Ecological Footprint	92
2-1-4	Quality of Materials	94
2-1-4-1	Selection of Materials with Consideration for Impact on Health	94
2-1-5	Quality of Local Environment	94
2-1-5-1	Enjoy Natural Landscapes and Parks	95
2-1-5-2	Outdoor Thermal Comfort	95
2-1-5-3	Outdoor Acoustic Comfort	97
2-1-5-4	Outdoor Lighting Comfort	98
2-1-5-5	Reduction of the Impact of Odor	98
2-1-6	Energy Use	99
2-1-6-1	Energy Efficiency	100
2-1-6-2	Renewable Energy	101
2-1-7	Waste Management & Recycling	101
2-1-7-1	Solid Waste	102
2-1-7-1	Wastewater	103
2-2	Physical Urban Quality of Life	103
2-2-1	Land Use	104
2-2-1-1	Mixed Land Use	104
2-2-1-2	Neighborhood Services and Facilities	106
2-2-1-3	Effective Use of Land	107
2-2-2	Compact Neighborhood	108
2-2-2-1	Density	109
2-2-2-2	Graded Density	110
2-2-3	Urban Layout	111
2-2-3-1	Street and Square Network	112
2-2-3-2	Building Block	112
2-2-4	Housing & Buildings Quality	114
2-2-4-1	Building Quality	115
2-2-4-2	Housing Quality	115
2-2-5	Management & Maintenance	116

	2-2-5-1	Management and Maintenance	116
2-3		<b>Mobility Urban Quality of Life</b>	117
	2-3-1	Accessibility	118
	2-3-1-1	Pedestrian Catchment Area	119
	2-3-1-2	Connectivity	124
	2-3-2	Walkability and Cycability	129
	2-3-2-1	Walkable Network	129
	2-3-2-2	Cycable Network and Facilities	130
	2-3-2-3	Traffic Calming	131
	2-3-3	Public Transportation	134
	2-3-3-1	Use of Public Transport	134
	2-3-3-2	Variety of Transportation Choices	134
	2-3-3-3	Public Transport Rate	135
	2-3-3-4	Appropriate public Transport	135
	2-3-3-5	Transit Facilities	135
	2-3-3-6	Ease of Access to Public Transport Facilities	136
	2-3-4	Traffic Load	137
	2-3-4-1	Traffic Volume	137
	2-3-4-2	Transportation Demand Management	137
2-4		<b>Social Urban Quality of Life</b>	138
	2-4-1	Social Equity and Inclusion	142
	2-4-1-1	Social Justice	143
	2-4-1-2	Inclusive Communities	144
	2-4-2	Social Connectedness	147
	2-4-2-1	Social Integration	148
	2-4-2-2	Social Network	149
	2-4-2-3	Social Participation	151
	2-4-3	Behavioral performance	154
	2-4-3-1	Public Awareness	155
	2-4-3-2	Neighborhood Stability	155
	2-4-3-3	Neighborhood Vitality	155
2-5		<b>Psychological Urban Quality of Life</b>	156
	2-5-1	Community Identity	157
	2-5-1-1	Urban Image	158
	2-5-1-2	Responsive Design	158
	2-5-1-3	Preserve Heritage Sites and Historical Remains	159
	2-5-1-4	Space Personalization	159
	2-5-2	<b>Pleasing Milieu</b>	161
	2-5-2-1	Architectural Quality	161
	2-5-2-2	Landscape Quality	162
2-6		<b>Economical Urban Quality of Life</b>	162
	2-6-1	Economic Development	163
	2-6-1-1	Employment	163
	2-6-1-2	Local Business	163
	2-6-2	Economic Standard of Living	164
	2-6-2-1	Cost of Living	164
2-7		<b>Political Urban Quality of Life</b>	166
	2-7-1	Urban Policies and Strategies	166
	2-7-1-1	Urban Quality of Life Policies	166
	2-7-1-2	Urban Quality of Life Strategies	166

2-7-1-3	Urban Governance and Management	166
2-7-2	Civil and Political Rights	168
2-7-2-1	Community involvement in council decision making	168
<b>Chapter Three: The Assessment Model's Set-Up</b>		170
3-1	<b>Hierarchical Structure of Decision Problem</b>	170
3-2	<b>Network Structure of Decision Problem</b>	174
3-3	<b>Finding the Indicators' Relative Weight</b>	176
3-4	<b>Toolbox for Measure Indicators</b>	183
3-5	<b>The Evaluation Model Result</b>	187
<b>Recommendations</b>		189
<b>Related Themes for Future Research</b>		191
<b>References</b>		192
<b>Appendices</b>		204

## List of Tables

### Chapter One: Urban Quality of Life

Table 1-1	Smith's (1973) Criteria/ Domains of Social Well-Being	15
Table 1-2	The relationship between density and transit opportunities	43
Table 1-3	Matrix of Urban Quality of Life Vs Urban Planning Theories & Approaches	61
Table 1-4	Summary of LEED-ND and main issues	65
Table 1-5	Summary of BREEAM for Communities and main issues	68
Table 1-6	Table of assessment points included in "QUD"	71
Table 1-7	Table of assessment items included in "LRUD"	72
Table 1-8	Summary of The Pearl Community Rating System & main issues	74
Table 1-9	The 20 Building for Life criteria	76
Table 1-10	Matrix of Assessment tools for urban planning evaluation	79

### Chapter Two: Neighborhood Urban Quality of Life Indicators

Table 2-1	Air Quality's indicators, basic needs and general goals	88
Table 2-2	Water Quality's indicators, basic needs and general goals	90
Table 2-3	Land Quality's indicators, basic needs and general goals	93
Table 2-4	Materials Quality's indicators, basic needs and general goals	94
Table 2-5	Local Environment Quality's indicators, basic needs & general goals	99
Table 2-6	Energy Use indicators, basic needs and general goals	101
Table 2-7	Waste Management & Recycling indicators, basic needs & general goals	103
Table 2-8	Primary and secondary services and facilities	107
Table 2-9	Land Use indicators, basic needs and general goals	108
Table 2-10	Different urban form for same density	110
Table 2-11	Compact Neighborhood indicators, basic needs and general goals	111
Table 2-12	Urban Layout indicators, basic needs and general goals.	114
Table 2-13	Housing & Buildings Quality indicators, basic needs & general goals	116
Table 2-14	Management & Maintenance indicators, basic needs & general goals	116
Table 2-15	Accessibility's indicators, basic needs and general goals	128
Table 2-16	Traffic-calming practices and their benefits	132
Table 2-17	Walkability & Cycability's indicators, basic needs & general goals	133
Table 2-18	Types or classes of transit services	135
Table 2-19	Public Transportation's indicators, basic needs and general goals	136
Table 2-20	Traffic Load's indicators, basic needs and general goals	138
Table 2-21	Social Equity & Inclusion's indicators, basic needs & general goals	147
Table 2-22	Social Connectedness's indicators, basic needs and general goals	154
Table 2-23	Behavioral Performance's indicators, basic needs & general goals	156
Table 2-24	Community Identity's indicators, basic needs and general goals	160
Table 2-25	Pleasing Milieu's indicators, basic needs and general goals	162
Table 2-26	Economic Development's indicators, basic needs & general goals	164
Table 2-27	Economic Standard of Living's indicators, basic needs & general goals	165
Table 2-28	Urban Policies and Strategies' indicators, basic needs & general goals	167
Table 2-29	Civil and Political Rights' indicators, basic needs & general goals	169

### Chapter Three: The Assessment Model's Set-Up

Table 3-1	Inner and outer connections between nodes	175
Table 3-2	A toolbox for measuring an environmental indicator	185
Table 3-3	A toolbox for measuring a mobility indicator	186
Table 3-4	Excel Sheet for Calculating the Model's Results	188



## List of Figures

<b>Figure I: Detailed structure of the research</b>	<b>6</b>	
<b>Chapter One: Urban Quality of Life</b>		
Fig 1-1	Urban Quality of Life Concept	18
Fig 1-2	Urban Quality of Life Dimensions – Heptagon Shape	19
Fig 1-3	the hierarchical structure	20
Fig 1-4	Urban quality of life indicators	23
Fig 1-5	A hierarchical model structure	29
Fig 1-6	Comparative matrix	30
Fig 1-7	Fundamental Scale of Saaty, which goes from 9 to 9	30
Fig 1-8	The numerical values	31
Fig 1-9	A network diagram	32
Fig 1-10	Supermatrix’s structure	34
Fig 1-11	New Urbanist communities	36
Fig 1-12	Duany and Plater-Zyberk’s neighborhood concept	37
Fig 1-13	Transportation choices	41
Fig 1-14	Smart Growth Goals and Issues	42
Fig 1-15	Cost of infrastructure per unit by density	43
Fig 1-16	Mixed housing around common recreational facilities	44
Fig 1-17	Walkable neighborhood	45
Fig 1-18	Community & stakeholder collaboration	46
Fig 1-19	The integration between private sector and local government	47
Fig 1-20	Retail, offices and upstairs residences occupy a mixed use structure	48
Fig 1-21	Preservation Area	49
Fig 1-22	Transit stop in the village center	50
Fig 1-23	Two buses can carry the same number of passengers as 100 cars	50
Fig 1-24	Pedestrian friendly environment	53
Fig 1-25	Interconnected street grid network	53
Fig 1-26	Increased density	54
Fig 1-27	Mixed use development	54
Fig 1-28	Mixed housing	54
Fig 1-29	Quality architecture and urban design	55
Fig 1-30	Quality public realm	55
Fig 1-31	Use of bicycles	55
Fig 1-32	More walking, less driving	56
Fig 1-33	Concept of assessment subjects for CASBEE for Urban Development	70
Fig 1-34	The Four Pillars of Estidama	73
<b>Chapter Two: Neighborhood Urban Quality of Life Indicators</b>		
Fig 2-1	The organization of urban quality of life dimensions & the sub-dimensions	84
Fig 2-2	El Azhar Park was in the past a landfill	91
Fig 2-3	Air quality at street level	97
Fig 2-4	Air quality at street level	97
Fig 2-5	At the ground floor “parking spaces, kindergartens, green areas,...”	105
Fig 2-6	Complete streets	112

Fig 2-7	Well-defined streets and spaces	113
Fig 2-8	On-street parking	114
Fig 2-9	Pedestrian catchment area	119
Fig 2-10	Comfortable walking distance for different people ages	120
Fig 2-11	Primary services and facilities	120
Fig 2-12	Transit-Oriented Development	121
Fig 2-13	Secondary areas	121
Fig 2-14	The distance between the dwelling and different facilities	122
Fig 2-15	The walking distance referring to the travel time	122
Fig 2-16	Street network that encourage daily physical activity	124
Fig 2-17	The comparison of two typical suburban residential neighborhoods	125
Fig 2-18	Average through Street Spacing Criteria (meters)	126
Fig 2-19	Project site design with 140 eligible intersections per square mile	127
Fig 2-20	Project site with at least 90 eligible intersections per square mile	128
Fig 2-21	The Function of the Pedestrian Realm Zones	130
Fig 2-22	Examples of Bicycle Paths	131
Fig 2-23	Quality of Society Concept	139
Fig 2-24	Built environment and human behavior	141

### **Chapter Three: The Assessment Model's Set-Up**

Fig 3-1	The hierarchical structure of the decision problem	171
Fig 3-2	Example of a cluster of alternatives.	174
Fig 3-3	The level of seven dimensions has been omitted.	174
Fig 3-4	The network structure of the decision problem	176
Fig 3-5	Design the clusters and nodes	178
Fig 3-6	Find connections between clusters and nodes	178
Fig 3-7	Putting the answer of first questionnaire	179
Fig 3-8	Putting the answer of second questionnaire	179
Fig 3-9	Priority of each indicator could be calculated within one cluster.	180
Fig 3-10	The un-weighted Super-Matrix.	180
Fig 3-11	The weighted Super-Matrix.	181
Fig 3-12	The cluster matrix.	181
Fig 3-13	The Limit Super-Matrix.	182
Fig 3-14	Experimental Priorities' table.	183
Fig 3-15	Priorities' table.	183

## **1- Introduction:**

New cities in Egypt are facing many problems such as high vehicle miles of travel, insufficient level of services, degraded sense of place, degraded sense of safety and security, segregation in land uses, and other none urban features problems. Unfortunately these problems negatively affect the individual quality of life.

Studies occurred by Egyptian Ministry of Housing, Utilities and Urban Development show that in many new cities the occupancy rate of the housing stock does not exceed 60%. On the other hand the World Bank affirms that there are 4.58 million unused housing units according to the 2006 census in urban areas in Egypt, nearly 32% of the total number of urban housing units<sup>1</sup>. These vacancy rates are considered excessive by international standards which are usually about 5% to 10%<sup>2</sup>. Accordingly the housing problem in Egypt is far more complex than simply an insufficient number of available units but it is a question of quality.

Quality of life is a notion that has been discussed recently in various studies as a response to many problems facing the new towns all over the world as well as in Egypt. Quality of life is considered one of the most important dimensions for sustaining any urban development. The desire to improve the quality of life in a particular place or for a particular person or group is an important focus of attention for planners.

From these perspective come the significance of the main subject of this research, which is mainly concerned with understanding of the term 'Urban quality of life' which addresses the urban planning features that contribute to

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<sup>1</sup> The World Bank, Analysis of Housing Supply Mechanisms, October 2006.

<sup>2</sup> S. Aziz and others, 2007.

improving the individual quality of life within the residential neighborhood? Based on the definition of the term Urban Quality of life an assessment tool is developed to measure the urban quality of life in the existing areas in order to identify possible weaknesses and understand the phenomenon of extruder areas. This assessment tool will be useful also for planners and designers addressing the new development areas.

## **2- Research Problem:**

Egypt's development plans have been devoting a high percentage of their investments to the formulation and the implementation of new communities in many governorates in Egypt. Unfortunately these new communities have not proved to fulfill their designated goals, and most of these communities did not have a significant role in development as they did not attract the required number of residents.

It is obvious that the problem of housing in Egypt is not a problem of quantity but a problem of quality. Most of new developments do not fulfill residents' aspirations. People do not look for just a shelter where they could live but they want an environment that improves their quality of life. On the other hand the notion of sustainable communities has recently appeared and received a considerable interest in the world as well as in Egypt. The country has the trend to establish new sustainable communities in many governorates, but the problem is that sustainable developments could have negative effect on individual quality of life.

Therefore, the problems within this research can be identified as follows:

- Lack of awareness of the significance of urban planning strategies that promote quality of life in cities in Egypt which cause the rising of vacancy rate in new cities.
- Absence of defined urban planning principles that contribute to improving individual quality of life within the neighborhood.

- Absence of assessment tool that can measure urban quality within the neighborhood which are useful for planners and designers addressing the new and exciting development areas.
- Lack of awareness of the importance of the dimension of individual quality of life in sustainable development.

### **3- Research Objective:**

The main objective of the research can be stated as follows:

**Develop an evaluation model for measuring the impact of urban planning on the individual quality of life (Urban Quality of Life) within a residential neighborhood which could be useful to identify possible weaknesses and strengths of existing and new development in order to determine ways of intervention.**

It is worth mentioning that, there are many other incorporated objectives that have to be achieved in order to reach the previously defined goal, and which can be stated as follows:

- 1- Providing clear definition of the term Urban Quality of Life which refers to urban planning that contribute to improving individual quality of life.
- 2- Demonstrating the different measurement approaches for measuring quality of life.
- 3- Analyzing different contemporary urban planning theories and approaches which address the issue of quality of life.
- 4- Studying international assessment tools in order to derive appropriate indicators and integrate them with new other.
- 5- Determining a set of urban quality of life indicators useful for the measurement tool.

### **4- Research Hypothesis:**

Usually, residents look for enhancing their quality of life. Therefore the relationship between the urban planning of a neighborhood and the individual

quality of life can explain why people prefer to live here and leave there. This study suggests an assessment tool to evaluate urban quality of life within a neighborhood which can detect the weaknesses in existing and new developments in order to know the way of interventions. It suggests also the remediation of weaknesses that can help the development to attract the required number of residents.

## **5- The Approaches Used in the Research:**

### **5-1 Descriptive analytical approach:**

This approach is used through the first part to identify the general concepts of quality of life, sustainable development and urban quality of life and its measurement approaches. In addition this approach is used to analyze the contemporary urban planning movements and different assessment tools used for evaluate the urban development.

### **5-2 Deductive analytical approach:**

This approach would be used to analyze the data resulting from the literature review in order to deduce urban quality of life indicators and design the evaluation model.

## **6- Research Methodology:**

The research structure includes three main parts (figure I), which can be summarized as follows:

**Part One: Urban Quality of Life:** this part will try to decompose the term urban quality of life into other more precise terms such as quality, quality of life and urban/ urban planning, address the notion of sustainable development and try to understand its relationship with the notion of quality of life. Furthermore, this part will deduce urban quality of life definition and dimensions and discuss different approaches for measuring urban quality of life focusing on approaches that have the ability to decompose the complex concepts and decision problems into a hierarchical structure. Finally, this part

will address contemporary urban planning theories and approaches which objective is to provide a high and sustainable quality of life and protect the natural environment; as well as the assessment tools used for the evaluation of urban development in order to deduce urban quality of life sub-dimensions and indicators.

**Part Two: Neighborhood Urban Quality of Life Indicators:** this part will try to analyze literature reviews in order to deduce the final set of neighborhood urban quality of life indicators. As well as to design a toolbox for measuring these indicators deduced from previous studies, local law and regulations, local codes or existing evaluation's methodologies.

**Part Three: The Assessment Model's Set Up:** this part will design the assessment model of neighborhood urban quality of life. The assessment tool will be composed into six main steps. First step will structure the decision problem into a hierarchy structure; the second step will structure the decision problem into network structure which put into consideration the interaction and dependencies that exist between the decision elements; the third step consists of finding indicators relative weight by using Analytical Network Process approach (ANP); the fourth step represents the design of toolboxes for measuring indicators and converts the qualitative and quantitative value of indicators into numerical value; the fifth step represents the evaluation results where the result of the measuring toolbox of indicators and the relative weight of indicators are combined in an excel sheet in order to calculate the final score of the assessment.

Moreover, this part also proposes the recommendations for the assessment tool. And finally, it presents some themes for future research.

# Neighborhood Urban Quality of Life

Guidelines for Urban Planning and Development of New Assessment Tool

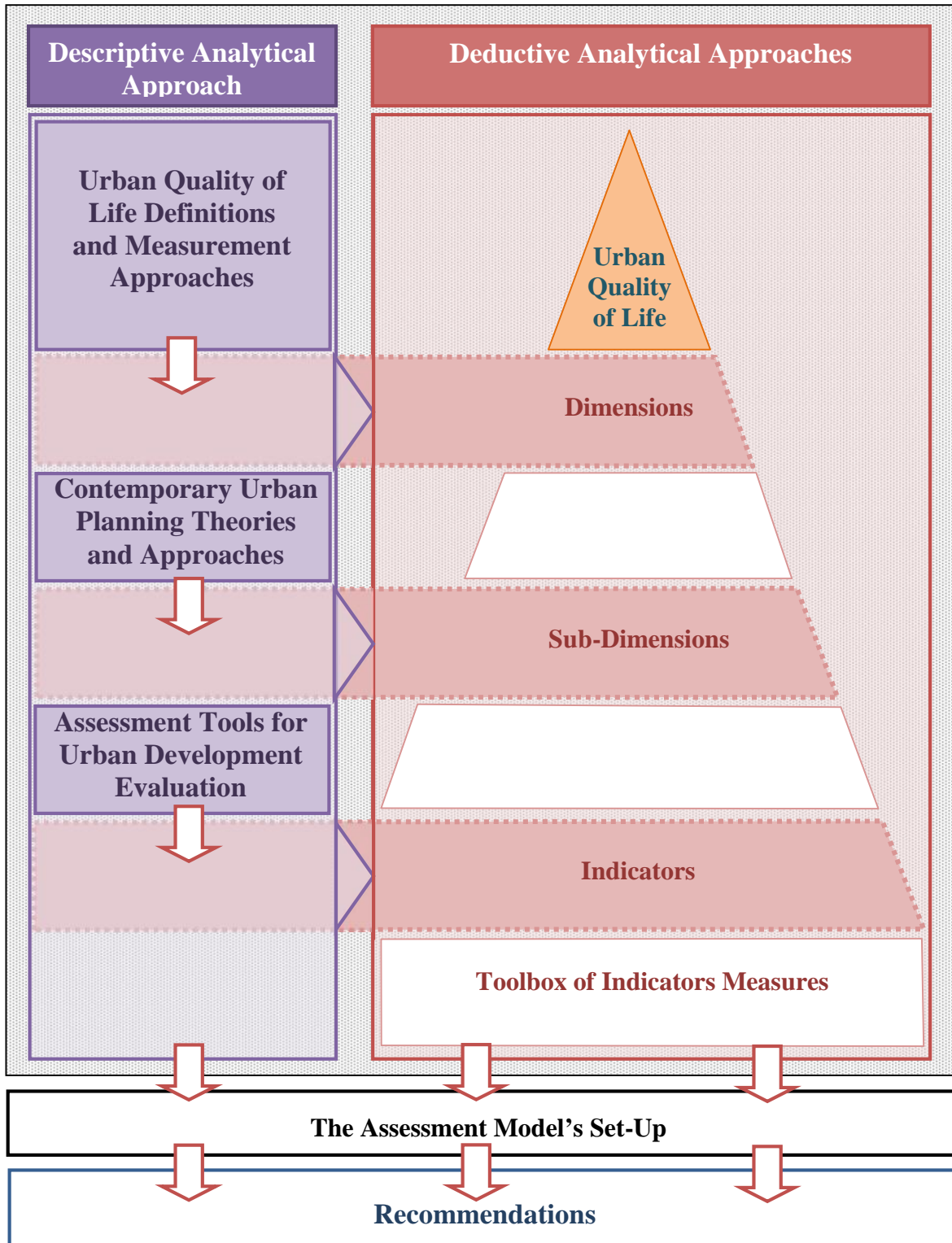


Figure I: Detailed structure of the research (the researcher)



## Chapter One: Urban Quality of Life

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Quality of life is a notion that has been discussed, in various forms, by philosophers, social scientists, economists concerned with the question of how society should best allocate resource. It has been widely used in a wide range of contexts, including the fields of international development, healthcare, political science, built environment, education, recreation and leisure time and social belonging. Also frequently related are concepts such as freedom, human rights, and happiness. By far the most researched area in quality of life is in the field of healthcare.

In fact improvement of life quality in each society is one of the important aims of public policies, therefore this chapter will try to define the term of *quality of life* focusing on *urban quality of life*, review previous studies that tried to measure *quality of life* and *urban quality of life*, discuss different contemporary urban planning approaches that tried to enhance *quality of life* and finally address the assessment tools for environment sustainability and urban planning evaluation where much of them are deduced from contemporary urban planning approaches.

## **1-1 Urban Quality of Life Definitions:**

There have been many attempts to answer some questions aiming to understand the term *urban quality of life*. This term could be decomposed into other more precise terms such as quality, quality of life and urban/ urban planning.

### **1-1-1 Quality:**

Quality is one of those words which are used unthinkingly by everybody but which stubbornly evade definition. In general usage and in publicity circles, the word ‘Quality’ is frequently used to designate the attractiveness or the excellence of the product.<sup>1</sup>

Quality refers to “*the degree to which something is good or bad, a high standard, a word meaning very good*”<sup>2</sup>

The quality may be intended as the capacity to satisfy exigencies. The exigencies that the quality is called to satisfy may be of primary character, connected with the fundamental needs as safety and people’s health, or of accessory nature, related to the development of the economic system and to the society’s well-being.<sup>3</sup>

### **1-1-2 Quality of Life:**

Quality of life is a concept which in recent years has generated a great deal of interest, but it is not only a notion of the twentieth century; rather it dates back to philosophers like Aristotle (384- 322 BC) who wrote about “the good life” and “living well” and how public policy can help to nurture it. Much later, in 1889, the term quality of life was used in a statement by Seth: “we must not regard the mere quantity, but also the quality of “life” which forms the

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<sup>1</sup> H. Osman, 2004.

<sup>2</sup> Longman dictionary of contemporary English, third edition

<sup>3</sup> Giordano, 2012.

moral end”.<sup>4</sup> Quality of life has been the focus of many studies but a consensus as to how it should be defined has not been reached; it is a complex, multidimensional construct that requires multiple approaches from different theoretical perspectives. There have been many attempts to define what constitutes quality of life in the different disciplines. More than 100 definitions of life quality have been noted in literature. Some authors use quality of life interchangeably with other concepts such as subjective well-being, happiness, life satisfaction and the good life.

Quality of life is” *the satisfaction in your life that comes from having good health, comfort, good relationship etc, rather than from money*”<sup>5</sup> It is “*The personal satisfaction (or dissatisfaction) with the cultural or intellectual conditions under which he lives*”<sup>6</sup>.

Quality of life refers to the day living enhanced by wholesome food and clean air and water, enjoyment of open spaces and bodies of water, conservation of wildlife and natural resources, security from crime, and protection from radiation and toxic substances. It may also be used as a measure of the energy and power a person is endowed with that enable him or her to enjoy life and prevail over life's challenges irrespective of the handicaps he or she may have<sup>7</sup>.

Quality of life is our ability to enjoy all that life has to offer. For instance, the ability to walk, talk, see and feel all contributes to our overall quality of life. A quality life is a life full of meaning and purpose; a high-quality life is also a life of freedom from tyranny. Having the ability to make choices about what you want to do with your time, your belief and what you buy shapes your quality of life. People who have lived under oppressive governments are generally unhappy because their quality of life is compromised<sup>8</sup>.

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<sup>4</sup> Marshall and Banister, 2007.

<sup>5</sup> Longman dictionary of contemporary English, third edition.

<sup>6</sup> the free dictionary 2010.

<sup>7</sup> Business Dictionary, 2010.

<sup>8</sup> EHow .com 2010

While there is no certainty as to what quality of life means exactly, it has been defined as the degree of well-being and satisfaction but it should not be confused with the concept of standard of living, which is based primarily on income.

According to the Centre for Health Promotion (2001) at the University of Toronto, the term quality of life includes three main areas<sup>9</sup>:

- Being: who one is, with physical, psychological and spiritual components
- Belonging: connections to one's physical, social and community environments
- Becoming: the day-to-day activities that a person carries out to achieve goals, hopes, and aspirations with practical, leisure, and growth aspects.

Mark Rapley mentions in his book "Quality of Life Research" that the term quality of life is referring to the individual's happiness, life-satisfaction, well-being, self-actualization, objective functioning, "a state of complete physical, mental and social well-being not merely the absence of disease", balance, equilibrium or 'true bliss', prosperity, fulfillment, low unemployment, democratic liberalism, and a full and meaningful existence.

It can be inferred that quality of life is a multi-faceted concept; it embraces the tangible and intangible aspects of life. Some researchers even go to the extent of including basic elements of life like rights, privileges and decision-making role of people in a society and the status of women<sup>10</sup>.

It can be deduced from the previous definitions two levels of quality of life, the individual level and the collective or community level:

a- The individual level, the question is, does the ordinary person have a grasp on the notion of quality of life? The ordinary man does not often talk in terms of the quality of his life, nor is the quality of life a common topic of

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<sup>9</sup> Yinshe Sun, 2005

<sup>10</sup> lim lan yuan and Belinda yuen and Christine Low ,1999

conversation. So any attempt to define this concept is theoretical. Quality of life refers to what everyone aspires and can be assessed on the basis of one's value and expectations, the degree to which a person enjoys the important possibilities of his/her life.<sup>11</sup> David Phillips argued in his book "*Quality of life, concept, policy and practice*" that everyone has a reasonably clear idea of what sorts of things would enhance his own individual quality of life and probably the quality of life of the others too, for example, higher pay, longer holidays, more satisfaction in the working lives, time to pursue enjoyable and satisfying leisure pursuits, emotional fulfillment in the relationships, and having a long healthy and happy life-all lived within a safe, caring and supportive local community. Most people's lists of quality of life would include: a peaceful, non-coercive and congenial social environment, social norms of interpersonal respect, a sustainable and pollution-free physical environment, education for children up to a reasonable level of literacy and numeracy, and adequate physical, economic and nutritional resources for everyone. Cutter also defines quality of life as an individual's happiness or satisfaction with life and environment including needs and desires, aspirations, lifestyle preferences, and other tangible and intangible factors<sup>12</sup>. In other words, quality of life is the extent to which an individual feels satisfied and is able to pursue and achieve those things that are important to him or her. In this sense, quality of life is determined by the individual's perceptions of his/her living environment.

b- The collective level the problems are perhaps more intense, there is little dispute about some of the factors which enhance collective quality of life-of communities and societies. The blueprint of a society which maximizes its members' quality of life – the vision of a 'perfect society' – has also been the center of debates by philosophers, political scientists and sociologists since the time of the ancient Greeks. For example, there have been huge ideological disagreements about the values that might underpin a non-coercive and congenial social environment and the mechanisms for providing and

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<sup>11</sup> Yinshe Sun, 2005.

<sup>12</sup> Yinshe Sun, Ibid.

distributing adequate resources. One set of these arguments boils is the relative merits of, and the balance to be struck between, liberty and equality.<sup>13</sup> The concept of community quality of life is often used to explore community factors, resources, and services that are observed by community members as factors influencing their life quality or assisting them in coping with each other.<sup>14</sup> Myer writes that “*a community quality of life is constructed of the shared characteristics residents experience in places (For example, air and water quality, traffic or recreational opportunities), and the subjective evaluations residents make of these conditions*”. Although individuals’ subjective evaluations on the social and physical environments in which they live vary, their perceptions collectively or statistically reflect the level of environment conditions. Therefore, it is possible to use objective criteria to substitute subjective perceptions of individuals in the measurement of the overall environment conditions<sup>15</sup>.

Therefore quality of life is an ambiguous term that might be classified as private and public quality of life<sup>16</sup>. Public quality of life is a notion that exists, at least implicitly. Public choices, such as where to locate an airport, implicitly involve reflection as to better or worse living conditions, hence reflection as to quality of life .

While the quality of an individual’s life reflects how well his life is going and the individual is a part of his environment, so the quality of an individual’s life in a given society is affected by the quality of his environment and the two terms private and public quality of life cannot be separated; so the concept of individual quality of life may mean at the same time the quality of public life.

However, since, the term ‘quality of life’ is used so often, and in so many different contexts for so many different purposes, it becomes difficult to pin down an agreed meaning; although much research has been done, there has not

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<sup>13</sup> David Phillips, 2006

<sup>14</sup> Yinshe Sun, 2005

<sup>15</sup> Yinshe Sun, Ibid.

<sup>16</sup> Quality of life :quality of life perspectives and policies

been any success in providing a holistic understanding of the quality of life and how to improve it.

Within a specific context at a given time, place and society, some agreements can usually be reached on what would constitute quality of life, in other words, people's needs and the fulfillment of their aspirations and needs can be defined in a relatively precise manner within a specific cultural context. There must be sufficient elements of quality of life held in common by members of a society for the concept of quality of life to be meaningful.

Finally the basic idea is that if a thing has a function or purpose then it will be achieving its goal, in the best state, when this thing completely achieves that function or purpose .For example, if a washing machine's purpose is to wash clothes, then a good washing machine washes clothes well .Thus if a human being has a function, or purpose (simply as a human being), then he will be in the best state when that purpose is achieved; if we can discover what man's purpose is, we can discover what the good life for man is.

### **1-1-3 Quality of Life and Sustainable Development:**

It is important to understand the relation of the two concepts 'Quality of Life' and 'Sustainable Development'. According to Marshall and Banister (2007), the two concepts are related to each other. Like 'Quality of Life' there is no definition of 'Sustainable Development' that is universally accepted, but one proposed by the world commission on Environment and Development (the Brundtland Commission) has been cited frequently: "*meeting the needs of the present without compromising the ability of future generations to meet their own needs....*" There is no doubt that the fulfillment of needs is not only a precondition for sustainable development but also for individual well-being and thus for a high quality of life. Many have elaborated on the above sustainable development definition, emphasizing that sustainable development should ensure that environmental, social and economic issues are considered and sustained for an unforeseeable future.

The concept of quality of life is highly relevant when considering sustainable development. It may be argued that quality of life reflects the social dimension of sustainable development; this does not imply that quality of life is affected by social conditions only; but also quality of life may be affected by economic, social and environmental conditions. Since sustainability implies a balance between environmental, social and economic qualities, policies that seriously decrease individual's quality of life can hardly be called sustainable.<sup>17</sup>

Sustainable development could affect individual quality of life positively or negatively since some sustainable development issues are acceptable and others are unacceptable for individual member of society. For example, to achieve a sustainable transport system, drivers may well have to drive less; for some people, driving a car is more attractive than other modes of transport, because of its convenience, independence, flexibility, comfort, speed, perceived safety, and privacy; the car also provides more status and pleasure than other modes of transport; it is a means of self-expression, and enables one to control a powerful machine. Consequently, it is important to know which elements of different sustainable development have high or low public acceptance. Policymakers should give special attention to possible effects on the most important quality of life indicators when they design and implement sustainable development.<sup>18</sup>

#### **1-1-4 Quality of life Domains:**

The environment that people experience can be depicted from various perspectives, each representing a specific facet of their lives. Therefore, quality of life domains should be defined broadly enough to include the most important aspects of the living environment. The domains can usually be determined through a logical process of decomposing the general goal of quality of life. Indicators can then be developed by further breaking those domains down into

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<sup>17</sup> Marshall and Banister, 2007.

<sup>18</sup> Garling and Steg, 2007.



measurable elements. One such example can be found in *The Geography of Social Well-Being in the United States* (Smith, 1973). Using an urban social geography perspective, Smith identified six major criteria/domains of quality of life - economic status, environment, health, education, social disorganization, and participation and equality (Table 1-1); he further broke these domains into more detailed concerns and finally developed forty-eight quality of life indicators.<sup>19</sup>

<b>Economic Status</b>	<b>Environment</b>	<b>Health</b>	<b>Education</b>	<b>Social Disorganization</b>	<b>Participation and Equality</b>
<ul style="list-style-type: none"> <li>• Income</li> <li>• Employment</li> <li>• welfare</li> </ul>	<ul style="list-style-type: none"> <li>• Housing</li> <li>• Streets and sewers</li> <li>• Air pollution</li> <li>• Open space</li> </ul>	<ul style="list-style-type: none"> <li>• General mortality</li> <li>• Chronic diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Duration</li> </ul>	<ul style="list-style-type: none"> <li>• Personal pathologies</li> <li>• Family breakdown</li> <li>• Overcrowding</li> <li>• Public order and safety</li> <li>• delinquency</li> </ul>	<ul style="list-style-type: none"> <li>• Democratic participation</li> <li>• Equality</li> </ul>

**Table (1-1): Smith's (1973) Criteria /Domains of Social Well-Being (Yinshe Sun, 2005)**

At 2003, the first Survey on quality of life in Europe investigated 8 domains of individual life situations in 25 member states - economic situation, housing and local environment, employment, education and skills, household structure and family relations, work-life balance, health and healthcare, subjective well-being, perceived quality of society. These do not cover all aspects but only the most relevant for a complete description of quality of life in both its objective and subjective dimensions.

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<sup>19</sup> Yinshe Sun, 2005

Drawing from a variety of sources, there are a number of domains which are common to most quality of life studies .These domains include:<sup>20</sup>

Social Domain	Urban Domain	Economic Domain	Politics Domain
<ul style="list-style-type: none"> <li>• Education</li> <li>• Leisure /Spare time</li> <li>• Health /Medical Care</li> <li>• Social environment / Stability</li> <li>• Public security / Crime and safety</li> <li>• Social opportunity/ participation</li> <li>• Community stress</li> <li>• Community affordability</li> <li>• Social well-being</li> </ul>	<ul style="list-style-type: none"> <li>• Housing</li> <li>• Land use</li> <li>• Transportation / Access /Mobility</li> <li>• Physical environment</li> <li>• Natural environment</li> <li>• Recreation and culture</li> <li>• Population resources</li> <li>• Government services</li> <li>• Education and health Services</li> </ul>	<ul style="list-style-type: none"> <li>• Work /Employment</li> <li>• Consumption / Financial</li> <li>• Food /Nutrition</li> </ul>	<ul style="list-style-type: none"> <li>• Political rights and general values</li> <li>• Government</li> <li>• Justice</li> </ul>

Lotfi and Solimani deduce from many researches in quality of life that the satisfactions in various urban domains predict overall life satisfaction.<sup>21</sup> In addition, it is impossible to think about policies to improve the quality of life in the region without paying special attention to urban issues.<sup>22</sup> Thus this research will focus on what could be named *urban quality of life* .

### 1-1-5 Urban/ Urban Planning:

*Urban* relating to, characteristic of, or constituting a city<sup>23</sup>. *Urban planning* is a technical and political process concerned with the control of the use of land and design of the urban environment, including transportation networks, to guide and ensure the orderly development of settlements and communities<sup>24</sup>. Urban planning is a branch of architecture that focuses on organizing metropolitan areas; it is made up of several different fields, from engineering to social science. City planning aims to provide a safe, organized, and enjoyable home and work life for residents of both new and established towns. Today, some of the largest concerns of urban planning are building

<sup>20</sup> Yinshe Sun, 2005

<sup>21</sup> Journal of social sciences, 2009

<sup>22</sup> Urban Quality of Life :More Than Bricks and Mortar

<sup>23</sup> MW Dictionary Thesaurus, 2004.

<sup>24</sup> [http://en.wikipedia.org/wiki/Urban\\_planning](http://en.wikipedia.org/wiki/Urban_planning), 2012.

locations, zoning, transportation, and how a town or city looks; planners also try to eliminate run down areas and prevent their development, as well preserve the natural environment of the area.<sup>25</sup>

This study will focus on the *neighborhood planning* as a spatial unit which has self-sufficiency that ensures the establishment of social interactions between residents. In other words, a neighborhood is a small but relatively independent area of dwellings, employment, retail, and civic places and their immediate environment that residents and/or employees identify with in terms of social and economic attitudes, lifestyles, and institutions.<sup>26</sup>

### **1-1-6 Urban Quality of Life:**

Different people seek different things in the same city; and the city, and even the neighborhood, responds differently to the diversity and needs of its residents.

*“Socrates, we have strong evidence that the city pleased you; for you would never have stayed if you had not been better pleased with it” -Plato<sup>27</sup>*

The desire to improve the quality of life in a particular place or for a particular person or group is an important focus of attention for planners. Improving the quality of life in cities is no longer a simple matter of bricks and mortar, but the human satisfaction with different urban issues such as transportation, quality of public spaces, recreational opportunities, land use patterns, population and building densities, ease of access for all to basic goods, services and public amenities; as well as social issues such as protecting public health, providing for safety and security, education and social integration, promoting equality and respect for diversity and cultural identities, increased accessibility for persons with disabilities, preservation of historic, spiritual, religious and culturally significant buildings and districts, promoting the spatial

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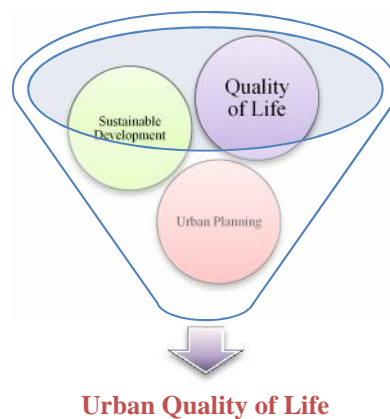
<sup>25</sup> <http://www.wisegeek.com>

<sup>26</sup> LEED 2009 for Neighborhood Development Rating System.

<sup>27</sup> Urban Quality of Life :More Than Bricks and Mortar

diversification and mixed use of housing and services at the local level in order to meet the diversity of needs and expectations; in addition to environmental issues such as respecting local landscapes and treating the local environment with respect and care.

Based on previously mentioned definitions, it can be deduced that the term *urban quality of life* refers to the *urban planning* whose objective is to realize the *sustainability* of the development with the respect of individual *quality of life* (figure 1-1).



**Figure 1-1: Urban Quality of Life Concept (the researcher, 2012)**

It should be noted that urban quality of life does not refer to the quality of life in urban areas only as conventionally known but it refers to the quality of built environment in both urban and rural areas.

The description of *urban quality of life* is complex and not linear, as to understand the concept, one should not only include the essence of the subject, but also all the relationships, the dynamics, and the reticular relationships that exist between the various dimensions of this concept, i.e. the network.

*Urban quality of life* is a multi-disciplinary concept and multi-dimensional concept. This ambiguous and complex concept must be represented by a reticular relationship between various dimensions; urban

quality of life is the result of the relationship between these dimensions. Such relationships differ and are determined according to places and societies. One cannot understand the urban quality of life of a certain place through only one dimension but through the relationship between all dimensions. Based on literature review, seven main dimensions which contribute to realize the *urban quality of life* can be deduced, namely, environmental urban quality of life, physical urban quality of life, mobility urban quality of life, social urban quality of life, psychological urban quality of life, economical urban quality of life and political urban quality of life. These dimensions are interrelated and dependent on each other as reflected in the “*Heptagon Shape*” (figure1-2). The heptagon shape also underlines the importance of the fact that several disciplines are involved in assessing urban quality of life for a neighborhood. Thus, aspects related to each of these dimensions should be taken into account when assessing urban quality of life.

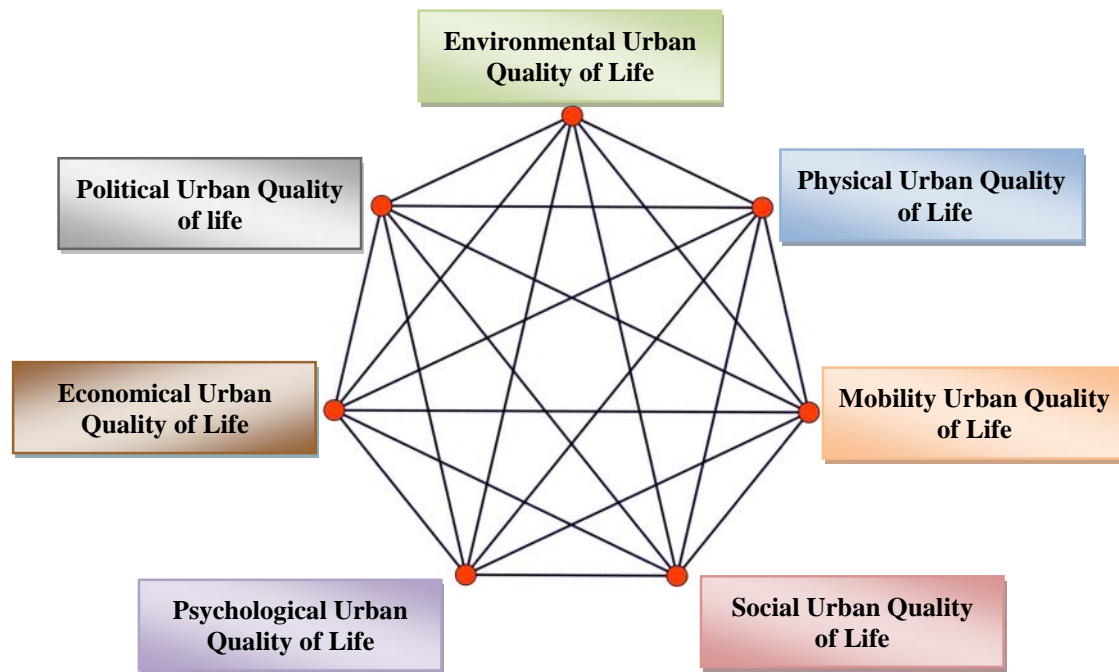


Figure 1-2: Urban Quality of Life Dimensions – Heptagon Shape (the researcher, 2012)

Many dimensions of the urban quality of life tend to have the same effect on people of both high and low socio-economic status, men and women, and

individuals of different ages<sup>28</sup>; but sometimes there are some exceptions as the saying “*Quality like beauty basically lies in the eyes of the beholder*” .<sup>29</sup>

To decompose the concept of urban quality of life, in order to reach an assessment tool for measuring neighborhood urban quality of life, it was necessary to develop a transparent and clear hierarchic structure, where each level is described by the results of the level below. The element (urban quality of life) consists of a number of dimensions. Each dimension is also defined by

a number of sub-dimensions. Each sub-dimension is described by a number of indicators that analyze its performance. Finally, each indicator has its toolbox measurement

(figure 1-3).

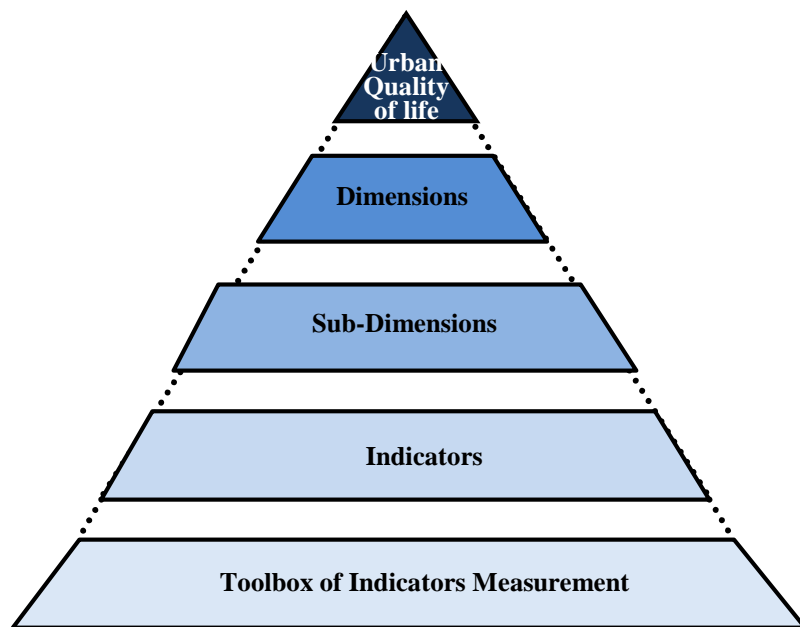


Figure 1-3: the hierarchical structure (the researcher, 2012).

<sup>28</sup> Urban Quality of Life :More Than Bricks and Mortar

<sup>29</sup> lim lan yuan and others, 1999

## 1-2 Measuring Urban Quality of Life

How to measure *quality of life* has been widely debated, and there is still a lack of standardized measures. Despite this, in the last 20 years, progress has been made and some form of agreement can be seen. Usually, in many studies, the overall quality of life in a community or neighborhood is emphasized by comparing different urban areas according to a number of indicators that reflect the quality of life of urban residents.

This part will define urban quality of life indicators and discuss different approaches used for measuring quality of life and urban quality of life where urban quality of life refers to individual satisfaction towards urban issues.

### 1-2-1 Urban Quality of Life Indicators Definitions:

The indicator is a parameter, or a derived value, which identifies/provides information that describes the phenomenon's status/field/area with a meaning that goes over what it is directly connected to the parameter's value.<sup>30</sup> The indicators should qualify and simplify the information.

An indicator, in order to be a useful and a usable instrument, must have intrinsic features as:<sup>31</sup>

- **Relevance:** To carefully reflect and without ambiguity, the component to be measured, sensitivity with respect to the change of the inspected phenomenon and richness of meaning.
- **Measurability:** Ready availability, or availability in reasonable time, statistic and scientific quality, possibility of periodical updates.
- **Information Efficacy:** Clearness, simplicity, easiness of comprehension, community acknowledgement.

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<sup>30</sup> Giordano, 2012.

<sup>31</sup> Giordano, Ibid.

- **Analytic Consistence:** Scientific grounding, correspondence to standards or to value limits for the evaluation, possibility to point out relationships.

The indicators are not instruments finalized to the problem solving, but useful to precisely define the entity, to verify the different scenarios and to monitor situations. They provide their help in evaluations and, consequently, in decisions, in communications, in carrying out of choices and information transfer in the time period<sup>32</sup>.

Urban quality of life is assessed through the use of a set of indicators. The question is whether these indicators are constant or differ from place to another or from individual to other one. Theories of quality of life and human well-being typically assume that a general set of indicators for quality of life can be defined that do not differ over time or between cultures<sup>33</sup>. However, the relative importance of various quality of life indicators (or needs and values) differs between groups. For example, unmarried persons evaluate family, health, and safety as less important than couples and families would. Accordingly, it can be deduced that the urban quality of life indicators will not differ over time or location but their relative importance will differ between different groups.

Most researchers agree that measures of urban quality of life should include subjective and objective indicators (figure 1-4). The use of both objective and subjective indicators is to yield a composite and comprehensive picture of living conditions for urban populations that can be easily understood by general public and policy makers. If objective and subjective indicators converge, the researcher will be able to make definitive and useful conclusions about urban quality of life.<sup>34-35</sup>

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<sup>32</sup> Giordano, Ibid.

<sup>33</sup> Garling and steg, 2007

<sup>34</sup> lim lan yuan and others, 1999

<sup>35</sup> Journal of social sciences, 2009



Many researches in urban quality of life measurement focus on objective indicators, others on subjective indicators, but recently researches started to use the two sets of objective and subjective criteria in order to reach satisfactory results for measuring urban quality of life.

Santos and Martins described the monitoring system of the urban quality of life developed by the Porto City Council, a new tool being used to support urban planning and management; the two components of this system are a quantitative approach based on statistical indicators and a qualitative analysis based on the citizens' perceptions of the conditions of life-are presented. It is argued that, in order to achieve a deeper understanding and more effective measurement of urban quality of life, both kinds of measurements are useful and complement each other.<sup>36</sup>

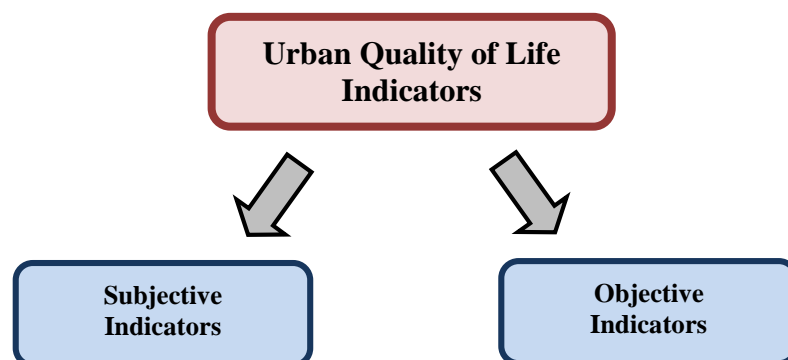


Figure 1-4: Urban quality of life indicators (the researcher, 2012).

### 1-2-1-1 Subjective Indicators

Subjective measures comprise measures of feelings about life, usually quantified through questions of satisfaction or happiness in urban domains and overall life satisfaction; the citizens are asked (questionnaires, interview....) directly for the level of their happiness about different aspects of urban life. The most common techniques use either a Likert-type scale (e.g. 1=very satisfied, 2=satisfied, 3=not satisfied, not dissatisfied, 4=dissatisfied, 5=very

<sup>36</sup> Springerlink, Monitoring Urban quality of life :the porto experience .

dissatisfied) or bipolar scale in which the score is located on a single dimension (e.g. Delighted – Terrible)<sup>37</sup>

### **1-2-1-2 Objective Indicators**

The objective indicators are based on quantitative statistics of urban environment characteristics that fulfill the basic residents' needs.

## **1-2-2 Reviewing Approaches for Measuring Urban Quality of Life:**

There are different approaches for measuring quality of life and evaluating urban quality of life or one of its dimensions. The focus shall be on approaches that deal with complex concepts and decision problems where they could be decomposed into a hierarchical structure.

### **1-2-2-1 Hedonic Model Approach:**

In economics, hedonic regression, also hedonic demand theory, is a revealed preference method of estimating demand or value. It decomposes the item being researched into its constituent characteristics, and obtains estimates of the contributory value of each characteristic. This requires that the composite good being valued can be reduced to its constituent parts and that the market values those constituent parts. Hedonic models are most commonly estimated using regression analysis.<sup>38</sup>

An attribute vector, which may be a dummy or panel variable, is assigned to each characteristic or group of characteristics. Hedonic models can accommodate non-linearity, variable interaction, or other complex valuation situations.<sup>39</sup>

Hedonic models are commonly used in real estate appraisal, real estate economics and Consumer Price Index (CPI) calculations. In CPI calculations hedonic regression is used to control the effect of changes in product quality.

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<sup>37</sup> Garling and steg, 2007

<sup>38</sup> Wikipedia, last modified on 27 December 2010 at 15:32.

<sup>39</sup> Wikipedia, Ibid.

Price changes that are due to substitution effects are subject to hedonic quality adjustments.<sup>40</sup>

The hedonic pricing model, aims to determine the relationship between the attributes of a product and its price and has as its starting point the proposition that any differentiated product has a range of characteristics each with its own implicit (also known as 'shadow' price). For housing these differentiated characteristics may be structural (plot size, number of bedrooms) or environmental (air quality, noise level, presence of view) and its price should be seen as the sum of the shadow prices of all characteristics<sup>41</sup>. Many studies have used the hedonic model for measuring quality of life and urban quality of life.

The Hedonic Model Approach has been used in many studies, i.e. to estimate a quality of life ranking of a number of cities and to examine the relative influence of cultural amenities, prestigious schools accessibility, mixed land uses, socio-economic factors and housing characteristics on the price structure of residential property. (Appendix 1)

#### **1-2-2-2 Life Satisfaction Approach (LSA):**

Life satisfaction approach (LSA) is a relatively new approach to placing a value on public goods. The (LSA) builds on the recent development of subjective well-being research in economics.

Life satisfaction approach is based on the satisfaction of preferences; the assumption of this approach is that people will select those things that will most enhance their quality of life within the constraints of their resources. Individuals are not asked to value the public good directly, but to evaluate their general subjective satisfaction. This approach which is based on people's choices is very much influenced by economic thinking; in addition the individuals' preferences are not stable over time. But there is an important

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<sup>40</sup> Wikipedia, Ibid.

<sup>41</sup> Quality of urban design

question about whether would an agent want to reveal his/her preferences or not.

The (LSA) starts empirically by asking individuals how satisfied they are with their life or how happy they are. The rationale for this approach is that individuals are able to evaluate their satisfaction with life as a whole. Such evaluation may take the form of verbal categories, such as “bad”, “adequate”, and “good”; or it may use a numerical scale on which, for instance, “0” stands for the worst conceivable situation and “10” stands for the best conceivable situation. The Life satisfaction approach could be calculated using regression analysis.

Life Satisfaction Approach has been applied in many studies, i.e. to test residents’ level of satisfaction of various urban attributes. (Appendix 1)

### **1-2-2-3 Combining the Hedonic and (LS) Approaches:**

Hedonic and life satisfaction approaches can be viewed by some authors as complementary. The hedonic approach will be sufficient to value most of the tangible characteristics. The (LSA) will be adequate to find the value of things that money does not buy<sup>42</sup>. Using both approaches could cover most of the aspects of life satisfaction.

Many studies use a methodology that combines the hedonic pricing method and the life-satisfaction approach, i.e. finding criteria to prioritize policy actions for improving the quality of life. (Appendix 1)

### **1-2-2-4 Conjoint Analysis Approach:**

Conjoint analysis is a statistical technique used in market research to determine how people value different features that make up an individual product or service.

The objective of conjoint analysis is to determine what combination of a limited number of attributes is most influential on a respondent’s choice or

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<sup>42</sup> Eduardo Lora, Andrew Powell and others, 2010

decision making. A controlled set of potential products or services is shown to respondents and by analyzing how they make preferences between these products, the implicit valuation of the individual elements making up the product or service can be determined. These implicit valuations (utilities or part-worths) can be used to create market models that estimate market share, revenue and even profitability of new designs.<sup>43</sup>

Conjoint analysis is a multivariate data analysis technique used to model the individuals' preferences as trade-offs among multiattribute alternatives. Each alternative is considered as a bundle of attributes and described in terms of its level on the set of attributes characterizing it. Thus, the respondents evaluate the value or utility of an alternative by combining the separate amounts of utility provided by each attribute. Conjoint analysis is designed to measure the relative importance that the individuals attach to each salient attribute (factor) and their degree of preference for each level of each attribute, which are expressed in terms of utilities called part-worths.

The conjoint methodology is based on a decompositional approach, since the respondents provide only their overall preferences and it is the job of the analyst to find a set of part-worths for the individual attributes that, given some type of composition rule (e.g. an additive one), are most consistent with the respondent's overall preferences. This is decomposing the preferences to determine the value of each attribute. The decompositional nature (stated preference) of Conjoint analysis makes it more realistic than compositional techniques (revealed preference) such as simple rank orderings of attributes, various versions of the paired-comparison technique and constant-sum scales, since the self-explicated methods suffer from normative responses instead of eliciting the actual ones.

Conjoint analysis can be carried out at either the individual (disaggregate) level or the aggregate level, a feature of the technique that almost all other multivariate techniques lack. Because of the substantial amount

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<sup>43</sup> Wikipedia, last modified on 1 February 2011 at 12:19

of among-person variation in preference structures, conjoint analysis is usually carried out at the individual level. However, the composition rule is assumed to be the same across individuals. Compared to the disaggregate-level analysis, the aggregate-level conjoint analysis not only provides a greater statistical efficiency by using more observations in the estimation but also reduces the data collection task through more complex experimental designs.

This method is used in many of the social sciences and applied sciences including marketing, product management, and operations research. It is used frequently in testing customer acceptance of new product designs, in assessing the appeal of advertisements and in service design.

The Conjoint Analysis Approach could be applied in various studies, i.e. to model the priorities, expectations and needs of inhabitants. (Appendix 1)

#### **1-2-2-5 Analytic Hierarchy Process Approach (AHP):**

Saaty developed the AHP as an aid to managers in making decisions. Subjective assessments and objective facts are incorporated into a logical hierarchical AHP framework to provide decision-makers with an intuitive and common-sense approach in quantifying the importance of each decision element through a comparison process. This process enables decision-makers to reduce a complex problem to a hierarchical form with several levels.<sup>44</sup>

The AHP allows the investigation to reach a set of ratings for the decision alternatives by aggregating the relative weights of decision elements. The procedure starts by breaking down the decision problem into a hierarchy of interrelated decision elements. At the top of the hierarchy lies the most macro-decision objective, such as that of selecting the best alternative. The lower levels of the hierarchy contain attributes which contribute to the quality of the decision. Details of these attributes increase at the lower levels of the hierarchy. The last levels of the hierarchy contain decision alternatives.<sup>45</sup>

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<sup>44</sup> Deakin and al., 2007.

<sup>45</sup> Deakin and al., Ibid.

In setting up the decision hierarchy, the number of levels depends on the complexity of the problem and on the degree of detail the analyst requires to solve the problem. Generally, the hierarchy has at least three levels: goal, criteria and alternatives. Criteria may have sub-criteria (figure 1-5). Then, each level entails paired comparisons of its elements.<sup>46</sup>

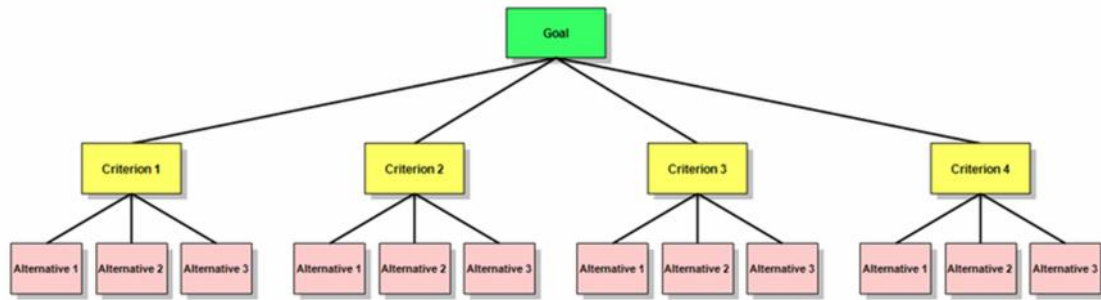


Figure 1-5: A hierarchical model structure. (Wikipedia, 2012)

The process starts by determining the relative importance of particular alternatives with respect to the criteria and sub-criteria. Then the criteria are compared with respect to the goal. Finally the results of these two analyses are synthesized by calculating the relative importance of the alternatives with respect to achieving the goal.<sup>47</sup>

The process of comparison is represented by forming a comparative matrix (figure 1-6). If the analyst has at his disposal (n) alternatives, or criteria that form the comparative matrix, then he must make  $n(n-1)/2$  evaluations. Paired comparisons data are collected for only half of the matrix elements: diagonal elements always equal one, and the lower triangle elements of the matrix are the reciprocal of the upper ones.<sup>48</sup>

<sup>46</sup> Deakin and al., Ibid.

<sup>47</sup> Deakin and al., Ibid.

<sup>48</sup> Deakin and al., Ibid.

	A	B	C	D	E
A	1				
B		1			
C			1		
D				1	
E					1

**Figure 1-6: Comparative matrix. (Deakin and al., 2007)**

Paired comparisons give the user a basis to reveal his/her preference by comparing two elements. Furthermore, the user has the option of expressing preferences between the two, through a scale of values called Fundamental Scale of Saaty (figure 1-7), as equally preferred, weakly preferred, strongly preferred, or absolutely preferred, which would be translated into paired weights of 1, 3, 5, 7 and 9, respectively. The numbers 2, 4, 6 and 8 are used as intermediate values when there is no agreement between preferences. The reciprocal numbers  $1/2, 1/3, \dots, 1/8, 1/9$  complete the matrices (figure 1-8)<sup>49</sup>

Element "A"	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Element "B"
-------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-------------

**Figure 1-7: Fundamental Scale of Saaty, which goes from 9 to 9 (Giordano, 2012)**

<sup>49</sup> Deakin and al., Ibid.



<b>1</b>	<b>Equally important</b>	The two elements equally contribute to the goal accomplishment
<b>3</b>	<b>Moderately important</b>	The assessment lightly supports one element
<b>5</b>	<b>Strongly important</b>	The assessment strongly supports one element
<b>7</b>	<b>Very strongly important</b>	The element predominance is strongly demonstrated
<b>9</b>	<b>Extremely important</b>	One element evidence belongs to the highest level

**Figure 1-8: The numerical values (Giordano, 2012)**

The technique of the AHP takes as input the above comparisons and produces the relative weights of elements at each level as output using the ‘eigenvalue’ method. The eigenvector of each comparative matrix is the priority list, while the eigenvalue gives the measure of consistency in making the assessment or comparison. The synthesized eigenvector is the global sequence of the alternatives with respect to achieving the goal.

The eigenvector and eigenvalue of the comparative matrix are determined by solving the general problem of eigenvalues:

$$AX = \lambda X$$

Where:

A= comparative matrix.

X= eigenvector (non zero vector).

$\lambda$  = eigenvalue of matrix “A”.

The last step of the procedure aggregates relative weights of various levels obtained from the previous step in order to produce a vector of composite weights which serves as ratings of decision alternatives in achieving

the most general objective of the problem.<sup>50</sup> The use of AHP is facilitated by the availability of a user-friendly supporting software ‘Expert Choice’.<sup>51</sup>

This approach has been successfully applied in different areas. In the field of regional and urban planning, including urban regeneration and sustainable development, AHP has been often used for evaluating alternative courses of action and/or design solutions, assessing their impacts on the built and natural environment.<sup>52</sup> (Appendix 1)

#### 1-2-2-6 Analytic Network Process Approach (ANP):

The AHP has been generalized into the Analytical Network Process (ANP). This is based on the observation that many decision problems cannot be structured hierarchically because they involve the interaction and dependence of higher-level elements on lower-level elements, thus the feedback structure does not have the linear top-to-bottom feature of a hierarchy but looks like a network, with cycles connecting its clusters of elements and with loops that connect a cluster to itself (figure 1-9).<sup>53</sup>

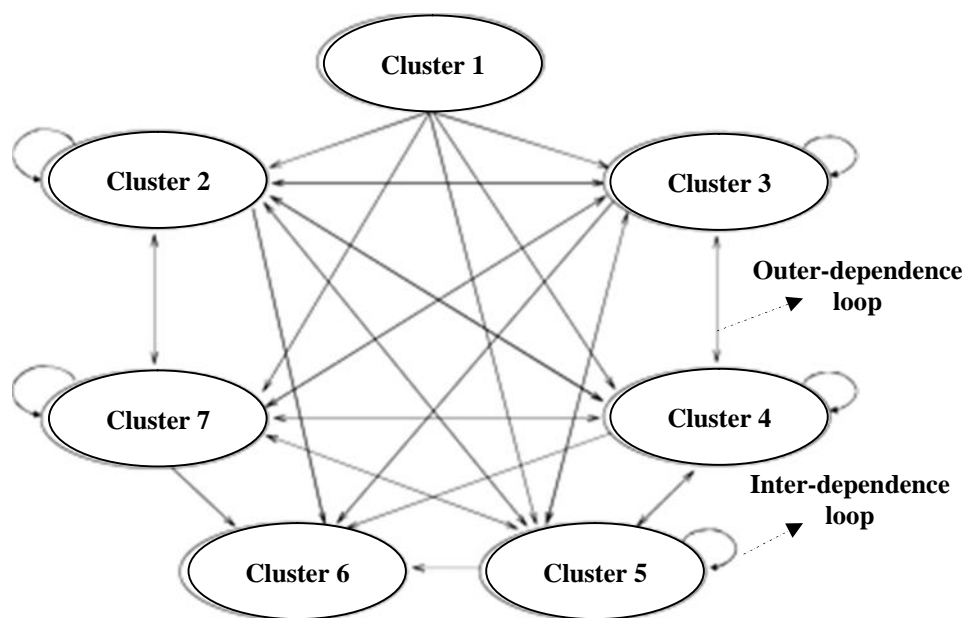


Figure 1-9: A network diagram (Deakin and al., 2007)

<sup>50</sup> Deakin and al., Ibid.

<sup>51</sup> Deakin and al., Ibid.

<sup>52</sup> Deakin and al., Ibid.

<sup>53</sup> Deakin and al., Ibid.

In a network model, usually not only the importance of the criteria determines the importance of the alternatives but also the importance of the alternatives themselves determines the importance of the criteria. However, in general, if there is no feedback, and to diminish complexity, the alternatives can be excluded and the influence among the remaining clusters may be examined.<sup>54</sup>

After having modeled and structured the decision problem and attributed values' judgments to each element, as in AHP approach, the judgments of preferences are translated and put in a square matrix.<sup>55</sup>

If for example “n” is the number of elements to evaluate to a certain level and “m” is the number of the elements presented in the superior level, they shall have to be elaborated “m” matrix of “n x n”. The matrix constructed has to have the diagonal composed of elements equal to one and they shall be reciprocal.<sup>56</sup>

After the matrix of comparison in couples is filled out, the priority of respective components can be determined. This is possible due to the extraction, from each matrix, of the main auto-vector which represents the synthesis of the judgment of reference issued in numerical terms. In the ANP the numerical values, result of the comparisons in couples between the hubs compose a “non weighted Super-Matrix”. The Super-Matrix is a matrix that contains the totality of vectors of priority extracted by the matrix of comparison in couples filled out during the analysis. This represents the relationship of influence inside the hubs that constitute the network and it is generally composed of the following (figure 1-10):<sup>57</sup>

- **N** is the number of clusters;
- **n** is the number of hubs inside the N-th cluster;
- **C<sub>N</sub>** represents the N-th cluster;

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<sup>54</sup> Deakin and al., Ibid.

<sup>55</sup> Giordano, Op.Cit.

<sup>56</sup> Giordano, Ibid.

<sup>57</sup> Giordano, Ibid.

- $e_{Nn}$  is the n-th hub inside the N-th cluster;
- $W_{ij}$  is a block of the Super-Matrix which contains the priority vectors ( $w$ ) of the influence of the i-th cluster's hubs to the j-th cluster.

		$C_1$			$C_2$			...	$C_N$		
		$e_{11}$	$e_{12}$	$e_{1n1}$	$e_{21}$	$e_{22}$	$e_{2n2}$	...	$e_{N1}$	$e_{N2}$	$e_{NnN}$
$C_1$	$e_{11}$	$W_{11}$			$W_{12}$			...	$W_{1N}$		
	$e_{12}$										
	$e_{1n1}$										
$C_2$	$e_{21}$	$W_{21}$			$W_{22}$			...	$W_{2N}$		
	$e_{22}$										
	$e_{2n2}$										
		...			...			...	...		
$C_N$	$e_{N1}$	$W_{N1}$			$W_{N2}$			...	$W_{NN}$		
	$e_{N2}$										
	$e_{NnN}$										

$C_n$  with  $n=1, 2, \dots, N$  Cluster  
 $e_{nm}$  with  $e_{nm} = e_{n1}, e_{n2}, \dots, e_{nNn}$  Node  
 **$W_{ij}$**  Matrix block with priority vectors ( $w$ ) of the i-th cluster nodes influence compared to the j-th cluster

Figure 1-10: Supermatrix's structure (Giordano, 2012)

Each  $W_{ij}$  block contains in each column that constitute the main autovector of the matrix of comparison in couples. The auto-vector shows the importance that each hub in the i-th cluster has with respect to a hub in the j-th cluster. If this last has no influence on the previous one, that means that the  $W_{ij}$  block is a matrix constituted only by 0. The null and void blocks are, therefore, a matrix in which there are no relationships of influence between the hubs of the clusters. The blocks which are not null and void of the Super-Matrix point out the relationships existing between the hubs expressed in numerical terms inside the same block. The Super-Matrix allows for the understanding of the relationships of influence in the decision network, as well as the typology of the relationships of influence inside the same. Moreover, it points out the

presence of a loop, showing the internal influences between the hubs and the same cluster.<sup>58</sup>

The relationships in Super-Matrix have the fundamental task of making the level of priority of the elements that compose the system emerge numerically. Thus it is possible to obtain, by the reading of each auto-vector, the weight that each hub has with respect to the totality of the decisional system.<sup>59</sup>

The use of ANP is facilitated by the availability of user-friendly supporting software ‘SuperDecisions’.

Analytical Network Process Approach is applied in many studies, i.e. it could provide a process to derive ratio scales priorities from inhabitants’ preferences. (Appendix 1)

### **1-3 Contemporary Urban Planning Theories and Approaches:**

The Conventional urban developments, especially those occurred after World War II, are facing many problems: high vehicle miles of travel, insufficient level of services, diminished air quality, degraded sense of place, segregation land uses, lack of critical population mass made for security concerns, and other none urban features problems. Therefore most of the new urban planning theories and approaches appear in the late twentieth-century, such as New Urbanism, Smart Growth, Compact Cities, Green Infrastructure, neo-traditional planning, livable communities, sustainable development ...etc. In order to develop communities that will be more successful in serving the needs of those who live and work and controlling the urban sprawl while enhancing urban quality of life. It is necessary to analyze the different contemporary urban planning theories and approaches that aim to enhance the quality of life through a set of principles in order to deduce Urban Quality of Life sub-dimensions.

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<sup>58</sup> Giordano, 2012.

<sup>59</sup> Giordano, 2012.

These new urban planning approaches make use of earlier work; they also break new ground by blending contemporary and traditional design principles. They advocate a return to urban design principles of pre-automotive times; but the automobile is a fact of life, and the low-density lifestyles that are both cause and effect of auto-dependence clearly appeal to most new cities.

### **1-3-1 New Urbanism**

The New Urbanism, also called Neotraditional Design, is an urban design movement that developed in the United States in the late 1980, its concepts are inspired by traditional town and neighborhood design “*new urbanism draws inspiration from townscapes of the past in an effort to engage their surroundings rather than retreat from them.*”<sup>60</sup> The New Urbanism offered a set of principles that addressed aesthetic, transportation, regional, and ecological concerns and offered a guide of alternatives to urban sprawl<sup>61</sup>. The organizing body for New Urbanism is the Congress for the New Urbanism, founded in 1993. Its foundational text is the *Charter of the New Urbanism*.

#### **1-3-1-1 New Urbanism Goals and Issues:**

New Urbanism is an urban design movement; its main goal is to create buildings, neighborhoods, and regions that provide a high quality of life for all residents, while protecting the natural environment (figure 1-11).

New Urbanists support regional planning for open space,



**Figure 1-11:** illustrates the kind of active and safe streetscape often found in New Urbanist communities. Places like this are created by applying certain design principles, such as short, walkable blocks, small setbacks, and the inclusion of a mix of uses in the neighborhood.

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<sup>60</sup> Nan Ellin, 1996

<sup>61</sup> Valuing Amenities of New Urbanist Communities

context-appropriate architecture and planning, and the balanced development of jobs and housing. They believe that their strategies can reduce traffic congestion, increase the supply of affordable housing, and control urban sprawl. The Charter of the New Urbanism also covers issues such as historic preservation, safe streets, green buildings, and the redevelopment of brownfield land<sup>62</sup>.

### 1-3-1-2 New Urbanism Principles:

The new urbanism principles are classified on the basis of three main levels:

- The region: metropolis, city, and town.
- The neighborhood, the district, and the corridor.
- The block, the street, and the building.

Due the scope of this research only the New Urbanism principles related to the scale of the neighborhood will be addressed.

#### ▪ New Urbanism Principle #1

#### MIXED LAND USE:

Neighborhoods should be diverse in use and population, and contain a range of housing, job types and daily living activities within walking distance (figure 1-12).

Civic, institutional, commercial activities and transit stops should be located at the center of the neighborhood, rather than having isolated remote single use complexes. However, in the

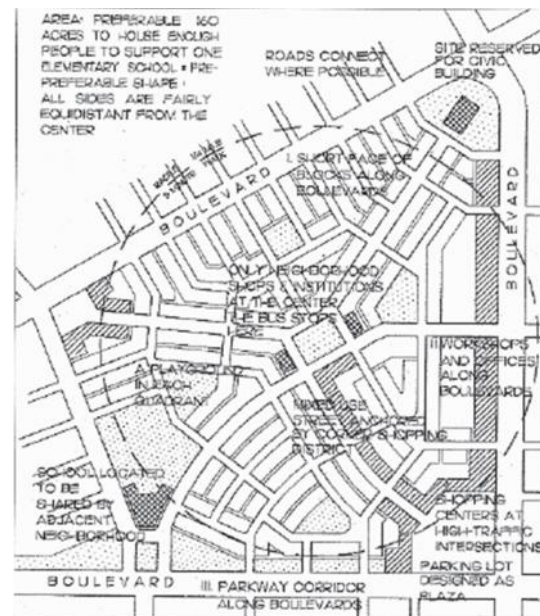


Figure 1-12: Duany and Plater-Zyberk's neighborhood concept (Carmona and al, 2004)

<sup>62</sup> Wikipedia, Ibid.

aggregations of multiple neighborhoods or at the neighborhood edge, the retail buildings offices and workshops would be located.

Neighborhoods may also contain a range of parks in convenient locations as well as sized schools which are located to enable children to walk or cycle to them.

▪ **New Urbanism Principle #2**

**PEDESTRIAN AND TRANSIT FRIENDLY NEIGHBORHOOD:**

Neighborhoods should be compact, typically no more than one-quarter mile (400m) from center to edge, knowing that this distance is equivalent to a five-minute walk at an easy pace, and its street networks should be formed to encourage pedestrian activity without excluding automobiles altogether.

Transit stops with variety of transportation types should be located among other neighborhood services and within walking distance of home or work in order to make public transit a viable alternative to the automobile.

However, in some cases, when people's incomes rise they prefer to travel by their personal cars than to walk or use public transportation.

▪ **New Urbanism Principle #3**

**PROVIDE CIVIC BUILDINGS AND PUBLIC GATHERING PLACES:**

Neighborhoods should give priority to public space and to appropriate locations for civic buildings. Public spaces and civic buildings represent community identity and foster civic pride. They deserve distinctive form, because their role is different from other buildings and places that constitute the fabric of the city.

▪ **New Urbanism Principle #4**

**PROVIDE A RANGE OF PARKS:**

Neighborhoods should have a range of parks, from tot-lots and village greens to ballfields and community gardens, should be distributed within neighborhoods. Conservation areas and open lands should be used to define and connect different neighborhoods and districts.



▪ **New Urbanism Principle #5**

**COMPACT NEIGHBORHOOD:**

Neighborhoods should have appropriate building densities that promote walkable neighborhood. But this, in some cases, works against market forces, as rising incomes lead people to choose more living space, which lowers population densities and this works against the new urbanist goal of increasing population density.

▪ **New Urbanism Principle #6**

**CREATE A RANGE OF HOUSING TYPES:**

Within neighborhoods, a broad range of housing types and price levels can bring people of diverse ages, races, and incomes into daily interaction, strengthening the personal and civic bonds essential to an authentic community.

However, the effectiveness of the New Urbanist solution of mixed income developments lacks statistical evidence.

▪ **New Urbanism Principle #7**

**CONTROLLED EVOLUTION:**

The economic health and harmonious evolution of neighborhoods, districts, and corridors can be improved through graphic urban design codes that serve as predictable guides for change. Designing identifiable areas encourages citizens to take responsibility for their maintenance and controls evolution.

▪ **New Urbanism Principle #8**

**INTERCONNECTED STREETS:**

Interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, conserve energy and disperse traffic congestion.

- **New Urbanism Principle #9**

**ARCHITECTURE & LANDSCAPE SHOULD BE LINKED TO CONTEXT:**

Individual architectural projects should be seamlessly linked to their surroundings; this issue transcends style. Architecture and landscape design should grow from local climate, topography, history, and building practice.

- **New Urbanism Principle #10**

**ECO-BUILDING:**

All buildings should provide their inhabitants with a clear sense of location, weather and time. Natural methods of heating and cooling can be more resource efficient than mechanical systems.

- **New Urbanism Principle #11**

**REINFORCING A SAFE AND SECURE ENVIRONMENT:**

The revitalization of urban places depends on safety and security. The design of streets and buildings should reinforce safe environments, but not at the expense of accessibility and openness. Streets and squares should be safe, comfortable, and interesting to the pedestrian; properly configured to encourage walking and enable neighbors to know each other and protect their communities.

- **New Urbanism Principle #12**

**PRESERVE HISTORIC AREAS:**

Preservation and renewal of historic buildings, districts, and landscapes affirm the continuity and evolution of urban society.

- **New Urbanism Principle #13**

**HIERARCHY OF STREETS NETWORKS:**

Corridors are regional connectors of neighborhoods and districts; they range from boulevards and rail lines to rivers and parkways. Hierarchy of streets should be based on their pedestrian and vehicular loads.

## 1-3-2 Smart Growth

Smart growth is a relatively recent urban planning and transportation theory that concentrates growth in compact walkable urban centers to avoid sprawl and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including neighborhood schools, complete streets, and mixed-use development with a range of housing choices (figure 1-13).<sup>63</sup>



Figure (1-13): Transportation choices

Smart growth started in North America probably after the New Urbanism, it shares principles with contemporaneous movements identified by the terms new urbanism and sustainable development. According to the EPA (Environmental Protection Agency), Smart Growth is “development that serves the economy, the community, and the environment. It changes the terms of the development debate away from the traditional growth/no growth question of how and where should new development be accommodated.”<sup>64</sup> Smart growth becomes now part of the lexicon of planners, policy makers, and almost everyone with an interest in urban issues.

### 1-3-2-1 Smart Growth Goals and Issues:

Smart growth is about thoughtfully considering where and how growth occurs. Smart growth is not about preventing growth, but rather about creating choices about where people live and how they get around and replacing poorly planned development with growth that supports our communities.

Its goals are to achieve a unique sense of community and place; expand the range of transportation, employment, and housing choices; equitably distribute the costs and benefits of development; preserve and enhance natural

<sup>63</sup> [http://en.wikipedia.org/wiki/Smart\\_growth](http://en.wikipedia.org/wiki/Smart_growth), 2011.

<sup>64</sup> Gerrit-Jan Knaap, 2004.

and cultural resources; promote public health, economic vitality, and social equity; and improve quality of life (figure 1-14).<sup>65</sup>



Figure 1-14: Smart Growth Goals and Issues  
(<http://megacitysustainability.wordpress.com/suggestions-for-new-york/>)

### 1-3-2-2 Smart Growth Principles:

It can be deduced that the Smart Growth deals with 6 main topics:

1. Land use
2. Housing
3. Transportation
4. Environment
5. Infrastructure
6. Community

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<sup>65</sup> Smart Growth, <http://www.smartgrowth.org>.

These main topics are divided into ten basic principles that can be applied in various combinations to create smart, nonsprawling communities. This section will predicate on the ten recognized smart growth principles and describes each of these principles and their intent.

▪ **Smart Growth Principle #1**

**ADOPT COMPACT BUILDING PATTERNS AND EFFICIENT INFRASTRUCTURE DESIGN:**

Smart growth provides a means for communities to incorporate more compact building design as an alternative to conventional, land consumptive development. Higher density (as dense as the market will allow) and compact building patterns are more energy efficient and protect the climate. Creating such neighborhoods is a critical element of reducing urban sprawl, reducing the amount of land consumed and leaving more for future generations. These patterns also minimize the amount of infrastructure and services that support the community and translate to lower municipal costs (figure 1-15). Local governments find that on a per-unit basis, it is cheaper to provide and maintain services like water, sewer, electricity, phone service and other utilities in more compact neighborhoods than in dispersed communities. As much as compact, livable urban neighborhoods attract more people and business and support wider transportation choices (Table 1-2).

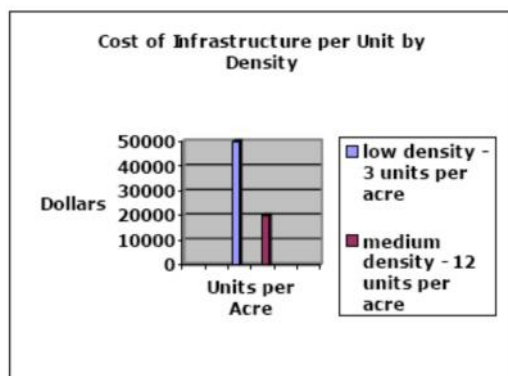


Figure 1-15: cost of infrastructure per unit by density (Western Riverside Council of Governments, 2003)

Minimum Densities to Support Various Levels of Transit	
Type of Transit	Residential Density*
Minimal level of local bus service, 1 hr frequency	4 to 6
Intermediate level of local bus service, ½ hr freq.	7 to 8
Light rail transit with feeder buses	9 and above

\* Dwelling Units per Acre

Table 1-2: The relationship between density and transit opportunities (Western Riverside Council of Governments, 2003).

However, urban intensification increases population density that reduces per capita car use, with benefits to the global environment, but will also increase concentrations of motor traffic, worsening the local environment in those locations where it occurs.

▪ **Smart Growth Principle #2**

**CREATE A RANGE OF HOUSING OPPORTUNITIES AND CHOICES:**

Housing is a critical part of the way communities grow as it constitutes a significant share of new construction and development. Not everyone has the same housing needs. Some singles prefer to rent small apartments, young couples need starter homes, families need room to grow and elders may need a caring community. Citizens of the communities should be able to live close to their families and friends even as their life-stages and needs change. Community workers (policemen, firemen, teachers, etc.) should be able to find homes they can afford within the community. Neighborhoods should offer a range of options.

Smart growth promotes housing options for diverse lifestyles and socio-economic levels. Providing quality housing for people of all income levels is an integral component in any smart growth strategy (figure 1-16).

By using smart growth approaches to create a wider range of housing choices, communities can mitigate the environmental costs of auto-dependent development, use their infrastructure resources more efficiently, ensure a better jobs/housing balance, and generate a strong foundation of support for neighborhood transit stops, commercial centers, and other services.



**Figure 1-16: Mixed housing around common recreational facilities. ( Ewing and Hodder)**

No single type of housing can serve the varied needs of today's diverse households. Smart growth represents an opportunity for local communities to increase housing choice not only by modifying their land use patterns on newly-developed land, but also by increasing housing supply in existing neighborhoods and on land served by existing infrastructure.

▪ **Smart Growth Principle #3**

**CREATE WALKABLE NEIGHBORHOODS:**

Walkable communities are desirable places to live, work, learn, worship and play, and therefore a key component of smart growth (figure 1-17). Their desirability comes from three factors:



**Figure 1-17: Walkable neighborhood.**  
(Idaho Smart Growth)

**First**, walkable communities locate within an easy and safe walk facilities (such as housing, offices, and retail) and services (such as transportation, schools, libraries) that a community resident or employee needs on a regular basis.

**Second**, walkable communities make pedestrian activity possible, thus expanding transportation options, and creating a streetscape that better serves a range of users – pedestrians, cyclists, transit riders, and automobiles.

**Third**, As the personal and societal benefits of pedestrian friendly communities are realized – benefits that include lower transportation costs, greater social interaction, improved personal and environmental health, and expanded consumer choice – many are calling upon the public and private sector to facilitate the development of walkable places.

▪ **Smart Growth Principle #4**

**ENCOURAGE COMMUNITY & STAKEHOLDER COLLABORATION:**

The communities are strengthened when working cooperatively to realize the shared vision. The community spirit, built on the pride of association and the sense of civic responsibility, creates strong and cohesive communities.



**Figure 1-18: Community & stakeholder collaboration. ( Idaho Smart Growth)**

Citizen participation can be time-consuming, frustrating and expensive, but encouraging community and stakeholder collaboration can lead to creative, speedy resolution of development issues and greater community understanding of the importance of good planning and investment. Smart Growth plans and policies developed without strong citizen involvement will at best not have staying power; at worst, they will be used to create unhealthy, undesirable communities. When people feel left out of important decisions, they will be less likely to become engaged when tough decisions need to be made. Involving the community early and often in the planning process vastly improves public support for smart growth and often leads to innovative strategies that fit the unique needs of each community (figure 1-18).

▪ **Smart Growth Principle #5**

**FOSTER DISTINCTIVE, ATTRACTIVE COMMUNITIES WITH A SENSE OF PLACE:**

Distinctive communities that celebrate their natural settings and reflect the character and values of the people give everyone who lives there a greater sense of belonging (and "being home"). As well as, the provision of welcoming public spaces, the preservation of spectacular vistas, the definition of well-designed focal points (including civic buildings) and the enhancement of appropriate architectural styles and scales of neighborhoods could contribute to the community's unique sense of place.



Smart growth encourages communities to craft a vision and set standards for development and construction which respond to community values of architectural beauty and distinctiveness, as well as expanded choices in housing and transportation. It seeks to create interesting, unique communities that reflect the values and cultures of the people who reside there, and foster the types of physical environments which support a more cohesive community fabric. Smart growth promotes development that uses natural and man-made boundaries and landmarks to create a sense of defined neighborhoods, towns, and regions; it encourages the construction and preservation of buildings which prove to be assets to a community over time, not only because of the services provided within, but because of the unique contribution they make on the outside to the look and feel of a city.

▪ **Smart Growth Principle #6**

**MAKE DEVELOPMENT DECISIONS PREDICTABLE, FAIR AND COST EFFECTIVE:**

For a community to be successful in implementing smart growth, it must be embraced by the private sector; only private capital markets can supply the large amounts of money needed to meet the growing demand for smart growth developments. However, if investors, bankers, developers, builders and others do not earn a profit, few smart growth



**Figure 1-19: The integration between private sector and local government ( Idaho Smart Growth)**

projects will be built. Governments should help make smart growth profitable to private investors and developers; since the development industry is highly regulated, the value of property and the desirability of a place is largely affected by government investment in infrastructure and government regulation. Governments that make the right infrastructure and regulatory decisions will create fair, predictable and cost effective smart growth (figure 1-19).

▪ **Smart Growth Principle #7**

**MIX LAND USES:**

Development may be characterized as “mixed use” if it combines more than one use or purpose within a shared building or compact project area. Mixed uses may combine a variety of activities such as housing, offices, stores, restaurants, medical, commercial, and high-tech/light-industrial endeavors (figure 1-20).



**Figure 1-20: Retail, offices and upstairs residences occupy a mixed use structure. (Ewing and Hodder)**

Smart growth supports the integration of mixed land uses into communities as a critical component of achieving better places to live. By putting uses in close proximity to one another, alternatives to driving, such as walking or cycling, once again become viable. Mixed land use also provides a more diverse and sizable population and commercial base for supporting viable public transit. It can enhance the vitality and perceived security of an area by increasing the number and attitude of people on the street. It helps streets, public spaces and pedestrian-oriented retail again become places where people meet.

Mixed land uses can convey substantial fiscal and economic benefits. Commercial uses in close proximity to residential areas are often reflected in higher property values, and therefore help raise local tax receipts. Businesses recognize the benefits associated with areas able to attract more people, as there is increased economic activity when there are more people in an area to shop. In today’s service economy, communities find that by mixing land uses, they make their neighborhoods attractive to workers who increasingly balance quality of life criteria with salary to determine where they will settle.

▪ **Smart Growth Principle #8**

**PRESERVE OPEN SPACE, FARMLAND NATURAL BEAUTY AND CRITICAL ENVIRONMENTAL AREAS:**

Many of the current environmental challenges — air and water pollution, global warming, habitat fragmentation and conversion — are due in part to the way neighborhoods, communities, and metropolitan areas have been built during the past half-century.



**Figure 1-21: Preservation Area (Ewing and Hodder)**

Smart growth reduces health threats from air and water pollution and indoor air contaminants through resource-efficient building design and offering transportation options such as mass transit, bike lanes, and pedestrian walkways. These engage residents and workers in a more active, healthy lifestyle. These actions help preserve a sense of place and enhance the quality of life in the communities.

Smart growth uses the term “open space” broadly to mean natural areas both in and surrounding localities that provide important community space, habitat for plants and animals, recreational opportunities, farm land, places of natural beauty and critical environmental areas. Open space preservation supports smart growth goals by bolstering local economies, preserving critical environmental areas, improving the communities quality of life, and guiding new growth into existing communities (figure 1-21).

▪ **Smart Growth Principle #9**

**PROVIDE A VARIETY OF TRANSPORTATION CHOICES:**

Smart growth protects public health and environmental quality, conserves energy, and improves the quality of life in communities by promoting new transportation choices and transit-oriented development (figure 1-22).

Many communities are designed so that residents are almost completely dependent on driving. Many places don't have sidewalks making short walks difficult. Providing a variety of transportation options – like safe and reliable public transportation, sidewalks, bike paths and walking trails – promotes and improves health, conserves energy, safeguards the environment and reduces car dependency (figure 1-23).

There are also many members of communities who can't drive or don't have access to a car. Providing transportation options creates communities where seniors, young people below driving age and the disabled can all live comfortably.



Figure 1-22: Transit stop in the village center (Ewing and Hodder)

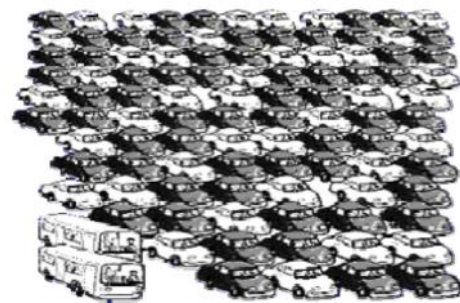


Figure 1-23: Two buses can carry the same number of passengers as 100 cars. (Western Riverside Council of Governments, 2003)

▪ **Smart Growth Principle #10**

**STRENGTHEN AND DIRECT DEVELOPMENT TOWARD EXISTING COMMUNITIES:**

Smart growth directs development towards existing communities already served by infrastructure, seeking to utilize the resources that existing neighborhoods offer, and conserve open space and irreplaceable natural resources on the urban fringe. Development in existing neighborhoods also represents an approach to growth that can be more cost-effective, and improves the quality of life for its residents. By encouraging development in existing communities, they benefit from a stronger tax base, closer proximity of a range

of jobs and services, increased efficiency of already developed land and infrastructure, reduced development pressure in edge areas thereby preserving more open space, and in some cases, strengthening rural communities.

The ease of greenfield development remains an obstacle to encouraging more development in existing neighborhoods. Development on the fringe remains attractive to developers for its ease of access and construction, lower land costs, and potential for developers to assemble larger parcels. Typical zoning requirements in fringe areas are often easier to comply with and a relative absence of residents who may object to the inconvenience or disruption caused by new construction.

But there are many obstacles that confront this way of development such as the lack of incentives for builders to redevelop older neighborhoods and the limitation of the ability of state planners to force local jurisdictions to approve high-density developments, as well as, buyers prefer low-density development and tend to oppose high density developments near them.

### **1-3-3 Urban Village:**

The concept of the urban village was first promoted by the Urban Villages Group in Britain in the late 1980s as a means to achieve more human scale, mixed-use and well-designed places.<sup>66</sup> The term urban village has since entered the planning discourse, and a number of developments known as urban villages have appeared across the country. Urban village ideals have been applied to new greenfield developments, as well as brownfield developments and urban renewal projects. The concept has been widely adopted in many countries and used by both government development agencies as well as private enterprise as a guiding concept for many projects.

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<sup>66</sup> Constructing an Image: The Urban Village Concept in the UK, Bridget Franklin and Malcolm Tait, 2001, Planning Theory November 2002 vol.1.

### **1-3-3-1 Urban Village Goals and Issues:**

The urban village is a concept of a settlement that is small enough to create a community, but big enough to maintain a reasonable cross section of facilities.

The goal of an Urban Village is to address the general erosion of local character and distinctiveness that is prevalent in most housing developments created in the last half century, typified by an absence of variety in land uses and architectural styles, unfriendly external environments, lack of community and a similarity of urban form that lacks a 'sense of place'.

Urban villages are seen to provide an alternative to recent patterns of urban development in many cities, especially decentralization and urban sprawl. They are generally purported to:

- Reduce car reliance and promote cycling, walking and transit use.
- Provide a high level of self containment (people working, recreating and living in the same area).
- Help facilitate strong community institutions and interaction.

The objectives of urban villages are often criticized as unrealistic because they ignore broader social and economic realities. The ability to create self-contained villages is questionable as employment and activity patterns continue to become more complex. The viability of creating a variety of employment and activity within an area with a small population base is also questionable.

### 1-3-3-2 Urban Village Principles:

Urban village has nine key principles.

#### ▪ Urban Village Principle #1

##### **WALKABILITY:**

Communities should be designed to reduce car dependency, encourage walking and cycling, and facilitate the access to existing or improved public transports links. Urban village suggests the comfortable walking distance to be 10 minute walk from one side of urban area to the other or 900m across. In addition, community should create a pedestrian friendly environment that increases the feeling of safety (figure 1-24).



**Figure 1-24: Pedestrian friendly environment. (What is Urban Village)**

#### ▪ Urban Village Principle #2

##### **CONNECTIVITY:**

Provide interconnected street grid networks with small street blocks and numerous pedestrian linkages to the central public spaces. Urban Village argues that, a high quality pedestrian network and public realm makes walking pleasurable. Street networks should be properly designed and provide a hierarchy of narrow streets, boulevards, and alleys (figure 1-25)



**Figure 1-25: Interconnected street grid network (What is Urban Village)**



▪ **Urban Village Principle #3**

**INCREASED DENSITY:**

Provide a sufficiently large population to support a range of community facilities all within walking distance which means that the density of development is usually higher than other comparable developments, particularly towards the centre, while decreasing towards the edges (figure 1-26).



**Figure 1-26: Increased density (What is Urban Village)**

▪ **Urban Village Principle #4**

**MIXED-USE AND DIVERSITY:**

Communities should provide mixed-use within neighborhoods, within blocks, and within buildings, a mix of shops, offices, services recreational activities, apartments, and homes. In addition, communities should promote diversity of people, ages, income levels, cultures, races and lifestyles (Figure 1-27).



**Figure 1-27: Mixed use development (What is Urban Village)**

▪ **Urban Village Principle #5**

**MIXED HOUSING:**

Provide a range of types, sizes and prices of housing in closer proximity, such as single family detached and attached, multi-family, upper floor rentals over retail, condominiums (figure 1-28).



**Figure 1-28: Mixed housing (What is Urban Village)**



▪ **Urban Village Principle #6**

**QUALITY ARCHITECTURE AND URBAN DESIGN:**

The block layout should reflect existing natural features, contours and existing building patterns. Design should emphasize on beauty, aesthetics, human comfort, and creating a sense of place, it should also provide attractive surroundings and human scale architecture that nourishes the human spirit. Civic uses and sites should be placed in special places within the community (figure 1-29).



**Figure 1-29: Quality architecture and urban design (What is Urban Village)**

▪ **Urban Village Principle #7**

**TRADITIONAL NEIGHBORHOOD STRUCTURE:**

Neighborhoods should have a discernable center and edge, contain a public space at the center and provide quality public realms. In addition, neighborhoods should contain a range of uses and densities within a 10-minute walk.



**Figure 1-30: Quality public realm (What is Urban Village)**

The quality of the public realm depends on the arrangement of its paving, planting, lighting, shelter, signage, street furniture, and the way it is over-looked, as well as the routes passing through it and the uses next to it (figure 1-30).

▪ **Urban Village Principle #8**

**SMART TRANSPORTATION:**

Provide a network of high-quality public transit connecting cities, towns, and neighborhoods together. As well as, encourage a greater use of bicycles, rollerblades, scooters,



**Figure 1-31: Use of bicycles (What is Urban Village)**

and walking as daily transportation (Figure 1-31).

▪ **Urban Village Principle #9**

**SUSTAINABILITY:**

Minimize environmental impact of the development and its operations. Provide eco-friendly technologies and respect ecology and value of natural systems. Design for more efficient use of public infrastructure, services and energy. Minimize car dependency by more walking, less driving (figure 1-32).



**Figure 1-32: More walking, less driving. (What is Urban Village)**

**1-3-4 Principles of Intelligent Urbanism (PIU):**

Principles of Intelligent Urbanism (PIU) is a theory of urban planning developed by Benninger in Indian and it is composed of a set of ten axioms intended to guide the formulation of city plans and urban designs. PIU acts as a consensual charter around which constructive debate over actual decisions can be evaluated and confirmed.<sup>67</sup>

**1-2-4-1 Intelligent Urbanism Goals and Issues:**

Principles of Intelligent Urbanism (PIU) are intended to reconcile and integrate diverse urban planning and management concerns.

**1-2-4-2 Principles of Intelligent Urbanism:**

Their ten principles include environmental sustainability, heritage conservation, appropriate technology, infrastructure efficiency, placemaking, "Social Access," transit oriented development, regional integration, human scale, and institutional integrity.

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<sup>67</sup> Principles of Intelligent Urbanism from *Encyclopedia of the City*, 2005.

### ▪ **Principles of Intelligent Urbanism - Principle #1**

#### **A BALANCE WITH NATURE:**

According to proponents of Intelligent Urbanism, balance with nature emphasizes the distinction between utilizing resources and exploiting them. The principle promotes environmental assessments to identify fragile zones, threatened eco-systems and habitats that can be enhanced through conservation, density control, land use planning and open space design.<sup>68</sup>

### ▪ **Principles of Intelligent Urbanism - Principle #2**

#### **A BALANCE WITH TRADITION:**

Balance with Tradition is intended to integrate plan interventions with existing cultural assets, respecting traditional practices and precedents of style. Intelligent Urbanism calls for respect for the cultural heritage of a place. It seeks out traditional wisdom in the layout of human settlements, in the order of building plans, in the precedents of style, in the symbols and signs that transfer meanings through decoration and motifs. Intelligent urbanism respects the order engendered into building systems through years of adaptation to climate, to social circumstances, to available materials and to technology. It promotes architectural styles and motifs designed to communicate cultural values. Intelligent Urbanism orients one's attention toward monuments and heritage structures<sup>69</sup>.

### ▪ **Principles of Intelligent Urbanism - Principle #3**

#### **APPROPRIATE TECHNOLOGY:**

Appropriate Technology promotes materials, building techniques, infrastructural systems and construction management that are consistent with people's capacities, geo-climatic conditions, local resources, and suitable capital investments. For every problem there is a range of potential technologies, which can be applied, and an appropriate fit between technology and other resources must be established.

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<sup>68</sup> Merle Krigul and others, 2008.

<sup>69</sup> Merle Krigul and others, Ibid.

▪ **Principles of Intelligent Urbanism - Principle #4**

**CONVIVIALITY:**

Conviviality sponsors social interaction through public domains, in a hierarchy of places, devised for personal solace, engaging friendship, romance, house holding, neighboring, community and civic life. It promotes the protection, enhancement and creation of “open public spaces” which are accessible to all<sup>70</sup>.

▪ **Principles of Intelligent Urbanism - Principle #5**

**EFFICIENCY:**

The principle of efficiency promotes a balance between the consumption of resources such as energy, time and fiscal resources, with planned achievements in comfort, safety, security, access, tenure, and hygiene. It encourages optimum sharing of public land, roads, facilities, services and infrastructural networks reducing per household costs, while increasing affordability, access and civic viability. Intelligent Urbanism promotes a balance between performance and consumption. Intelligent urbanism promotes efficiency in carrying out functions in a cost effective manner. It assesses the performance of various systems required by the public and the consumption of energy, funds, administrative time and the maintenance efforts required to perform these functions.

A major concern of Intelligent Urbanism is transport; it promotes alternative modes of transport, as opposed to dependence on personal vehicles. It promotes affordable public transport and medium to high-density residential development along with complimentary social amenities, convenience shopping, recreation and public services in compact, mixed-use settlements. These compact communities have shorter pipe lengths, wire lengths, cable lengths and road lengths per capita. More people share gardens, shops and transit stops<sup>71</sup>.

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<sup>70</sup> "The Principles of Intelligent Urbanism" by Christopher Charles Benninger, Architect, 2011.

<sup>71</sup> Merle Krigul and others, 2008.

▪ **Principles of Intelligent Urbanism - Principle #6**

**HUMAN SCALE:**

Human Scale encourages ground level, pedestrian oriented urban arrangements, based on anthropometric dimensions. Walkable, mixed use urban villages are encouraged, over mono-functional blocks and zones, linked by motor ways and surrounded by parking lots<sup>72</sup>.

▪ **Principles of Intelligent Urbanism - Principle #7**

**OPPORTUNITY MATRIX:**

Opportunity Matrix enriches the city as a vehicle for personal, social, and economic development, through access to a range of organizations, services and facilities, providing a variety of opportunities for education, recreation, employment, business, mobility, shelter, health, safety and basic needs. Intelligent urbanism views the city as an opportunity system, yet these opportunities are not equally distributed. If the city is an institution, that generates opportunities, intelligent urbanism promotes the concept of equal access to opportunities within the urban system.

▪ **Principles of Intelligent Urbanism - Principle #8**

**REGIONAL INTEGRATION:**

Regional Integration, envisages the city as an organic part of a larger environmental, economic, social and cultural geographic system that is essential for its future sustainability<sup>73</sup>.

▪ **Principles of Intelligent Urbanism - Principle #9**

**BALANCED MOVEMENT:**

Balanced Movement promotes integrated transport systems composed of pedestrian paths, cycle lanes, express bus lanes, light rail corridors and automobile channels. The modal split nodes between these systems become the

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<sup>72</sup> "The Principles of Intelligent Urbanism" by Christopher Charles Benninger, Architect, 2011.

<sup>73</sup> "The Principles of Intelligent Urbanism" by Christopher Charles Benninger, Ibid.

public domains around which cluster high density, specialized urban hubs and walkable, mixed-use urban villages<sup>74</sup>.

▪ **Principles of Intelligent Urbanism - Principle #10**

**INSTITUTIONAL INTEGRITY:**

Institutional Integrity recognizes that good practices inherent in these principles can only be realized through the emplacement of accountable, transparent, competent and participatory local governance. It recognizes that such governance is founded on appropriate data bases, on due entitlements, on civic responsibilities and duties. The PIU promotes a range of facilitative and promotive urban development management tools to achieve intelligent urban practices, systems and forms<sup>75</sup>.

**1-3-5 Analysis of Urban Planning Theories and Approaches:**

A matrix was developed to show the relationship between the aforementioned urban planning theories and approaches principles, and the seven dimensions of urban quality of life as shown in (table 1-3). The principles presented in the matrix will contribute in the decomposing the seven main dimensions into sub-dimensions that will form another level in the hierarchical structure.

It is obvious that there are some gaps in this matrix, such as for the economical dimension, although these gaps reflect the lack of principles that deal directly with the economical dimension; this does not mean that those urban planning approaches or theories have not considered this dimension, as they do address this dimension indirectly. For example, the principle of mixed land uses that appears in most of approaches has a clear effect on economic issues.

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<sup>74</sup> "The Principles of Intelligent Urbanism" by Christopher Charles Benninger, Architect, Ibid.

<sup>75</sup> "The Principles of Intelligent Urbanism" by Christopher Charles Benninger, Architect, Ibid.

	New Urbanism	Smart Growth	Urban Village	Intelligent Urbanism
Environmental	-	<ul style="list-style-type: none"> <li>• Preserve open space and critical environment areas.</li> <li>• Strengthen and direct development toward existing communities.</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>• Balance with nature.</li> <li>• Efficiency.</li> <li>• Appropriate technology.</li> </ul>
Physical	<ul style="list-style-type: none"> <li>• Mix land use.</li> <li>• Compact neighborhood.</li> <li>• Eco-building</li> <li>• Hierarchy of streets networks.</li> </ul>	<ul style="list-style-type: none"> <li>• Mixed land use.</li> <li>• Adopt compact building patterns and efficient infrastructure design.</li> </ul>	<ul style="list-style-type: none"> <li>• Mixed-use &amp; diversity.</li> <li>• Increased density.</li> <li>• Traditional neighborhood structure.</li> </ul>	-
Mobility	<ul style="list-style-type: none"> <li>• Pedestrian and transit friendly neighborhood.</li> <li>• Fine network of interconnecting streets.</li> </ul>	<ul style="list-style-type: none"> <li>• Create walkable neighborhoods.</li> <li>• Provide a variety of transportation choices.</li> </ul>	<ul style="list-style-type: none"> <li>• Walkability.</li> <li>• Connectivity.</li> <li>• Smart transportation.</li> </ul>	<ul style="list-style-type: none"> <li>• Balanced movement.</li> </ul>
Social	<ul style="list-style-type: none"> <li>• Provide civic building and public gathering places.</li> <li>• Provide a range of parks.</li> <li>• Create a range of housing types.</li> <li>• Reinforcing a safe and secure environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage community and stakeholder collaboration.</li> <li>• Create a range of housing opportunities and choices.</li> </ul>	<ul style="list-style-type: none"> <li>• Mixed housing.</li> </ul>	<ul style="list-style-type: none"> <li>• Conviviality.</li> <li>• Human scale.</li> <li>• Opportunity matrix.</li> </ul>
Psychological	<ul style="list-style-type: none"> <li>• Architecture and landscape should be linked to context.</li> <li>• Preserve historic areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Foster distinctive, attractive communities with a sense of place.</li> </ul>	<ul style="list-style-type: none"> <li>• Quality architecture &amp; urban design.</li> </ul>	<ul style="list-style-type: none"> <li>• Balance with tradition.</li> </ul>
Economical	-	-	-	-
Political	<ul style="list-style-type: none"> <li>• Control evolution.</li> </ul>	<ul style="list-style-type: none"> <li>• Make development decisions predictable, fair and cost effective.</li> </ul>		<ul style="list-style-type: none"> <li>• Regional integration.</li> <li>• Institutional integrity.</li> </ul>

**Table 1-3: Matrix of Urban Quality of Life Vs Urban Planning Theories and Approaches.**

## **1-4 Assessment Tools for Urban Planning Evaluation:**

After discussing the different contemporary movements in urban planning that resulted many urban design principles whose objectives are to control the urban sprawl and enhance the urban quality of life; it is necessary to analyze these urban design principles in order to establish a set of minimum standards for delivering a more human, coherent and sustainable public realm and to know how these standards could be assessed.

Similar to what has been done in other market sectors, such as in the food industry, labeling systems have been implemented in an attempt to establish a standard reference framework for urban design and architecture. Labeling and protocols have been especially successful in relation to energy and environmental assessment, since they can refer to standardized calculation methods; this allows a pre-assessment to be carried out by designers, often using specific software tools.

There are other forms of certification gaining progressive ground in several national and international contexts are closely connected with energy aspects, but include a wider range of considerations related to the overall design, such as the developments' or buildings' impact on the site, connection with existing urban infrastructures, accessibility, social and economic sustainability. In this respect, The LEED certification system<sup>76</sup> and the BREEAM<sup>77</sup> and others are increasingly proposing their methods as “global” systems of environmental assessment, to be used where local protocols are not available.

Analytical certification systems are usually based on checklists; designs are awarded a score on the basis of a varying and generally large number of criteria, ranging from the relationship to the site to the kind of flooring applied in interiors. Certification scores are awarded on the basis of the total number of “boxes checked”, where different indicators are assigned weighed values.

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<sup>76</sup> Created by the United States Green Building Council

<sup>77</sup> Belonging to the private group BRE in the United Kingdom



Before creating a core set of indicators useful for neighborhood urban quality of life evaluation, it was important to discuss international evaluation systems and instruments and analyze them. This analysis will be the departure basis of the building up of the panel of urban quality of life indicators for a neighborhood.

#### **1-4-1 LEED for Neighborhood Development - United States:**



**LEED Rating System:** LEED certification is increasingly becoming a popular, “globalized” assessment system for the environmental performance of planning and buildings, and it encompasses a significant number of distinct protocols related to different types of development, such as residential, office, neighborhood development, etc. at both the design and operation level. Each protocol includes a very large number of factors, in the attempt to carry out a “holistic” evaluation of each design. The LEED certification process is complex and articulated in various stages: designers can become LEED-accredited through specific training, operating preliminary assessment.<sup>78</sup>

**LEED for Neighborhood Development (LEED-ND):** the U.S. Green Building Council (USGBC), the Congress for the New Urbanism (CNU), and the Natural Resources Defense Council (NRDC) have come together to develop a rating system for neighborhood planning and development based on the combined principles of smart growth, New Urbanism, and green infrastructure and building. The goal of this partnership is to establish a

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<sup>78</sup> C. Clemente, F. De Matteis, 2010.

national leadership standard for assessing and rewarding environmentally superior green neighborhood development practices within the framework of the LEED Green Building Rating System<sup>79</sup>

**The main aims:** LEED-ND addresses directly the economy, environment and equity. Everyone living or working in a community can reap the benefits of sustainable development, whether through increased business or decreased health problems. LEED-ND has seven main aims<sup>80</sup>:

1. Encourage healthy living.
2. Reduce urban sprawl.
3. Protect threatened species.
4. Increase transportation choice and decrease automobile dependence.
5. Potentially reduced fees or review periods associated with the approval process for community projects that can demonstrate a commitment to sustainability.
6. A good impression on your neighbors.
7. Higher tenancy rates.

**The evaluation fields:** the rating system is divided into three categories: Smart Location & Linkage, Neighborhood Pattern & Design, and Green Infrastructure & Buildings. All three have prerequisites which are required of all projects and credits which reward performance. There also are ten additional points for Innovation and Design Process (exemplary performance and innovative performance) and Regional Priority Credits (table 1-4).

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<sup>79</sup> LEED 2009 for Neighborhood Development Rating System, 2010.

<sup>80</sup> Giordano, 2010.

Category Description	Issues Covered	
<p><b>Smart Location &amp; Linkage</b></p> 	<p>Smart Location &amp; Linkage focuses on WHERE the project is built. The prerequisites outline where the project cannot be located in order to preserve prime farmland, wildlife habitat, wetlands, and other places want to be save. At the same time, projects are encouraged to locate in existing areas near services or transit.</p> <p>This section looks at the broader context of the project, as well as how sensitive features within or near the project are addressed.</p>	<ul style="list-style-type: none"> <li>• Proximity to existing development.</li> <li>• Proximity to goods and services.</li> <li>• Proximity to existing infrastructure.</li> <li>• Preserve sensitive lands.</li> <li>• Locate jobs near housing.</li> <li>• Provide bicycle amenities.</li> </ul>
<p><b>Neighborhood Pattern &amp; Design</b></p> 	<p>Neighborhood Pattern &amp; Design looks at HOW the project is laid out. This section promotes compact, complete, and connected developments. This kind of development can drastically change occupant behavior for the better.</p> <p>This section reminds that true neighborhoods have unique character, and include a variety of uses and building types that reflect local tastes. This section promotes neighborhood design that includes plenty of opportunities for residents, workers, and visitors to meet and build community, such as parks, farmers markets, and plazas.</p>	<ul style="list-style-type: none"> <li>• People connected to place and to each other.</li> <li>• Shared public spaces.</li> <li>• Nearby goods and services.</li> <li>• Historic buildings</li> <li>• Housing in many types and prices</li> <li>• Farmer's markets and community gardens</li> <li>• Neighborhood schools</li> <li>• Civic spaces</li> <li>• Community participation in design</li> </ul>
<p><b>Green Infrastructure &amp; Buildings</b></p> 	<p>The Green Infrastructure &amp; Buildings section focuses on measures that can reduce the environmental impacts associated with the construction and operation of buildings and infrastructure. It promotes more efficient energy and water use.</p>	<ul style="list-style-type: none"> <li>• Energy use.</li> <li>• Water use.</li> <li>• Solid waste.</li> </ul>

**Table 1-4: Summary of LEED-ND and main issues. (www.usgbc.org/leed/nd)**

## 1-4-2 BREEAM for Communities - Great Britain:



**BREEAM Rating System:** BREEAM<sup>81</sup> was created by the Energy & Environment Consultancy (ECD) in cooperation with Building Research Establishment (BRE), and launched in 1990 in a version suitable for the assessment of buildings for new construction offices. Subsequently, there have been elaborated versions for the evaluation of buildings for existing offices, for the new residential construction, for big warehouses and for industrial constructions.

At the moment, BREEAM is the world's most used environmental quality assessment system. The method is based on the attribution of credits for each of the features considered important in order to establish the sustainability of the building. From the sum of the credits it derives an overall judgment in a scale which includes Fairly Good, Good, Very Good, and Excellent. The evaluation may be conducted also on a project level and on refurbishments of existing buildings.

**BREEAM for Communities:** the sustainability evaluation of a settlement scale has been developed by BREEAM in a second model called "Communities". BREEAM for Communities is the first sustainable assessment methodology and certification standard designed specifically for the built environment that provides the necessary 'Stewardship' required to create a truly Sustainable Community. It addresses key environmental, social and economic sustainability objectives and planning policy requirements that have an impact on proposed development projects within the built environment.

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<sup>81</sup> The **B**uilding **R**esearch **E**stablishment **E**nvironmental **A**ssessment **M**ethod









**The main aims:** Bream for Communities has five main aims<sup>82</sup>:

1. To mitigate the overall impacts of development projects within the built environment.
2. To enable development projects to be recognized according to their environmental, social and economic benefits to the local community.
3. To provide a credible and holistic environmental, social and economic sustainability label for development projects in the built environment.
4. To stimulate demand for sustainable development (and sustainable communities) within the built environment.
5. To ensure the delivery of sustainable communities within the built environment.

**The evaluation fields:** The evaluation fields identified by BREEAM Communities are eight. Each category consists of a number of issues. Each issue seeks to mitigate the environmental, social and economic impact of a development project by defining a performance target and assessment criteria that must be met to confirm the target has been achieved. Where a performance target has been achieved the number of available BREEAM credits can be awarded (Table 1-5).

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<sup>82</sup> Giordano, Ibid.

Category Description		Issues Covered
<b>Climate and Energy</b> 	Reducing the proposed project's contribution to climate change whilst ensuring that developments are appropriately adapted to the impacts of present and future climate change	<ul style="list-style-type: none"> <li>• Flood management</li> <li>• Energy and water efficiency</li> <li>• Renewable energy</li> <li>• Infrastructure</li> <li>• Passive design principles</li> </ul>
<b>Resources</b> 	Designing for the efficient use of resources including water, materials and waste in construction, operation and demolition, and minimizing the life cycle impacts of materials chosen	<ul style="list-style-type: none"> <li>• Material selection</li> <li>• Waste management</li> <li>• Construction management</li> <li>• Modern methods of construction</li> </ul>
<b>Transport</b> 	Addressing how people can get to the facilities and locations that they need; giving people choices other than private cars and encouraging walking and cycling for healthier lifestyles	<ul style="list-style-type: none"> <li>• Pedestrian neighborhoods</li> <li>• Cycle networks</li> <li>• Provision of public transport</li> <li>• Green travel plans</li> <li>• Construction transport</li> </ul>
<b>Ecology</b> 	Conserving the ecology living on and visiting the site and taking full opportunity for ecological enhancement within and around the development as well as on buildings	<ul style="list-style-type: none"> <li>• Maintaining/Enhancing habitat</li> <li>• Green corridors</li> <li>• Ground pollution</li> <li>• Contaminated land</li> <li>• Landscaping schemes</li> </ul>
<b>Business</b> 	Providing opportunities for business to locate to serve both the locality and provide jobs for people living in and around the development	<ul style="list-style-type: none"> <li>• Inward investment</li> <li>• Local employment</li> <li>• Knowledge sharing</li> <li>• Sustainable charters</li> </ul>
<b>Community</b> 	Designing the development to support a vibrant new community which can integrate with surrounding areas, avoiding creating actual or perceived "gated" communities	<ul style="list-style-type: none"> <li>• Social impact assessment</li> <li>• Community engagement</li> <li>• Sustainable lifestyles</li> <li>• Facilities management</li> <li>• Mixed of use</li> <li>• Affordable housing</li> </ul>
<b>Place shaping</b> 	Provide a framework for the design of a "real place" with an identity that ensures that people can instinctively find their way around. Also ensuring that the new development draws from local context and heritage.	<ul style="list-style-type: none"> <li>• Site selection</li> <li>• Defensible space</li> <li>• Active frontages</li> <li>• Green space</li> <li>• Secured by design</li> <li>• Housing density</li> </ul>
<b>Buildings</b> 	Ensuring that the design of individual buildings contributes to the sustainability of the overall development through high environmental and social standards.	<ul style="list-style-type: none"> <li>• BREEAM buildings</li> <li>• Code for sustainable homes</li> <li>• Eco-Homes</li> </ul>

**Table 1-5: Summary of BREEAM for Communities and main issues (BREEAM for Communities, 2008)**

### 1-4-3 CASBEE for Urban Development - Japan:



**CASBEE Assessment Tool:** CASBEE is an assessment tool based on the environmental performance of buildings. CASBEE was developed in the suite of architectural design process, starting from the pre-design stage and continuing through design and post design stages.

CASBEE is composed of many assessment tools corresponding to the building lifecycle. Each tool is intended for a separate purpose and target user, and is designed to accommodate a wide range of uses (offices, schools, apartments, etc.) in the evaluated buildings.

**CASBEE for Urban Development:** CASBEE for Urban Development was launched in July 2006, as a new expanded tool carrying on the principles and methodology of the previous CASBEE tools that were developed for evaluating single buildings. The assessment fields for CASBEE for Urban Development are:

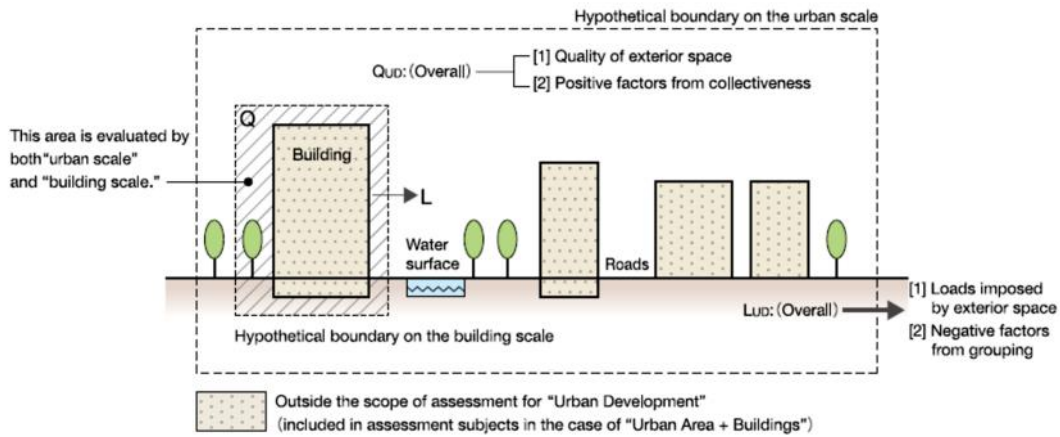
1. Exterior spaces on the district scale (roads, plazas and other public spaces, and exterior spaces within building sites).
2. Effect of collectiveness (phenomena which occur when buildings form groups).

CASBEE (urban scale) avoided evaluating the individual buildings within the subject district, for which CASBEE (building scale) was already established as the assessment method (figure 1-34).<sup>83</sup>

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<sup>83</sup> CASBEE for Urban Development, 2007





**Figure 1-34: Concept of assessment subjects for CASBEE for Urban Development (CASBEE for Urban Development, 2007)**

**The main aim:** the assessment of the environmental design for a group of buildings.

**The evaluation fields:** the assessment method is divided into two categories Q (environmental quality) and L (outdoor environmental load). These two categories are evaluated and scored separately.  $Q_{UD}$  (environmental quality in urban development) (table 1-6) and  $L_{UD}$  (outdoor environmental loads in urban development) (table 1-7), each comprise three main categories, and the assessment results for the designated area are presented in various forms, such as bar charts and radar charts, for the scores in these six categories. All the categories are also compounded using the formula below to generate  $BEE_{UD}$ , an indicator for **Building Environmental Efficiency in urban development**.

$$BEE_{UD} = \frac{\text{Environmental quality in urban development } (Q_{UD})}{\text{Environmental load in urban development } (L_{UD})}$$

The major categories from  $Q_{UD1}$  (Quality) to  $LR_{UD3}$  (load Reduction) each comprise 4-6 medium-level categories, and each medium-level category is further divided into minor categories, as required. Each minor category is scored on five levels, according to predetermined criteria, and weighting coefficients are applied between assessment fields to calculate the results, which is also the same approach as CASBEE (building scale).



<b>Q<sub>UD1</sub></b> <b>Natural Environment (microclimates and ecosystems)</b>	1.1 Consideration and conservation of microclimates in pedestrian space in summer	1.1.1 Mitigation of heat island effect with the passage of air
		1.1.2 Mitigation of heat island effect with shading
		1.1.3 Mitigation of heat island effect with green space and open water etc.
		1.1.4 consideration for the positioning of heat exhaust
	1.2 Consideration and conservation of terrain	1.2.1 Building layout and shape design that consider existing topographic character
		1.2.2 Conservation of topsoil
		1.2.3 Consideration of soil contamination
	1.3 Consideration and conservation of water environment	1.3.1 Conservation of water bodies
		1.3.2 Conservation of aquifers
		1.3.3 Consideration of water quality
	1.4 Conservation and creation of habitat	1.4.1 Grasping the potential of the natural environment
		1.4.2 Conservation or regeneration of natural resources
		1.4.3 Creating ecosystem networks
		1.4.4 Providing a suitable habitat for flora and fauna
	1.5 Other consideration for the environment inside the designated area	1.5.1 Ensuring good air quality, acoustic and vibration environments
1.5.2 Improving the wind environment		
1.5.3 Securing sunlight		
<b>Q<sub>UD2</sub></b> <b>Service functions for the designated area</b>	2.1 Performance of supply and treatment systems (mains water, sewerage and energy)	2.1.1 Reliability of supply and treatment systems
		2.1.2 Flexibility to meet changing demand and technical innovation in supply and treatment systems
	2.2 Performance of information systems	2.2.1 Reliability of information systems
		2.2.2 Flexibility to meet changing demand and technical innovation in information systems
		2.2.3 Usability
	2.3 Performance of transportation systems	2.3.1 Sufficient capacity of transportation systems
		2.3.2 Securing safety in pedestrian areas etc.
	2.4 Disaster and crime prevention performance	2.4.1 Understanding the risk from natural hazards
		2.4.2 Securing open space as wide area shelter
		2.4.3 Providing proper evacuation routes
		2.4.4 Crime prevention performance (surveillance and territoriality)
	2.5 Convenience of daily life	2.5.1 Distance to daily-use stores and facilities
		2.5.2 Distance to medical and welfare facilities
		2.5.3 Distance to educational and cultural facilities
2.6 Consideration for universal design		
<b>Q<sub>UD3</sub></b> <b>Contribution to the local community (history, culture, scenery &amp; revitalization)</b>	3.1 Use of local resources	3.1.1 Use of local industries, personnel and skills
		3.1.2 Conservation and use of historical, cultural and natural assets
	3.2 Contribution to the formation of social infrastructure	
	3.3 Consideration for nurturing a good community	3.3.1 Formation of local centers and fostering of vitality and communication
		3.3.2 Creation of various opportunities for public involvement
	3.4. Consideration for urban context and scenery	3.4.1 Formation of urban context and scenery
3.4.2 Harmony with surroundings		

**Table 1-6: Table of assessment points included in “Q<sub>UD</sub>: Environmental quality in urban development” (CASBEE for Urban Development, 2007)**

<b>LR<sub>UD1</sub></b> Environmental impact on microclimates, façade and landscape	1.1 Reduction of thermal impact on the environment outside the designated area in summer	1.1.1 Planning of building group layout and forms to avoid blocking wind	
		1.1.2 Consideration for paving materials	
		1.1.3 Consideration for building cladding materials	
		1.1.4 Consideration for reduction of waste heat	
	1.2 Mitigation of impact on geological features outside the designated area	1.2.1 Prevention of soil contamination	
		1.2.2 Reduction of ground subsidence	
	1.3 Prevention of air pollution affecting outside the designated area	1.3.1 Source control measures	
		1.3.2 Measures concerning means of transport	
		1.3.3 Atmospheric purification measures	
	1.4 Prevention of noise, vibration and odor affecting outside the designated area	1.4.1 Reduction of the impact of noise	
		1.4.2 Reduction of the impact of vibration	
		1.4.3 Reduction of the impact of odor	
	1.5 Mitigation of wind hazard and sunlight obstruction affecting outside the designated area	1.5.1 Mitigation of wind hazard	
		1.5.2 Mitigation of sunlight obstruction	
	1.6 Mitigation of light pollution affecting outside the designated area	1.6.1 Mitigation of light pollution from lighting and advertising displays etc.	
		1.6.2 Mitigation of sunlight reflection from building facade and landscape materials	
	<b>LR<sub>UD2</sub></b> Social infrastructure	2.1 Reduction of mains water supply (load)	2.1.1 Encouragement for the use of stored rainwater
			2.1.2 Water recirculation and use through a miscellaneous water system
2.2 Reduction of rainwater discharge load		2.2.1 Mitigation of surface water runoff using permeable paving and percolation trenches	
		2.2.2 Mitigation of rainwater outflow using retaining pond and flood control basins	
2.3 Reduction of the treatment load from sewage and graywater		2.3.1 Load reduction using high-level treatment of sewage and graywater	
		2.3.2 Load leveling using water discharge balancing tanks etc.	
2.4 Reduction of waste treatment load		2.4.1 Reduction of collection load using centralized-storage facilities	
		2.4.2 Installation of facilities to reduce the volume and weight of waste and employ composting	
		2.4.3 Classification, treatment and disposal of waste	
2.5 Consideration for traffic load		2.5.1 Reduction of the total traffic volume through modal shift	
		2.5.2 Efficient traffic assignment on local road network	
2.6 Effective energy use for the entire designated area		2.6.1 Area network of unused and renewable energy	
		2.6.2 Load leveling of electrical power and heat through area network	
		2.6.3 Area network of high-efficient energy system	
<b>LR<sub>UD3</sub></b> Management of the local environment		3.1 Consideration of global warming	3.1.1 Construction and materials, etc.
			3.1.2 Energy
			3.1.3 Transportation
		3.2 Environmentally responsible construction management	3.2.1 Acquisition of ISO14001 certification
	3.2.2 Reduction of by-products of construction		
	3.2.3 Energy saving activity during construction		
	3.2.4 Reduction of construction-related impact affecting outside the designated area		
	3.2.5 Selection of materials with consideration for the global environment		
	3.2.6 Selection of materials with consideration for impact on health		
	3.3 Regional transportation planning	3.3.1 Coordinating with the administrative master plans for transportation system	
		3.3.2 Measures for transportation demand management	
	3.4 Monitoring and management system	3.4.1 Monitoring and management system to reduce energy usage inside the designated area	
		3.4.2 Monitoring and management system to conserve the surrounding environment of the designated area	

**Table 1-7: Table of assessment items included in “LR<sub>UD</sub>: Load Reduction in Urban Development” (CASBEE for Urban Development, 2007)**

#### 1-4-4 The Pearl Community Rating System for Estidama - Emirate:



**Pearl Building Rating System:** the aim of PBRS<sup>84</sup> is to promote the development of sustainable buildings and improve quality of life. Achievement of a sustainable building requires the integration of the four pillars of Estidama together, namely, environmental, economic, cultural and social (figure 1-35) with a collaborative and inter-disciplinary approach to building development known as the Integrated Development Process. The PBRS encourages water, energy and waste minimization, local material use and aims to improve supply chains for sustainable and recycled materials and products. The PBRS is applicable to all building typologies, their sites and associated facilities, including hospitals, warehouses, industrial buildings, laboratories and hotels<sup>85</sup>.



**Figure 1-35: The Four Pillars of Estidama (Pearl Community Rating System: Design & Construction, Version 1.0, April 2010)**

<sup>84</sup> Pearl Building Rating System, 2010.

<sup>85</sup> <http://estidama.org/pearl-rating-system-v10/pearl-building-rating-system.aspx>, 2010.

**Pearl Community Rating System:** the Community Rating System is designed to be used for development projects, which will support a minimum permanent residential population of 1,000 people, this being the minimum population for which community facilities are required to be provided in accordance with the UPC community facility requirements. The PCRS encourages water, energy and waste minimization, local material use and aims to improve supply chains for sustainable and recycled materials and products.

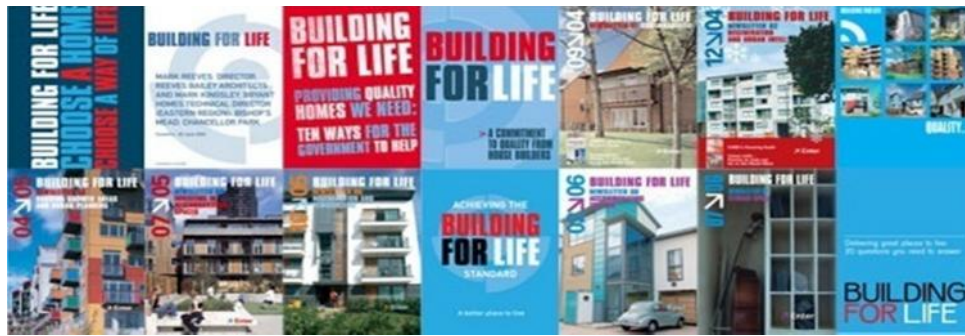
**The main aims:** its aim is to create more sustainable communities, cities and global enterprises, to balance the four pillars of Estidama, and to improve quality of life.

**The evaluation fields:** the Pearl Community Rating System is organized into six categories that are fundamental to more sustainable development, in addition to those, there is a seventh category which concern innovation practice. These form the heart of the Pearl Community Rating System (table 1-8):

Category Description	Objective
<b>Integrated Development Process</b>	Encouraging cross-disciplinary teamwork to deliver environmental and quality management throughout the life of the project
<b>Natural Systems</b>	Conserving, preserving and restoring the region's critical natural environments and habitats.
<b>Livable Communities</b>	Improving the quality and connectivity of outdoor and indoor spaces.
<b>Precious Water</b>	Reducing water demand and encouraging efficient distribution and alternative water sources.
<b>Resourceful Energy</b>	Targeting energy conservation through passive design measures, reduced demand, energy efficiency and renewable sources.
<b>Stewarding Materials</b>	Ensuring consideration of the 'whole-of-life' cycle when selecting and specifying materials.

**Table 1-8: Summary of The Pearl Community Rating System and main issues.**

## 1-4-5 Building for Life - Great Britain:



**Building for Life:** building for Life, founded in 2001, is the national standard for well-designed homes and neighborhoods. Building for Life is meant to be administered by local authorities only, thus serving as a guidance and assessment tool for planning departments, whose staff members can receive training at CABE<sup>86</sup>. Nevertheless, several planning agencies in the UK now require a mandatory Building for Life assessment for all new housing developments. Building for Life is a synthetic quality evaluation method, where the 20 fundamental questions are not intended as a scoring checklist but rather as a guide for designers and assessors.

**The main aims:** Building for Life has three main aims:

- Celebrating best practice in home and neighborhood design;
- Understanding the needs and aspirations of home buyers;
- Identifying the barriers to good design – and campaigning to remove them.

**The evaluation fields:** the Building for Life criteria are a series of 20 questions which are used to evaluate the quality of new housing developments (table 1-9).<sup>87</sup>

<sup>86</sup> Commission for Architecture and the Built Environment, 2001.

<sup>87</sup> [www.buildingforlife.org](http://www.buildingforlife.org)



	Category Description	Objective	Illustrations
Environment & Community	1. Does the development provide (or is it close to) community facilities, such as a school, parks, play areas, shops, pubs or cafes?	The government's policy is to ensure that housing is developed in suitable locations which offer a range of community facilities and with good access to jobs, key services and infrastructure.	
	2. Is there an accommodation mix that reflects the needs and aspirations of the local community?	Developers should reflect demand and the profile of households requiring market housing, in order to sustain mixed communities. Proposals for affordable housing should reflect the size and type of affordable housing required.	
	3. Is there a tenure mix that reflects the needs of the local community?	The planning system should deliver a mix of housing, both market and affordable, particularly in terms of tenure and price, to support a wide variety of households in all areas, both urban and rural.	
	4. Does the development have easy access to public transport?	Local planning authorities should consider if a development: 'Is easily accessible and well-connected to public transport.'	
	5. Does the development have any features that reduce its environmental impact?	Local planning authorities should consider if a development: 'Facilitates the efficient use of resources, during construction and in use, and seeks to adapt to and reduce the impact of, and on, climate change.'	
Character	6. Is the design specific to the scheme?	A thorough appreciation of the overall site context is the starting point for designing a distinct place.	
	7. Does the scheme exploit existing buildings, landscape or topography?	If done well, imaginative design and layout of new development can lead to a more efficient use of land without compromising the quality of the local environment.	
	8. Does the scheme feel like a place with distinctive character?	Local planning authorities should consider if a development: 'Creates, or enhances, a distinctive character that relates well to the surroundings and supports a sense of local pride and civic identity.'	
	9. Do the buildings and layout make it easy to find your way around?	Street layouts should aim to make the environment self explanatory to all users. Features such as public art, planting and architectural style can assist navigation while possibly reducing the need for signs.	
	10. Are streets defined by a well-structured building layout?	Local networks of high-quality and well-managed open space help to create urban environments that are attractive, clean and safe and can play a major part in improving people's sense of well-being.	

<b>Streets, Parking &amp; Pedestrianisation</b>	11. Does the building layout take priority over the streets and car parking, so that the highways do not dominate?	The building layout should be the priority in any new housing development. Buildings of the appropriate size, proportion, shape and layout will help create well-defined streets and spaces, which are attractive and user-friendly, improving residents' quality of life.	
	12. Is the car parking well integrated and situated so it supports the street scene?	Local planning authorities should consider if a development: 'Takes a design-led approach to the provision of car-parking space that is well-integrated with a high quality public realm.'	
	13. Are the streets pedestrian, cycle and vehicle friendly?	Local planning authorities should consider if streets are: 'pedestrian, cycle and vehicle friendly'.	
	14. Does the scheme integrate with existing streets, paths and surrounding development?	High-quality and inclusive design should create well-mixed and integrated developments which avoid segregation and have well-planned public spaces.	
	15. Are public spaces and pedestrian routes overlooked and do they feel safe?	In identifying where to locate new areas of open space carefully consider security and personal safety, especially for children.	
<b>Design &amp; Construction</b>	16. Is public space well designed and does it have suitable management arrangements in place?	New open spaces should improve the quality of the public realm through good design.	
	17. Do the buildings exhibit architectural quality?	Good design ensures attractive, usable, durable and adaptable places and is a key element in achieving sustainable development.	
	18. Do internal spaces and layout allow for adaptation, conversion or extension?	A good project will continue to provide value for money and meet user needs throughout its lifetime.	
	19. Has the scheme made use of advances in construction or technology that enhance its performance, quality and attractiveness?	Advanced building technology can contribute to the environmental performance of a home, reduce defects in construction, improve health and safety on site, and increase overall efficiency.	
	20. Do buildings or spaces outperform statutory minima, such as building regulations?	For various aspects of building performance, including energy efficiency, the higher levels of achievement listed in the code for sustainable homes is the relevant reference point.	

**Table 1-9: The 20 Building for Life criteria (www.buildingforlife.org).**

#### **1-4-6 Analysis of Assessment Tools for Urban Planning Evaluation:**

Based on the review of the different assessment tools for urban planning evaluation, a matrix was developed to show the common indicators, with the intention to differentiate those indicators according to the seven dimensions of urban quality of life previously mentioned; this matrix is shown in (table 1-10). This matrix does not deal with all indicators mentioned in these assessment tools, but it deals only with those which respond to the requirement of the focus of this study. This matrix will be the departure point for creating the urban quality of life assessment tool for a neighborhood. Some of the types of assessments used for measuring specific indicators shall be borrowed and used in the new assessment tool.



	<b>LEED for Neighborhood Development</b>	<b>BREEAM for Communities</b>	<b>CASBEE for Urban Development</b>	<b>The Pearl Community Rating System for Estidama</b>	<b>Building for Life</b>
<b>Environmental</b>	<ul style="list-style-type: none"> <li>• Protection from natural hazards.</li> <li>• Conservation of endangered species and ecological communities.</li> <li>• Conservation of natural features.</li> <li>• Brownfield redevelopment.</li> <li>• Shaded streets.</li> <li>• Green infrastructure.</li> <li>• Construction activity pollution prevention.</li> <li>• Heat island reduction.</li> <li>• Waste management.</li> <li>• Light pollution reduction.</li> </ul>	<ul style="list-style-type: none"> <li>• Energy management.</li> <li>• Reuse of contaminated land.</li> <li>• Water resources management.</li> <li>• Ensure that the development is resilient to the weather.</li> <li>• Monitoring energy and water consumption.</li> <li>• Low environmental impact of used materials.</li> <li>• Locally sourced materials.</li> <li>• Waste management.</li> <li>• Resources conservation.</li> <li>• Protection of natural features.</li> <li>• Biodiversity action plan.</li> <li>• Ensure that the character of the landscape is respected and enhanced through the location of features and design appropriate to the local environment.</li> <li>• Security lighting.</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation of heat island effect.</li> <li>• Consideration and conservation of terrain.</li> <li>• Consideration and conservation of water environment.</li> <li>• Conservation and creation of habitat.</li> <li>• Ensure good air quality, acoustic and vibrant environments.</li> <li>• Reduction of impact of odor.</li> <li>• Improving the wind environment.</li> <li>• Securing sunlight.</li> <li>• Performance of supply and treatment systems (mains water, sewerage and energy).</li> <li>• Understanding the risk from natural hazards.</li> <li>• Mitigation of light pollution.</li> <li>• Reduction of construction-related impact.</li> </ul>	<ul style="list-style-type: none"> <li>• Protect significant and valuable natural systems.</li> <li>• Promote soil protection and ensure the management of landscaped / habitat areas.</li> <li>• Protection of sensitive areas.</li> <li>• Minimize demand for resources (water, energy)</li> <li>• the use of onsite renewable energy</li> <li>• Waste Management</li> <li>• Use Regional Materials</li> <li>• Use Recycled Materials</li> <li>• Remediation of Contaminated Land</li> <li>• To reduce the environmental impacts associated with construction practices.</li> <li>• Outdoor thermal comfort.</li> <li>• Urban heat reduction.</li> <li>• Efficient infrastructure.</li> <li>• To create a more localized approach to food with sustainable food production and resident access to high-quality foods.</li> </ul>	<ul style="list-style-type: none"> <li>• Efficient use of resources.</li> <li>• Reduce the impact of, and on, climate change.</li> </ul>

	<b>LEED for Neighborhood Development</b>	<b>BREEAM for Communities</b>	<b>CASBEE for Urban Development</b>	<b>The Pearl Community Rating System for Estidama</b>	<b>Building for Life</b>
<b>Physical</b>	<ul style="list-style-type: none"> <li>• Compact Development.</li> <li>• Mixed-use neighborhood.</li> <li>• Reduced Parking Footprint.</li> <li>• Integrating schools into the neighborhood.</li> <li>• Access to civic and public space.</li> <li>• Access to recreation facilities.</li> <li>• Certified Green Building.</li> <li>• Housing and jobs proximity.</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible parking to be used for other use when not being used for parking</li> <li>• Residential/mixed use streets</li> <li>• Access to high quality public green space.</li> <li>• Buildings are assessed under the appropriate Code for Sustainable Home rating.</li> <li>• Easy access to infrastructures.</li> <li>• Management and operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of street furniture, signs, lighting, sound.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum Pearl Rated Buildings within communities.</li> <li>• Provision of amenities and facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Access to community facilities.</li> <li>• Defined streets by a well-structured building layout.</li> <li>• The building layout takes priority over the streets and car parking, so that the highways do not dominant.</li> <li>• The car parking is well integrated and situated to support the street scene.</li> <li>• Well-mixed and integrated developments and well-planned public spaces.</li> <li>• Use advanced building technology.</li> </ul> <p>Internal spaces and layout allow for adaptation, conversion or extension.</p>
<b>Mobility</b>	<ul style="list-style-type: none"> <li>• bicycle network and storage.</li> <li>• Walkable Streets.</li> <li>• High connectivity.</li> <li>• Transportation demand management.</li> <li>• Transit transportation services.</li> </ul>	<ul style="list-style-type: none"> <li>• Pedestrian friendly movement.</li> <li>• Network of safe bike routes</li> <li>• Provide bicycle storage</li> <li>• Appropriate vehicle speeds</li> <li>• Ensure the availability of frequent and convenient public transport.</li> <li>• Provision transit waiting rooms.</li> <li>• High connectivity.</li> </ul>	<ul style="list-style-type: none"> <li>• Securing safety in pedestrian areas.</li> <li>• Sufficient capacity of transportation system.</li> <li>• Distance to daily-use stores and facilities.</li> <li>• Distance to medical and welfare facilities.</li> <li>• Distance to educational and cultural facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• An enhanced pedestrian environment</li> <li>• Managing the demand for travel.</li> <li>• High connectivity.</li> <li>• Provide transit facilities (shaded area).</li> <li>• Easy access to community facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Easy access to public transport.</li> <li>• Streets are pedestrian, cycle and vehicle friendly.</li> </ul>

	<b>LEED for Neighborhood Development</b>	<b>BREEAM for Communities</b>	<b>CASBEE for Urban Development</b>	<b>The Pearl Community Rating System for Estidama</b>	<b>Building for Life</b>
<b>Social</b>	<ul style="list-style-type: none"> <li>• Community Involvement.</li> <li>• Diversity of Housing Types.</li> <li>• Enable the widest spectrum of people to more easily participate in community life (elders, handicaps, etc.).</li> <li>• Mixed-income diverse communities.</li> </ul>	<ul style="list-style-type: none"> <li>• Community involvement in the design of the development.</li> <li>• The development attracts a diverse community.</li> <li>• Community facilities.</li> <li>• Local demographic.</li> <li>• Indistinguishable affordable housing.</li> <li>• Secure by design.</li> <li>• Defensible spaces.</li> <li>• Inclusive design.</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of various opportunities for public involvement.</li> <li>• Provision of open spaces as centers for community.</li> <li>• Consideration for universal design..</li> <li>• Securing open space.</li> <li>• Providing evacuation routes.</li> <li>• Crime prevention performance.</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainability awareness.</li> <li>• Encourage a diverse mix of residential properties in neighborhoods.</li> <li>• Safe and secure community.</li> <li>• Create an interconnected network of parks and open space, differing in size, character and purpose to support a variety of human activities and natural systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Community participation</li> <li>• Mix of housing types, prices and sizes.</li> <li>• Safe pedestrian route and public spaces.</li> <li>• Open spaces that improve the quality of the public realm.</li> </ul>
<b>Psychological</b>	<ul style="list-style-type: none"> <li>• Historic Resource Preservation.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that the development responds to local character.</li> <li>• Ensure that building frontages helping to make a place feel more vibrant and contributing to vitality.</li> </ul>	<ul style="list-style-type: none"> <li>• Formation of urban context and scenery.</li> <li>• Harmony with surroundings.</li> <li>• Conservation of historical, cultural and natural assets.</li> </ul>	<ul style="list-style-type: none"> <li>• Reflect the unique climatic, social and historical influences of the site and region in the community plan.</li> <li>• Active urban environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Design distinct place that relates well to the surroundings and supports a sense of local pride and civic identity.</li> <li>• Easy to find the way around.</li> </ul>
<b>Economical</b>	<ul style="list-style-type: none"> <li>• Affordable Housing</li> <li>• Local Food Production</li> </ul>	<ul style="list-style-type: none"> <li>• Promote business growth within regionally prioritized sectors.</li> <li>• Create additional jobs.</li> <li>• The development is designed to attract inward investment.</li> <li>• Affordable Housing.</li> </ul>			<ul style="list-style-type: none"> <li>• Mix of housing tenure</li> </ul>
<b>Political</b>				<ul style="list-style-type: none"> <li>• The development supports the vision for the Emirate of Abu Dhabi (Plan 2030).</li> <li>• Integrated development process.</li> </ul>	<ul style="list-style-type: none"> <li>• Apply building regulations.</li> </ul>

**Table 1-10: Matrix of assessment tools for urban planning evaluation (the researcher)**

## **Chapter Two: Neighborhood Urban Quality of Life Indicators**

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According to the analysis of contemporary urban planning approaches and theories, and the literature review, and after reviewing the different assessment tools for environmental sustainability and urban planning evaluation, the seven main dimensions of urban quality of life were divided into 25 sub dimensions (figure 2-1).

The seven main dimensions refer to different aspects of the neighborhood; the first dimension, Environmental Urban Quality of Life, refers to the natural aspects of the neighborhood; the second dimension, Physical Urban Quality of Life, refers to facilities, urban fabric, land use, services and facilities, and infrastructure; the third dimension, Mobility Urban Quality of Life, discusses the accessibility, traffic and transportation issues; the fourth dimension, Social Urban Quality of Life, includes the indicators that refer to the social dimension of the neighborhood and to the relationship between people, that is, questions regarding individual choices and the participation of citizens, the fifth dimension, Psychological Urban Quality of Life, discusses the issues concerning the feeling of citizens toward its neighborhood, such as the identity of the place; the sixth dimension, Economical Urban Quality of Life

characterizes the neighborhood as a place of economic activities, the seventh dimension, Political Urban Quality of life, refers to the city policies which support the concept of urban quality of life and the extent to which these policies are implemented. Each sub-dimension has a set of indicators each indicator has a tool box to measure it.



**Figure 2-1: The organization of urban quality of life dimensions and the sub-dimensions. (the researcher, 2012)**

## **2-1 Environmental Urban Quality of life:**

A healthy natural environment contributes to public health. Air pollutants, for example, can reduce the capacity to resist infection, which can increase the number of hospital admissions and emergency department visits, school absences, lost work days and restricted activity days. Emissions from motor vehicles and other sources of air pollution, such as industry, have been linked to premature deaths per year in Egypt. In addition, polluted recreational water is also strongly related to human health problems, such as stomach and intestinal illness, colds and flu and skin, eye and ear infections.

Therefore the environmental conditions within human settlements are a central concern; the quality of the natural environment is directly related to people's quality of life. Population growth and economic development have effects on the natural ecosystems of both the land and sea. Issues such as environmental pollution, waste generation and management, and preservation of indigenous wildlife in built-up areas are all important issues to be considered as urban areas grow and develop.

It is argued that the city should be seen as part of nature, not as something existing outside of it.<sup>1</sup> Nature in the city is far more than trees and gardens, and weeds in sidewalk cracks and vacant lots. It is the air we breathe, the earth we stand on, the water we drink and excrete, and the organisms with which we share our habitat.

The physical aspects of the natural environment that have a substantial impact on life in cities are as follows.

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<sup>1</sup>S. M. Wheeler and T. Beatley, 2009.

### **2-1-1 Quality of Air:**

Good air quality is essential for human health and the health of the natural environment. Factors that impact on air quality include motor vehicle emissions, industrial emissions, outdoor burning (including agricultural burning and rubbish fires), plant pollens, dust and sea spray.

Air quality is an increasingly important consideration in urban areas. Trees and other vegetation tend to filter air, while rainfall scrubs it. In high concentrations, pollution will tend to kill natural vegetation.

#### **2-1-1-1 Atmospheric Quality:**

The international environmental protection agencies and the World Health Organization (WHO) suggest six air pollutants that determine the atmospheric quality. The limit value of these pollutants is set by WHO as well as national standards. Accordingly there are six measures used to assess atmospheric quality:

1. Suspended particles (PM<sub>10</sub>): Suspended particles (PM<sub>10</sub>) refer to particles suspended in the air that have a diameter of less than 10 microns. Larger particles are not generally a problem for human health since they fall rapidly out of the atmosphere. High concentrations of smaller particles (less than 10 microns in size or PM<sub>10</sub>) can penetrate the lungs and damage the respiratory tissues.
2. Lead (Pb): Sources of ambient air Lead concentrations typically include motor vehicle emissions, Lead smelters and burning fuel oil for power generation.
3. Carbon Monoxide (CO): is a gas that is produced as a product of incomplete combustion. Sources of ambient air carbon monoxide concentrations typically include motor vehicle emissions, outdoor burning and industry. Health effects associated with exposure to CO include headaches, dizziness and nausea and, can result in



problems with visual perception, dexterity, learning ability and the ability to perform sensorimotor tasks.

4. Nitrogen Dioxide (NO<sub>2</sub>): is a respiratory irritant that affects lung function, it can lower resistance to respiratory infections and may also increase reactivity to natural allergens. The main source of NO<sub>2</sub> in most urban environments is motor vehicle emissions, although burning of other fossil fuels (e.g. coal, gas and oil) will also produce NO<sub>2</sub>.
5. Sulphur Dioxide (SO<sub>2</sub>): has health impacts that include coughing and irritation of the nose, throat and lungs. Concentrations of SO<sub>2</sub> in ambient air typically occur as a result of combustion processes, in particular the burning of high sulphur fuels, although specific industries such as fertilizer manufacturing also discharge SO<sub>2</sub>. The main source of SO<sub>2</sub> is typically motor vehicles or industry.
6. Ozone (O<sub>3</sub>): is formed through atmospheric reactions between NO<sub>2</sub> and volatile organic compounds (VOCs). Ozone has a greater tendency to form in warmer areas. Health impacts from ozone include respiratory illness such as coughing, phlegm and wheezing. The main sources of ozone-forming contaminants are motor vehicles, domestic heating and industry.

#### **2-1-1-2 The Air Quality Health:**

Air pollution in many Egyptian cities is still high and above healthy limits, leading to various types of disease and shortening life expectancy. In many areas residents perceived air pollution as a problem that threatens their health.

#### **2-1-1-3 Prevention Measures of Air Pollution:**

Green buffer areas, plants, green spaces can have beneficial air quality effects as well, lowering levels of several air pollutants. Construction activities

contribute also in air pollution cause of fugitive dust which has to be controlled.

Environmental Urban Quality of Life		Quality of Air	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Atmospheric Quality	Annual average Levels of PM <sub>10</sub>	Control emissions and pollutants.	Ensure good comfort conditions and healthy environment.
	Annual Average Levels of Lead (Pb)		
	Annual Average Levels of Carbon Monoxide (CO)		
	Annual Average Levels of Nitrogen Dioxide (NO <sub>2</sub> )		
	Annual Average Levels of Sulphur Dioxide (SO <sub>2</sub> )		
	Annual Average Levels of Ozone (O <sub>3</sub> )		
The Air Quality Health	Air Quality Health Index	Preservation of public health.	
	Residents' Perception of Air Pollution as a Problem		
Prevention Measures of Air Pollution	Atmospheric Purification Measures	The purification of the atmosphere in general.	

Table 2-1: Air Quality's indicators, basic needs and general goals.

### 2-1-2 Quality of Water:

Good water quality is essential for human health and the health of the natural environment.

#### 2-1-2-1 Drinking Water Quality:

Clean drinking water is essential to life and is fundamental in order for cities to operate effectively. Access to a continuous and high quality supply of

water is often taken for granted<sup>2</sup>. The provision of clean water has a positive effect in the improvement of health indicators such as infant mortality rates. According to Egypt Country Report 2000 the provision of clean water caused the decline of infant mortality rates from 4.33 per cent in 1996 to 3.52 percent in 2000<sup>3</sup>.

### **2-1-2-2 Water Consumption:**

High levels of water use can cause both environmental and economic problems. Environmentally, high water consumption places stress on rivers, lakes and groundwater aquifers and may require dams, which have ecological impacts. Increased consumption levels may lead to increased volumes of discharged water and in case of polluted water it may damage aquatic ecosystems. Economically, high levels of water use require increasing and expensive investments in water system infrastructure needed to gather, deliver and dispose of water (dams, reservoirs, water treatment facilities, distribution networks and sewage treatment).<sup>4</sup>

According to some reports 40% of Cairo's drinking water is wasted as a result of deteriorating supply networks (leakages), with some networks being made of asbestos, and water theft through illegal tapping<sup>5</sup>. On the other hand, Egypt has adopted a national public scheme for conservation of drinking water. The project aims to reducing the loss of drinking water, locally and nationally, through the utilization of 16 locally developed sanitary fixtures, intensive public awareness program (media and personal contact), and training programs for local plumbers. The best practices database indicates that these measures reduced the water consumption by 36 million m<sup>3</sup> over a one year period, with cost saving of about 5 million U.S. dollar/year and reduced the load on the sewerage system<sup>6</sup>.

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<sup>2</sup> Quality of Life, [www.qualityoflifeproject.govt.nz](http://www.qualityoflifeproject.govt.nz).

<sup>3</sup> UN-Habitat, AUC in Cairo, 2011.

<sup>4</sup> Quality of Life, [www.qualityoflifeproject.govt.nz](http://www.qualityoflifeproject.govt.nz).

<sup>5</sup> UN-Habitat, AUC in Cairo, Ibid.

<sup>6</sup> Sustainable urban development: a regional perspective on good urban governance.

### 2-1-2-3 Water Bodies Quality:

Beach and stream/lake water quality is measured to ensure that the water is safe for human recreational use and to show the impact of human activity on beaches and natural waterways. High levels of bacteria can directly impact on the health and wellbeing of residents as they indicate the presence of pathogens (illness causing bugs). A key factor in the quality of beach and stream/lake water is the quality of a city's storm water and sewerage systems<sup>7</sup>.

Environmental Urban Quality of Life		Quality of Water	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Drinking Water Quality	Public Health Water Quality Grading	Access to a continuous and high quality supply of water.	Guarantee the environmental quality of superficial waterways, drinking water and underground water.
	E. Coli Compliance of Water Distribution Zones		
	Percent of Population Access to Potable Water for 24 hours per day		
Water Consumption	Domestic Water Consumption Per Person	Reduce water consumption.	
	Commercial and Industrial Water Consumption		
	Water Leak Detection		
Water Bodies Quality	Beach and Stream/Lake Water Quality	Safe water for human recreational use and activities.	
	The Rate of Public Health Risk at Water Bodies		
	Residents' Perception of Water Pollution as a Problem		

Table 2-2: Water Quality's indicators, basic needs and general goals.

<sup>7</sup> Quality of Life, Ibid.

### **2-1-3 Quality of Land:**

Access to clean land is essential for human health and the health of the natural environment, as the land accommodates all human activities.

#### **2-1-3-1 Remediation of Contaminated Land:**

It is important to investigate the land of the project as well as its surroundings in order to evaluate the hazardous pollutant. The contamination of land could be caused through former land uses, landfills.etc (figure 2-2). Municipal landfills have been responsible for a great deal of soil and groundwater pollution.



**Figure 2-2: El Azhar Park was in the past a landfill.**

#### **2-1-3-2 Biodiversity:**

Nature in the city is far more than trees and gardens, and weeds in sidewalks' cracks and vacant lot. It is the air we breathe, the earth we stand on, the water we drink and excrete, and the organisms which we share with our habitat.

Nature, particularly the eco-sensitive zones must be protected against physical disruption by the urban development and urban-related activities; engineers and developers filled in or paved over streams, wetlands, and shorelines to make way for urban expansion; highways or railroad lines cut many cities off from their waterfronts; hills were leveled and native vegetation removed; landowners plotted lots and built roads without considering the implications for wildlife, native plant species, or human recreation. In addition the introduction of new technologies in all aspects of life domains causes alienation from nature in all its form.

The conflicts between species' protection and urban growth and development appear virtually in every part of the country. The preservation of the natural entities of the site is a national concern as mentioned in Law 4 for

the Protection of Environment<sup>8</sup> that deals with the protection of different natural entities. It is important to rationalize land use and control urban sprawl to prevent land degradation; erosion, siltation and pollution of different water bodies and to conserve the endangered species or ecological communities. Different natural entities must be kept safe for human use as the contaminated land or polluted water or the derogation of certain species affects the health and wellbeing of residents.

Biodiversity provides the critical ecosystem processes necessary to maintain life, such as the quality of the atmosphere, climate, water and soil quality and waste disposal. Apart from the ethical, aesthetic and cultural reasons behind the need to preserve biological diversity, there are also economic motives to do so.<sup>9</sup>

### **2-1-3-3 Ecological Footprint:**

An ecological footprint is a measure of how much biologically productive land and water an individual, population or activity requires to produce all the resources it consumes and to absorb the waste it generates, using current technology and resource management practices. Ecological footprints are usually measured in global hectares (gha) as trade is global, an individual or country's footprint includes land or sea from all over the world. A larger footprint means that more resources are being used to support people's lifestyles.<sup>10</sup>

If a country does not have enough ecological resources within its own territory, then there is a local ecological deficit and it is called an ecological debtor country. Otherwise, it has an ecological remainder and it is called an ecological creditor country.

The ecological footprint is a measure of human demand on the Earth's ecosystems. It is a standardized measure of demand for natural capital that may

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<sup>8</sup> Egyptian law 4 for 1994, the Protection of Environment.

<sup>9</sup> Quality of Life, Op.Cit.

<sup>10</sup> Quality of Life, Ibid.

be contrasted with the planet's ecological capacity to regenerate. It represents the amount of biologically productive land and sea area necessary to supply the resources a human population consumes, and to assimilate associated waste. Using this assessment, it is possible to estimate how much of the Earth (or how many planet Earths) it would take to support humanity if everybody followed a given lifestyle. For 2007, humanity's total ecological footprint was estimated at 1.5 planet Earths; that is, humanity uses ecological services 1.5 times as quickly as Earth can renew them. Every year, this number is recalculated to incorporate the three-year lag due to the time it takes for the UN to collect and publish statistics and relevant research.

According to the Global Footprint Network published in 2010, Egypt ecological footprint is 1.66 gha/pers and its biocapacity is 0.62 gha/pers.<sup>11</sup>

Although the term ecological footprint is widely used and well known, the methods used to calculate it vary greatly. However, standards are now emerging to make results more comparable and consistent.

Environmental Urban Quality of Life		Quality of Land	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Remediation of Contaminated Land	Land Remediation	Promote the reuse of contaminated land in an appropriate and suitable manner by preventing the generation of waste arising from site.	<ul style="list-style-type: none"> <li>• Keep land consumption down.</li> <li>• Ensure survival and enriching biodiversity.</li> <li>• Ensure that the land can accommodate all the human activities.</li> </ul>
Biodiversity	Living Resources Conservation Plan	Habitat preservation.	
Ecological Footprints	Egypt Ecological Footprints	The land must accommodate all the human activities.	
	Regional Ecological Footprints		

Table 2-3: Land Quality's indicators, basic needs and general goals.

<sup>11</sup> [http://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_ecological\\_footprint](http://en.wikipedia.org/wiki/List_of_countries_by_ecological_footprint).

### 2-1-4 Quality of Materials:

Use of non hazardous materials is essential for human health and the health of the natural environment. Human beings should be protected from radiation and toxic substances.

#### 2-1-4-1 Selection of Materials with Consideration for Impact on Health:

There is always a certain level of risk of using materials or chemical substances with potentially adverse health effects in the external cladding of buildings, in the structures which make up façade and landscape, or in the fertilizers and chemicals used on plants.

Environmental Urban Quality of Life		Quality of Materials	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Selection of materials with consideration for impact on health	Selection of Materials with Consideration for Impact on Health	Discourage the use of construction materials and products that create pollution during their life cycle.	Elimination of exposure to hazardous and toxic materials.

Table 2-4: Materials Quality's indicators, basic needs and general goals.

### 2-1-5 Quality of Local Environment:

An essential part of urban design is the need to provide comfortable conditions within public spaces; if spaces are not comfortable, they are unlikely to be used. Levels of sunlight, shade, temperature, humidity, rain, wind and noise have an impact on human experience and use of urban environments. A number of design actions can help make conditions more acceptable, including



the configuring of space, and use of buildings, walls, trees, canopies and arcades for shade and shelter. Desirable conditions vary by season, and by the activities taking place.

#### **2-1-5-1 Enjoy Natural Landscapes and Parks:**

*'Green spaces are the 'lungs of the city'*<sup>12</sup>. Green space areas in a city, such as parks and gardens, help protect and enhance urban ecology, they also help mitigate the effects of urbanization and provide residents with a choice of recreational opportunities, which contributes positively to health and general wellbeing. Provision of city green space can also help foster a sense of community, as well as a sense of pride.

#### **2-1-5-2 Outdoor Thermal Comfort:**

Thermal comfort is a state of mind which expresses satisfaction with the thermal environment. (ASHRAE)

Microclimate is often neglected in urban design. Urban design has an important influence on modifying the impact of the microclimate to make spaces more comfortable. Relevant factors at this scale include<sup>13</sup>:

- The configuration of the proposed development, and its effect on and relationship to buildings and other influences at the site boundary.
- The positioning of access roads and pedestrian paths, trees and other vegetation, walls, fences and other obstructions.
- The orientation of internal and external spaces and facades with respect to the direction of sunlight and shade.
- The massing, grouping, and space between buildings.
- The wind environment.

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<sup>12</sup> Rudlin and Falk, 2009

<sup>13</sup> Carmona and al., 2004.

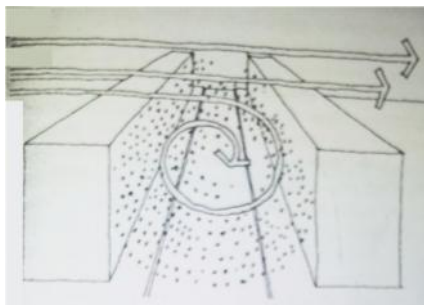
- The positioning of main entrances and other openings acting as transitions between inside and outside conditions.
- Landscape, planting and pools/fountains to enhance natural cooling.
- Environmental noise and pollution.

Sunlight penetration into urban places and into buildings helps make them more pleasant places. It also encourages outdoor activities; reduces mould growth; improves health by providing the body with vitamin E; encourages plant growth; and provides a cheap, readily available source of energy for passive and active collection. The value of sunlight penetration varies over the seasons and, while places in the sun are desirable at some times of year, at other times shade is preferred.

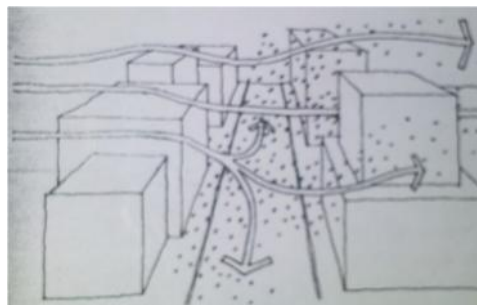
Solar access can be evaluated by the use of charts such as a stereographic sun chart. As well as graphical and computer prediction techniques, physical models can be tested using a heliodon. If overshadowing is to be avoided during winter months (when solar gain is most advantageous), the spacing between buildings is very significant. Trees will also provide obstructions to solar access; if deciduous, they will perform the dual function of permitting solar penetration during the winter and a degree of shading in the summer. The spacing between tree and building is also critical.

Wind flow has a substantial effect on the comfort of pedestrians, the environmental conditions within public spaces and around building entrances and the activities that might occur there. In some cases the wind effect must to be minimized in other cases such as humid climate areas, external spaces may need to be designed to encourage a greater through-flow of cooling air. In more arid climates, fountains and water features in public spaces help cooling

through water vapor<sup>14</sup>. In addition, good air circulation around buildings and within urban spaces is required to dissipate air pollution (figure 2-3 and 2-4).



**Figure 2-3: Air quality at street level. Street canyons lined with buildings of similar height, oriented perpendicular to the wind direction tend to have poorer air circulation. (Carmona and al., 2004)**



**Figure 2-4: Air quality at street level. Street canyons lined with buildings of different heights and interspersed with open areas have richer air circulation. (Carmona and al., 2004)**

### **2-1-5-3 Outdoor Acoustic Comfort:**

Egyptian cities are becoming increasingly 'noisy'; people are affected by noise from traffic, leisure activities and construction activities at all hours of day night. The need for quite environment has increased. Quality of life requires less noise; problems related to noise include hearing loss, stress, high blood pressure, sleep loss and a general reduction in quality of life and opportunities for tranquility.

Noise is an intrinsic part of everyday life within cities. Although some degree of noise is inevitable, it can affect the way people feel about the area they live in and can have a negative impact on their wellbeing.

The adverse effects of noise depend on acoustical characteristics of the noise (e.g., loudness, time pattern) and on aspects of the noise situation that may involve cognitive processing. For noise, active approaches (e.g., improve insulation, file a complaint) and passive approaches (e.g., put in perspective, ignore as much as possible) can be identified.

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<sup>14</sup> Carmona and al., 2004.

#### **2-1-5-4 Outdoor Lighting Comfort:**

Natural lighting makes an important contribution to the character and utility of public spaces, and the play of light in urban spaces also has an aesthetic dimensions. The amount of visible sky, particularly overhead, where it is brighter than at the horizon, is crucial to the quality of day lighting. Except where particularly tall or large buildings surround the space, adequate day lighting (as distinct from direct sunlight) of an urban space is rarely a problem.

Although artificial lighting can make a positive contribution to the character and utility of urban spaces, it is often designed with only vehicular traffic in mind and tends to be inefficient in energy use, resulting in light pollution. It has two key functions:

- ‘Statutory lighting’: provides basic lighting levels, to aid pedestrian way-finding and the secure use of the public realm at night, and the safe passage of vehicles.
- ‘Amenity lighting’: which enhances the street scene through flood, feature and low level lighting; and gives night-time color and vitality through signs, shop-lighting and seasonal lighting.

In practice, lighting of streets at night derives from a wide range of sources such as street lamps, borrowed light from buildings, shop signs, etc... and the ensemble needs careful consideration to meet both statutory and amenity needs. To achieve this and to enhance the night-time economy, a number of towns and cities have adopted comprehensive lighting strategies. Well-lit streets and spaces are particularly important in making users feel safe and secure.

#### **2-1-5-5 Reduction of the Impact of Odor:**

It is important to take measures to reduce the diffusion of unpleasant odor through urban areas and put restriction, on odor generation.

<b>Environmental Urban Quality of Life</b>	<b>Quality of Local Environment</b>
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Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
<b>Enjoy Natural Landscapes and parks</b>	<b>Green Area Percentage</b>	Being able to enjoy natural landscapes, and parks. Assurance of the continued existence of plants and animals and maintenance of biodiversity.	Provide comfortable conditions within urban areas.
	<b>Ease of Access to Green Area</b>		
<b>Outdoor Thermal Comfort</b>	<b>Improving The Wind Environment</b>	Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.	
	<b>Consideration for Building Group Layout</b>		
	<b>Consideration for Landscape</b>		
	<b>Consideration for Paving</b>		
	<b>Consideration for Building Cladding Materials</b>		
	<b>Consideration for Positioning of Heat Exhaust</b>		
	<b>Designing for Sun and Shade</b>		
<b>Outdoor Acoustic Comfort</b>	<b>Outdoor Acoustic Comfort</b>	Apply measures to restrict the transmission of the noise, and use other measures, to secure an appropriate sonic environment.	
	<b>Residents' Perception of Noise Pollution as a Problem</b>		
<b>Outdoor Lighting Comfort</b>	<b>Sunlight</b>	Improve the visual comfort.	
	<b>External Surfaces Treatment for Glare Control</b>		
	<b>Street Lighting</b>		
<b>Reduction of the Impact of Odor</b>	<b>Reduction of the Impact of Odor</b>	Measures for controlling unpleasant odor.	

Table 2-5: Local Environment Quality's indicators, basic needs and general goals.

### 2-1-6 Energy Use:

The use of energy is essential in urban centers for transportation, industrial production, and household and office activities. Current dependence in most urban centers on nonrenewable energy sources can lead to climate

change, air pollution and consequent environmental and human health problems, and may represent a serious threat to sustainable development.

The current national energy supply mix in Egypt is<sup>15</sup>:

- 95% from fossil fuel (petroleum products and natural gas)
- 5% from renewable resources (mainly hydro and wind, which is increasing gradually)

#### **2-1-6-1 Energy Efficiency:**

The main source of energy use is lights and appliances reliant on electricity. The demand for electricity use increases every year. This results in a need to produce more energy to keep up with consumer demands and the subsequent impact this may have on the environment.

Electricity generation activities utilize around 30% of fossil fuel and natural gas resources in addition to all the hydro and wind energy resources. The industrial activities in Egypt consume around 40% of the overall energy available. The average annual increase of energy use has been around 6% over the last decade. This growth is expected to continue in line with improvements in GDP<sup>16</sup>.

The consumption of energy can be reduced by monitoring energy use, establishing an energy management team, with functions such as energy auditing, creating energy strategies and policies and promoting energy efficiency, monitoring petrol/diesel use, replacing lighting with more energy efficient bulbs, installing co-generation engines at wastewater treatment plants, introducing a 'walking and cycling for sustainable transport' plan, solar powered lighting on bus shelters, eco-design advisory service available to promote energy saving practices to builders, developers and residents, and generating electricity for the national grid from landfill gas extraction.

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<sup>15</sup> <http://www.imc-egypt.org/pgmenergy.asp>©2009

<sup>16</sup> <http://www.imc-egypt.org/pgmenergy.asp>, Ibid

### 2-1-6-2 Renewable Energy:

The use of renewable energies must be a priority in any action taken to protect the urban environment.<sup>17</sup> New energy technologies are becoming available for use in cities; these include heat pumps, fuel cells, solar hot water systems and photovoltaic (PV) modules. On-site energy production reduces loss of energy in transmission and, therefore, minimizes waste.

Environmental Urban Quality of Life		Energy Use	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Renewable Energy	Electrical Efficiency Level	Decrease of the primary energy demand.	Rational use of resources.
	Renewable Energy Projects		
Energy Consumption	Percentage of Renewable Supply on Total	Alternative use of resources supply.	

Table 2-6: Energy Use indicators, basic needs and general goals.

### 2-1-7 Waste Management and Recycling:

Waste is material that is perceived to have no further use and which is released into the environment as a means of disposal. If it is not effectively managed it can create a range of adverse environmental and human health effects. Waste includes solid, liquid or gaseous materials. This indicator focuses on solid and liquid waste.

<sup>17</sup> <http://www.un.org/esa/sustdev/agenda21text.htm>

All countries should develop national goals for sustainable management of waste, and implement environmentally sound technologies to ensure that the environment, human health and quality of life are protected.<sup>18</sup>

#### **2-1-7-1 Solid Waste:**

Litter or rubbish is a social and environmental problem that can affect perceptions of quality of life for residents. The presence of litter indicates a lack of respect for communal places, which reduces the perceived value of these areas and makes them less attractive for use by the public. Litter degrades the environment and can be harmful to people, domestic animals and wildlife. Littering as a social problem indicates that people do not feel a sense of ownership or responsibility for public places.

Solid waste is the most visible output by cities in recent decades, there has been a substantial increase in solid waste produced per head, and the waste mix has become ever more complex. Solid wastes include all domestic refuse and non-hazardous wastes such as commercial and institutional wastes, street sweepings and construction debris.

For dealing with solid waste there are two stages the first one is the solid waste collection and the second one is the solid waste recycling or disposal to landfill. There are various methods of collection and recycling of solid waste across the country.

Cairo, with 15 million people one of the world's largest cities, reuses and recycles most of its solid waste. Much of it is handled by a community of garbage collectors called the "Zaballeen". By 1980, as the levels of solid waste rose with the rapid population growth and expansion of informal areas, the collection needs began to overtake the Zaballeen's capacity. At 2005 the World Bank reported that 88 percent of the collected waste was disposed of in open dumps around urban areas. This uncontrolled disposal and burning of solid

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<sup>18</sup> <http://www.un.org/esa/sustdev/agenda21text.htm>, Ibid.



waste constituted a major environmental problem and contributed to poor air quality in Cairo<sup>19</sup>.

### 2-1-7-2 Wastewater:

It was important to encourage and promote the use of adequately treated and purified waste waters in agriculture, aquaculture, industry and other sectors in order to minimize the water consumption and protect human health.

By the early twentieth century, waterborne diseases were in check and the objective of wastewater treatment was to minimize nuisance conditions noticeable by sight or smell.

Environmental Urban Quality of Life		Waste Management and Recycling	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Solid Waste	Litter Perception	Decrease of the environment load due to materials and components	Ensure the environment safety concerning the waste management.
	Waste Collection and Disposal		
	Waste Recycling		
Wastewater	Wastewater Treatment	Reduce pollution from wastewater and encourage water reuse.	

Table 2-7: Waste Management and Recycling indicators, basic needs and general goals.

## 2-2 Physical Urban Quality of life

It is important to discuss the built environment and its effect on quality of life. The built environment refers to the man-made surroundings that provide the setting for human activity, ranging in scale from personal shelter and buildings to neighborhoods and cities that can often include their supporting infrastructure. The built urban environment contributes to the way people feel

<sup>19</sup> UN-Habitat and the American University in Cairo, 2011.

about where they live and impacts strongly on the sustainability of the natural environment.

There are many aspects of the built environment that make up a neighborhood and can help foster a good quality of life for the neighborhood's residents.

### **2-2-1 Land Use:**

Land use is the human use of land. The way urban land is used to accommodate growth in households and industry also impacts on the costs and accessibility of housing, transport and employment. Poor access to these can impact on residents' health, their financial wellbeing, their sense of safety and general community wellbeing. For that reason, over the last decade, mixing land uses has become one of the key planning principles among contemporary planning strategies.

Broadly speaking, the term land use is used to describe the different functions of the environment. Within the urban context, the dominant land use tends to be residential but a functional urban area requires industrial, retail, offices, infrastructure and other uses. The spatial (micro) pattern of land uses is crucial to the arguments about the efficiency of a city and potential 'sustainable' urban forms in influencing urban travel patterns and the quality of life. There are also certain 'locally-unwanted land uses' such as prisons, airports, or landfill sites claimed to be undesirable in residential mixed-use areas<sup>20</sup>.

#### **2-2-1-1 Mixed Land Use**

Areas may have mixed uses in either or both of two ways: by having a Mix of single use buildings or by having buildings that each contain a mix of uses (e.g. living over the shop). The latter is generally preferable (figure 2-5).

Development may be characterized as "mixed use" if it combines more than one use or purpose within a shared building or compact project area. Mixed

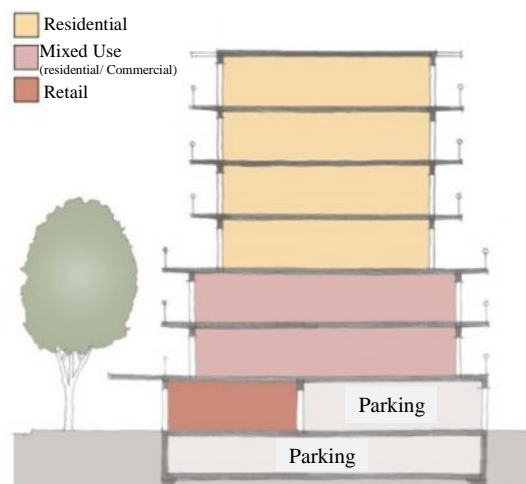
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<sup>20</sup> M. Jenks and C. Jones, 2010.

uses may combine a variety of activities such as housing, offices, stores, restaurants, medical, commercial, and high-tech/light-industrial endeavors.

Mix land uses, is one of the 10 principles of Smart Growth. The Congress of New Urbanism (CNU) also calls for: “*Neighborhoods to contain a mix of shops, offices, apartments, and homes; land uses are mixed-use within neighborhoods, within blocks, and within buildings*”<sup>21</sup>. The call for mixed land uses is a response to a set of complex problems brought on by urban sprawl. Advocates for mixed land uses have argued that the practice of separating land uses has led to excessive commute times, traffic congestion, air pollution, inefficient energy consumption, loss of open space and habitat, inequitable distribution of economic resources, job/ housing imbalance, and loss of sense of community.

It is argued that a greater mix of complimentary land use types, can be beneficial since it can promote transit-supportive development, preserve open spaces and other landscape amenities, facilitate a more economic arrangement of land uses, encourage street activity to support retail businesses, help achieve regional housing and employment targets, reinforce streets as public spaces, encourage pedestrian and bicycle travel, and thereby create a sense of community.<sup>22</sup>



**Figure 2-5: At the ground floor “parking spaces, kindergartens, green areas, commercial spaces and restaurant” (www.healthyplaces.org.au)**

<sup>21</sup> Song and Knaap, 2004.

<sup>22</sup> Song and Knaap, Ibid.

### **2-2-1-2 Neighborhood Services and Facilities:**

Neighborhood services and facilities are considered one of the main components of urban community; they represent the main elements that attract people and without it the urban community may be abandoned. Neighborhood services and facilities vary qualitatively and quantitatively according to the number of residents, their needs, the demographic and law of the region. Every type of facilities has its catchment area that can be measured by distance or by travel time.

There are two groups of services:

First group: includes public utilities such as roads, water supply networks, sanitation, drainage, solid-waste management, electricity, gas supply networks, and information communication technologies (ICT). They represent indispensable elements called infrastructure.

Second group: includes urban services and facilities. Despite the variety in size and nature of urban units the services do not depart from educational, health, commercial, administrative, cultural, religious, social services and green space.

There are many studies that tried to set the types of services needed in the neighborhood:

- Winter and Farthing identify an ‘everyday eight’ local neighborhood services and facilities in the UK context that include a post office, supermarket, primary school, newsagent and open space. Other services, to which residents need local access, albeit on a less frequent basis, include a doctor’s surgery chemist, bank; and community centre<sup>23</sup>.
- Egyptian New Urban Communities Authority proposed two levels of services and facilities in the neighborhood, the first level include kindergarten, elementary school, residential open space, small mosque (Zawia); The second level include playground, neighborhood center,

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<sup>23</sup> Jenks and Jones, 2010.

clinic health unit in a social complex, ambulance, private and public clinics, nursery, social unit, post office, tel. office, mosque, preparatory and secondary school cultural facilities city hall, and public library.<sup>24</sup>

- Burton and Mitchell characterized the services as primary and secondary services and facilities. Primary services and facilities include a general food store, post office, bank, surgery/health center, green space (village green, green street edges), public toilets, public seating and transport stops; Secondary services and facilities include open spaces (parks, allotments, recreation grounds, public squares), a library, dentist, optician, places of worship, community and leisure facilities and public toilets and seating.<sup>25</sup>

Accordingly facilities and services levels differ to their catchment area. The two levels of services could be simplified as shown in table (2-8):

Primary services and facilities	Secondary services and facilities
<ul style="list-style-type: none"> <li>▪ Supermarket and general food store</li> <li>▪ Kindergarten – nursery (public/private)</li> <li>▪ Elementary/ principle school (public/private)</li> <li>▪ Newsagent</li> <li>▪ Open space and green space</li> <li>▪ Small mosque (Zawia)</li> <li>▪ Bank, post office</li> <li>▪ Surgery/health center</li> <li>▪ Public toilets,</li> <li>▪ Public seating and transport stops</li> <li>▪ Dry clean</li> <li>▪ Community-Serving retail</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pharmacy</li> <li>▪ Bank</li> <li>▪ Open space (playground)</li> <li>▪ Neighborhood center</li> <li>▪ Clinic health unit in social complex</li> <li>▪ Ambulance</li> <li>▪ Mosque</li> <li>▪ Preparatory and secondary school (public/private)</li> <li>▪ Cultural facilities</li> <li>▪ Community centre, city hall, public Library</li> <li>▪ Public toilets and seating</li> <li>▪ Transit stop</li> <li>▪ Police and fire station</li> </ul>

**Table 2-8: Primary and secondary services and facilities.**

### **2-2-1-3 Effective Use of Land:**

It is important to encourage new developments to reuse land that has already been built on and infill existing urban areas rather than using undisturbed land. The land reuse has many advantages such as, reducing motor vehicle use, providing needed homes, services, or jobs, taking advantage of

<sup>24</sup> Hassan A., Msc, 1986.

<sup>25</sup> Burton and Mitchell, 2006.

existing infrastructure, reducing local government costs of service development, and restoring ecosystem elements. Land reuse represents the opposite of sprawl, it refers to the construction of new housing, workplaces, shops, and other facilities within existing urban or suburban areas. This development can be of several types: building on vacant lots, reuse of underutilized sites (such as parking lots and old industrial sites), and rehabilitation or expansion of existing buildings.

Physical Urban Quality of Life		Land Use	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Mixed Land Use	Diversity Index	Combine more than one use or purpose within a shared building or compact project area.	Provide the access to the residents' needs of facilities and promote a healthy environment.
	Neighborhood Completeness		
Neighborhood Services and Facilities	Availability of infrastructure	Appropriate community services and facilities.	
	Availability of services and Facilities		
	Degree of Cleanliness of Amenities		
	Degree of Attractiveness of Amenities		
Effective Use of Land	Land Reuse	Effective and efficient use of land.	

Table 2-9: Land Use indicators, basic needs and general goals.

### 2-2-2 Compact Neighborhood:

In urban development, the designation “compact” translates to buildings that are tightly grouped and multistoried. A building might have parking underground, retail on the ground floor, offices and restaurants above, and apartments above that. Compact forms of residential development are attached

homes, with the smallest and most compact being stacked apartments and the least compact being attached; single-family homes, such as row houses.<sup>26</sup>

The compact settlement has a range of benefits:

- Offering a high quality of life while minimizing resources and energy consumption.
- Encouraging positive interaction.
- Providing economies of infrastructure.
- Reducing overall demand for development land and protecting the green and pleasant land.
- Improving viability of and access to community services.  
Supporting public transport and reducing car travel and parking demand.
- Distances between facilities are kept to a minimum therefore minimize the car reliance.

#### **2-2-2-1 Density:**

*“Density .... Is always a fundamental decision in city design. It sets the framework for all the other features and has far-reaching implications”<sup>27</sup>.*

Urban density is a term used in urban planning and urban design to refer to the number of people inhabiting a given urbanized area. Urban density is considered an important factor in understanding how cities function. Increasing population and housing densities affect the wellbeing of a community. While higher densities are sometimes equated with poor quality environments, high quality urban design is achievable at all densities. At higher density levels, however, good design becomes essential to protect amenity (particularly privacy standards) and to provide liveable environments. Jacobs concluded that ‘proper’ city densities were a ‘matter of performance’ and could not be based on abstractions about the quantity of land needed for ‘x’ number of people<sup>28</sup>.




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<sup>26</sup> Girling and Kellett, 2005.

<sup>27</sup> K. Lynch, A Theory of Good City Form.

<sup>28</sup> Carmona, Heath and others, 2003.

Studies showed that density must be considered in terms of the configuration of urban form as shown in table (2-10)<sup>29</sup>:

<p><b>1) High-rise development standing in open space</b></p>		<ul style="list-style-type: none"> <li>• No private gardens, poor amenities directly available to the inhabitants.</li> <li>• No direct relationship between the buildings and the surrounding streets.</li> <li>• Large area of open space requires management and maintenance.</li> </ul>
<p><b>2) A traditional street layout.</b></p>		<ul style="list-style-type: none"> <li>• Front and back gardens.</li> <li>• Continuous street frontages define the public space.</li> <li>• Streets form a clear pattern of public space.</li> <li>• High site coverage minimizes potential for communal spaces.</li> </ul>
<p><b>3) A perimeter block enclosing an open space.</b></p>		<ul style="list-style-type: none"> <li>• Surrounding buildings can be of different heights and configuration.</li> <li>• Buildings are arranged around a landscaped open space.</li> <li>• Open space can contain a community-based facility.</li> <li>• Commercial and public facilities can be distributed along the ground floor, maintaining an active street frontage.</li> <li>• Space is available for use as, for example, near gardens, communal areas or a park.</li> </ul>
<p>Each has the same density (75 dwellings per hectare) but a different arrangement of public and private space.</p>		

**Table 2-10: Different urban form for same density**

### **2-2-2-2 Graded Density:**

Entire neighborhoods do not need to have the same density; in fact, to achieve housing diversity, densities and types of housing must be varied. “Graded density” refers to the concept of clustering the highest density at and

<sup>29</sup> Carmona, Heath and others, 2003.



around a mixed-use service center while gradually decreasing residential densities toward the farthest reaches of the neighborhood. This strategy maximizes the population near the center while achieving an average density that will support pedestrian-oriented neighborhood services and also provide a range of choices in housing types and costs. Density gradients were proposed by Calthorpe for Sacramento County’s transit-oriented developments (TOD) in the late 1980s and referred to a primary and secondary residential areas; his concept was to include higher-density housing in the primary residential area, closest to the transit station at the neighborhood center<sup>30</sup>.

Physical Urban Quality of Life		Compact Neighborhood	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Density	Gross Residential Density	Protect amenity and to provide liveable environments	Promote livability, walkability, and transportation efficiency. Improve public health encouraging daily physical activity associated with alternative modes of transportation and compact development.
	Floor-Area Ratio		
Graded Density	Graded Density		

Table 2-11: Compact Neighborhood indicators, basic needs and general goals.

### 2-2-3 Urban Layout:

Layout describes the spatial arrangement and configuration of elements of streets, blocks and buildings. Well designed urban layout has an influence on how lively, well-used space and the quality of life.

The way in which the street blocks are designed affects the quality of the built environment.

<sup>30</sup> Girling, Kelley, 2005.

### 2-2-3-1 Street and Square Network:

Streets in most of towns and cities represent roughly 30 percent of public open space. Streets are not the dividing lines within the city; they are communal rooms and passages; a single given street is always a part of street network. Hierarchy of street networks should be based on their pedestrian and vehicular loads.

A more recent approach is to treat all streets as “complete streets”<sup>31</sup>, designed with diverse users in mind: drivers, transit riders, pedestrians, bicyclists, as well as older people, children, and people with disabilities. The complete street approach classifies streets according to their primary transportation role, rather than their size. This helps create linkages between bicycle-oriented or pedestrian-oriented streets, for example, ensuring that bike routes are not cut off by freeways and that pedestrians have safe sidewalks and crosswalks on the routes connecting common destinations. Linking streets by their usage helps create networks through the city and greatly amplifies the effectiveness of multiple modes of transportation (figure 2-6).



Figure 2-6: Complete streets (<http://blog.cascade.org/2011/02/double-dose/>, 2011)

### 2-2-3-2 Building Block

Streets, homes, gardens, places for leisure and parking must be carefully arranged. A successful layout should be characterized by a framework of interconnected routes that define ‘blocks’ of housing, open spaces and other uses.

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<sup>31</sup> Farr, 2008.

Streets work well if there is a clear definition of the public and private realm. This can be achieved by arranging buildings to follow a continuous line and by creating active edges with doors and windows opening onto the street, which also increases surveillance.

The building layout should be a priority in any new housing development. Buildings of the appropriate size, proportion, height, shape and layout will help create well-defined streets and spaces, which are attractive and user-friendly, improving residents' quality of life<sup>32</sup> (figure 2-7).



**Figure 2-7: Well-defined streets and spaces.**

Car parking is one of the most difficult challenges in housing design. Limited parking squares and courtyards will help avoid visual dominance. On-street parking can bring activity to the street and have a traffic-calming effect (figure 2-8). Car parking should be designed into the scheme, making sure that the fronts of properties are not dominated by cars, and that there is a good relationship between houses and the street. The combination between on-street parking and well-managed below-building parking provides the most satisfactory solution. Where possible, below-building parking should be efficiently designed to free up more space for attractive streets and more shared public areas.

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<sup>32</sup> <http://www.buildingforlife.org/criteria/10>

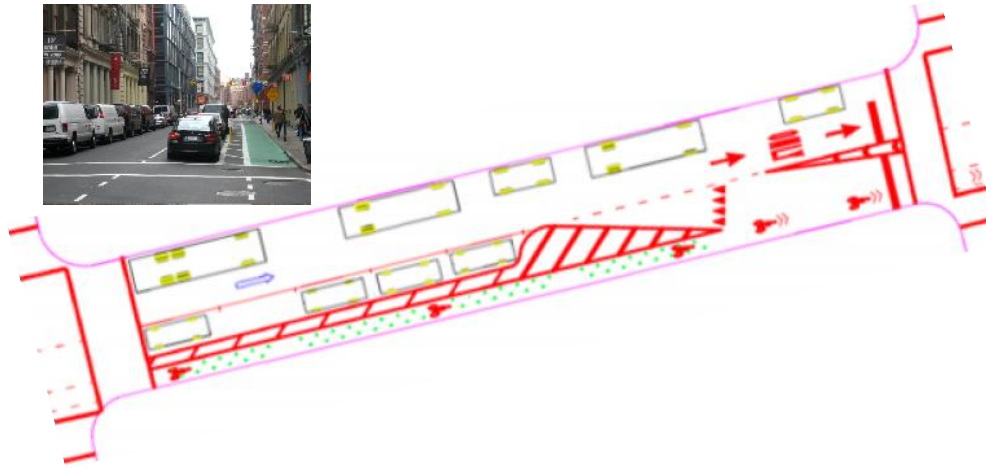


Figure 2-8: On-street parking protects pedestrians and cyclists from the actual and perceived danger of moving traffic. (<http://www.streetsblog.org>, 2008)

Physical Urban Quality of Life		Urban Layout	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Street and Square Network	Complete Streets	Complete street network that promote different uses and needs.	Well used and defined urban spaces.
	Providing Proper Evacuation Routes		
Building Block	Building Line	Well-defined urban space that promote the sense of enclosure.	
	Well Integrated Car Parking		
	Building Height-to-Width Ratio		

Table 2-12: Urban Layout indicators, basic needs and general goals.

### 2-2-4 Housing and Buildings Quality:

Research conducted in various countries proved that having satisfactory accommodation is at the top of the hierarchy of human needs. From the wider social perspective, the extent to which housing needs are satisfied on a national scale is an important indicator of overall quality of life and the development of society.

The characteristics of housing and other buildings in urban settlements can have an important bearing on everyday living and the quality of life.

#### **2-2-4-1 Building Quality:**

Buildings must be adapted to local climates, materials, and traditions that consequently enhance urban sustainability and urban quality of life.

Buildings are instruments for constructing time and place, not items to be consumed and discarded. For all practical and symbolic purposes, they are permanent fixtures in the landscape and the city. They should be designed with enough material and technical quality to allow their continuing renovation and reuse well.

#### **2-2-4-1 Housing Quality:**

Housing is a fundamental component of quality of life. Without appropriate shelter, people cannot meet their basic needs and participate adequately in society. Housing issues can have flow-on effects for health, education and community wellbeing. The changing demand for housing and supply constraints can put pressure on an urban area's natural and social environment and affect a city's ability to provide suitable infrastructure and services.

Crowding is an indicator of housing affordability, because people on lower incomes may share their living environments with others as a way to reduce overall housing costs. It is also an indicator of housing need, providing information on the suitability of a dwelling for the people occupying it. Living in crowded situations is associated with poor health outcomes such as respiratory and infectious diseases.

Physical Urban Quality of Life		Housing & Buildings Quality	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Building Quality	Building Technology	Increase overall efficiency.	Fulfill households' needs.
	Fulfillment of Building Codes		
Housing Quality	Durability	Provide appropriate shelter for fulfilling people's basic needs.	
	Adaptability		
	Condition		
	Overcrowding Average		
	Access to Kitchen and Bathroom Facilities		
	Access to Infrastructure		

Table 2-13: Housing & Buildings Quality indicators, basic needs and general goals.

## 2-2-5 Management and Maintenance:

### 2-2-5-1 Management and Maintenance:

The development must ensure that community facilities, such as open space, grey water schemes, meeting places, allotments etc..., are maintained and managed adequately.

Physical Urban Quality of Life		Management and Maintenance	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Management and Maintenance	Maintenance Policies	Give a sense of ownership of the community facilities.	Sustainability of the development.
	Maintenance Responsibilities		
	Resident's Manual		
	On-site office		

Table 2-14: Management and Maintenance indicators, basic needs and general goals.

## 2-3 Mobility Urban Quality of Life:

Mobility is the ability of people and freight to travel where they want to go; it can be measured by kilometers travelled per year: the greater the number, the more mobile the society. The number of passenger kilometers by private car per capita increased during the last few decades and the public transit use declined<sup>33</sup>. Rising traffic volume and congestion causes increase in energy consumption, in carbon monoxide generation, greenhouse gas emissions, and deterioration in human health condition; therefore the quality of life is affected.

A sustainable transport system may improve quality of life by increasing the amount a driver walks or rides a bike, for example, but many drivers may not be ready to see the value of these alternatives.

A number of combined strategies involving land use, public transit, other alternative travel modes, and pricing of transportation are likely to resolve the problem and improve urban quality of life. Various studies revealed important indicators of mobility urban quality of life, such as traffic safety and security, traffic noise, availability of facilities, accessibility of various destinations and public transportation, lively neighborhoods, number of people around, orderliness, and pollution. Agenda 21<sup>34</sup> recommended that for efficient and environmentally sound urban transport systems, all countries should:

1. Integrate land-use and transportation planning to encourage development pattern that reduces transport demand.
2. Adopt urban-transport programs favoring high-occupancy public transport in countries, as appropriate.
3. Encourage non-motorized modes of transport by providing safe cycleways and footways in urban and suburban centers in countries, as appropriate.
4. Devote particular attention to effective traffic management, efficient operation of public transport and maintenance of transport infrastructure.

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<sup>33</sup> UN-Habitat, AUC in Cairo, 2011.

<sup>34</sup> It is a product of the UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992..

5. Promote the exchange of information among countries and representatives of local and metropolitan areas.
6. Re-evaluate the present consumption and production patterns in order to reduce the use of energy and national resources.

### **2-3-1 Accessibility:**

Accessibility is often used in human geography for the evaluation of spatial distribution of facilities and functions. A place is accessible only when it can be reached easily by pedestrians or by an appropriate mode of transport; it denotes the ease with which any land-use activity can be reached from a location, using a particular transport system.<sup>35</sup> Accessibility is also considered as the opportunities available to an individual or type of person to take part in a particular activity or set of activities. Therefore a typical measure of accessibility will consist of two parts:

- a. Transportation elements, which represents the impedance or difficulty of travel, usually measured by travel distance, time, or costs (usually walking distance is measured by kilometer or mile while the distance covered by vehicles is measured by travel time<sup>36</sup>).
- b. An activity element, which represents the opportunities available at a particular zone or location, usually indicated by the amount and the location of different types of activities, such as employment or schools, depending on the situations in which the measure is used.

Ideally, everyone should have access to outdoor environments. Lack of access can reduce individual and community participation in activities and reduce people's ability to take advantage of social, economic and healthy lifestyle opportunities.

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<sup>35</sup> Dalvi, 1979

<sup>36</sup> El Wakil, 2007



### 2-3-1-1 Pedestrian Catchment Area:

Emerging public health research<sup>37</sup> is revealing an ever-clearer understanding of the relationship between neighborhood design and the length and share of all trips that people will willingly make on foot. One central idea that has become very clear is that meeting one's daily needs on foot in a neighborhood is made much more convenient and more likely when many-to destinations are clustered close together (Figure 2-9).

According to Newman and Kenworthy a pedestrian catchment area or "Ped shed", based on a 10-minute walk, creates an area of approximately 220-550 hectares which equivalent to 2.2-5.5 km<sup>2</sup> (walking distance is about 800m – 1300m from the center to the edge) for walking speeds of 5-8 km/h.<sup>38</sup>

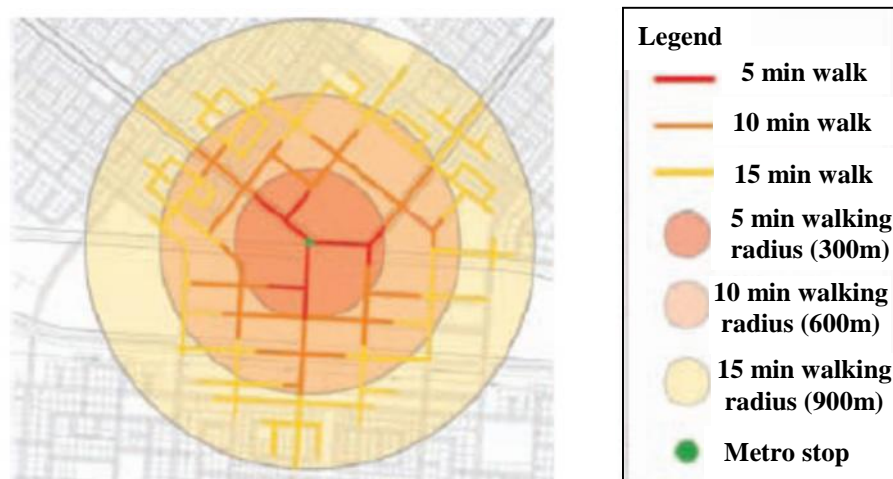


Figure 2-9: Pedestrian catchment area (Abu Dhabi Urban Street Design Manual)

Farr argued that the overall size of the neighborhood should be suitable for walking. Neighborhoods range from 40-200 acres (0.16 km<sup>2</sup> – 0.81 km<sup>2</sup>). Most people will walk a distance of approximately one-quarter mile (400 m) before turning back or opting to drive or ride a bike rather than walk. This dimension is a constant in the way people have settled for centuries. Most neighborhoods built before World War II were one-quarter mile from center to edge.<sup>39</sup>

<sup>37</sup> Farr, 2008.

<sup>38</sup> Garling & Steg, 2007

<sup>39</sup> Douglas Farr, 2008.

According to the UK government states a ten minutes walk is a comfortable walking time to reach services and facilities and calculates this is the time it takes to walk about 800 m.<sup>40</sup> These calculations appear to be based on younger adults as people in their mid-70s will generally take around 10-20 min to walk 400m to 500m and cannot walk further than 10 min without a rest (figure 2-10).<sup>41</sup>

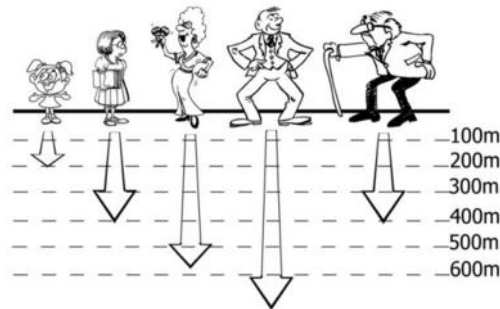


Figure 2-10: Comfortable walking distance for different people ages (El Wakil, 2007)

Burton and Mitchell argued that services can be classified into primary services where housing located no further than 500 m from them; and secondary services where housing located no further than 800m from them (figure 2-11)<sup>42</sup>.

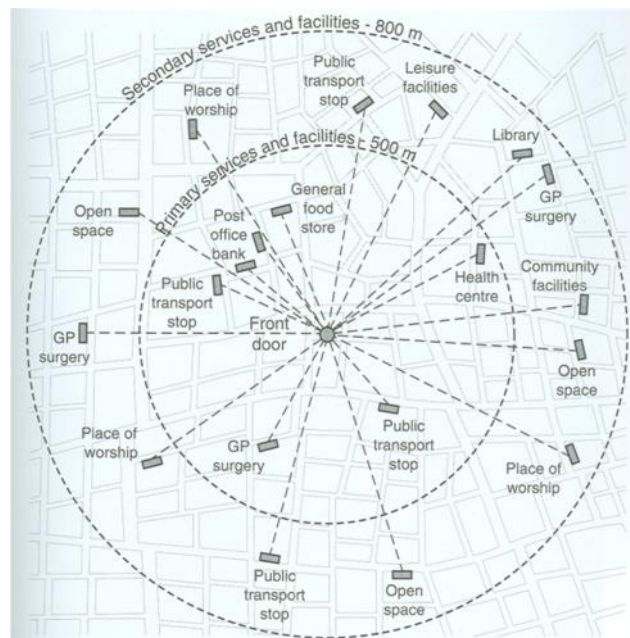


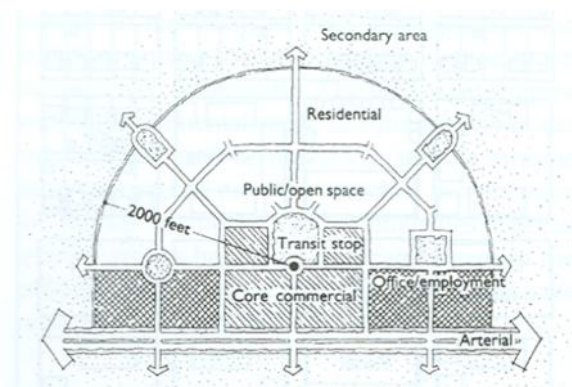
Figure 2-11: Primary and secondary services and facilities.(Burton & Mitchell 2006)

<sup>40</sup> Department of Transport, Local Government and the Regions (DTLR), 2001.

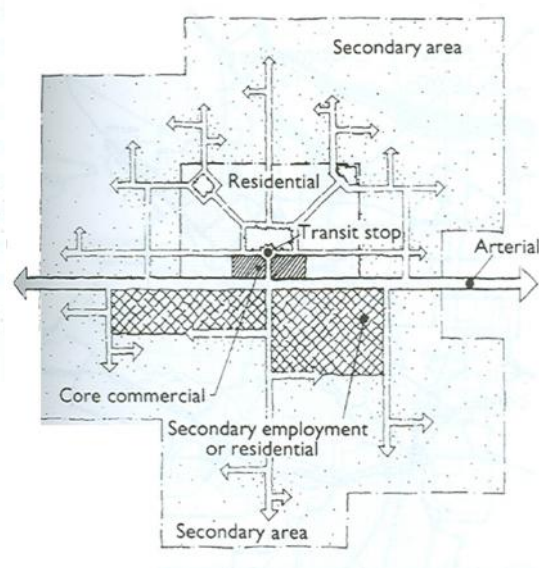
<sup>41</sup> American Institute of Architects (AIA), 1985; Carstens, 1985.

<sup>42</sup> Burton and Mitchell, 2006.

The concept of Transit-Oriented Development (TOD) is based on a mixed-use community within an average 2,000 ft walking distance (600 m) of a transit stop and core commercial area (figure 2-12). Each TOD has a Secondary Area adjacent to it, including areas across and arterial, which are no further than one mile (1600m) from the core commercial area. The Secondary area street network must provide multiple direct street and bicycle connections to the transit stop and core commercial area, with a minimum of arterial crossings<sup>43</sup> (figure 2-13).



**Figure 2-12: Transit-Oriented Development**  
(M. Wheeler & Beatley, 2009)



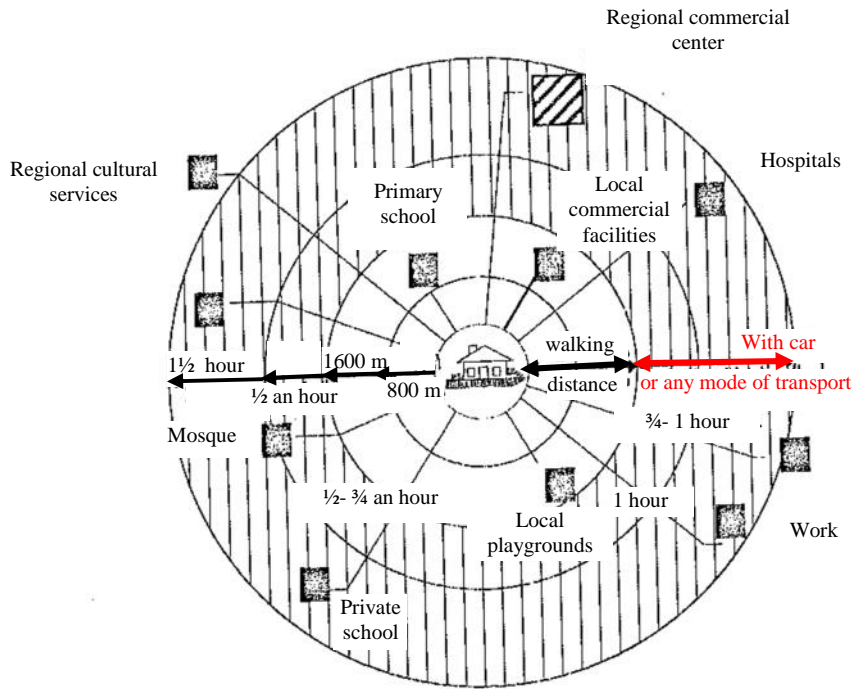
**Figure 2-13: Secondary areas**  
(M. Wheeler & Beatley, 2009)

The New Urbanism approach argues that most of the dwellings must be within a five-minute walk of the center, an average of roughly ¼ mile or 1,320 feet (400 m).

The Urban Village approach argues that the comfortable walking distance usually determines the size, a 10 minute walk from one side of the urban area to the other (up to 900 m across). Thus an urban development area could be around 40ha (0.4 km<sup>2</sup>) say 600x600m.

<sup>43</sup> M. Wheeler & Beatley, 2009

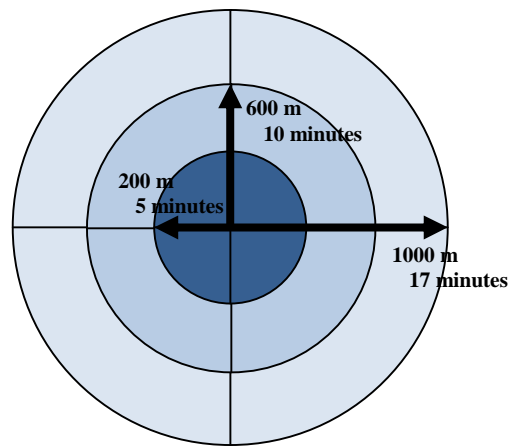
El Wakil identifies the maximum distance between the dwelling and different services as shown in (Figure 2-14); she illustrates that the comfortable walking distance is between 800 m to 1600 m; and using the car if the travel time is between 30 minutes to 1 hour 30 minutes<sup>44</sup>.



**Figure 2-14: The distance between the dwelling and different facilities. (El Wakil, 2007)**

She adds that there is an approval that the walking distance between the services and any dwelling in a neighborhood must not exceed 10 to 15 minutes which refer to 400 m to 800 m (figure 2-15).

<sup>44</sup> El Wakil, 2007.



**Figure 2-15: The walking distance referring to the travel time. (El Wakil, 2007)**

The Pearl Rating System for Estidama states that all primary pedestrian walkways and cycle tracks as well as public transit options must be within a 350m radius of all amenities and facilities.

CASBEE Assessment tool set 800m to 300m as an average travel distance between the furthest point and different facilities which cover at least 80% of the residents and working populations in the designated area. If the distribution of the resident and working populations makes measurement difficult, a substitute point covering 80% or more of the total floor area of residential and employment-related facilities within the designated area may be used. For some facilities such as cultural facility the evaluation was according to the total journey time required for walking and public transport which is determined to be 30 minutes to 60 minutes.

LEED for Neighborhood Development Rating System suggests that 50% of the neighborhood dwelling units must be within a 1/4 mile (400m) walk distance of the number of diverse uses, but about the recreation facilities this range increased till 1/2 mile (800m) walk distance.

The BREEAM Assessment tool argues that all dwellings within the proposed site must be within 500m to 700m of designated public green space.

In blocks of flats / multi-residential buildings the distance is calculated from the main entrance to the building.

### **2-3-1-2 Connectivity:**

The main objective of an interconnected street network is to improve public health by encouraging daily physical activity and reducing the negative effects of motor vehicle emissions.

Street connectivity is a measure of how well the roadway network connects what planners call origins and destinations. In layman's terms, good street connectivity means providing a variety of ways to get from Point A to B. The traditional grid-style street layout of older towns provides excellent connectivity. Interconnected street network not only provides a more direct route to any destination, but also helps to disperse traffic. The presence of a grid pattern and alternate parallel streets allows the state highway and other major roads to serve their main purpose, moving vehicles over longer distances, while shorter trips can take place on local streets.<sup>45</sup>

A highly connected area includes a system of parallel routes and cross connections, few closed-end streets, many points of access, and narrow streets with sidewalks or off-street paths. Frequent intersections are provided which create a pedestrian scale block pattern (figure 2-16).

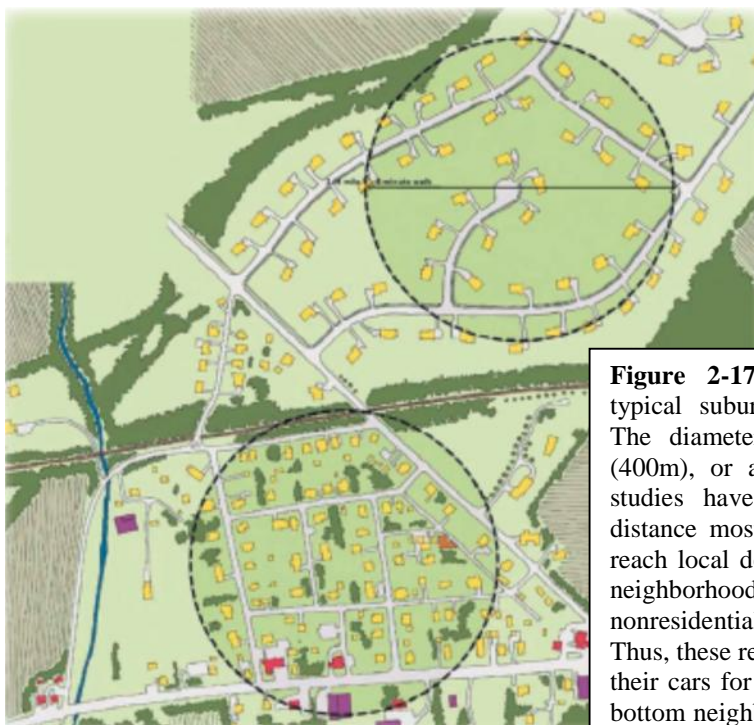


**Figure 2-16: street network that encourage daily physical activity**

<sup>45</sup> Hannah Twaddell, Making the Connection, from Planning Commissioners Journal (No. 58, Spring 2005) <http://www.plannersweb.com/216free.pdf>

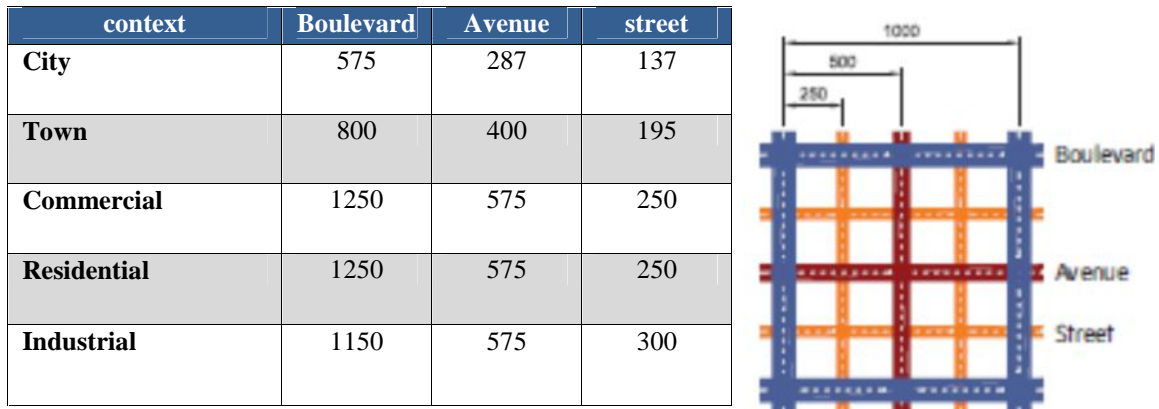


A maximum block length is one way to evaluate connectivity in proposed developments, because grid patterns with shorter blocks, instead of long dead end streets or cul-de-sacs, make it easier to get from place to place within a community, and provide several alternative routes. This concept can assist in reducing traffic congestion as well as increasing options for pedestrian activity. Connectivity relates not only to the number of intersections along a segment of a street but also how an entire area is connected by the street system (figure 2-17).



**Figure 2-17:** This image compares two typical suburban residential neighborhoods. The diameters of the circles are  $\frac{1}{4}$  mile (400m), or about a 5 minute walk, which studies have shown to be the maximum distance most people are willing to walk to reach local destinations. Residents of the top neighborhood cannot walk to any nonresidential destinations within this radius. Thus, these residents are far more likely to use their cars for local trips than are those of the bottom neighborhood, who can easily walk to other houses, parks, and shops.

The Pearl Rating System for Estidama states that the design of street networks and intersections at the neighborhood level must emphasize a high level of vehicular and pedestrian/cycle connectivity. It specifies that at least 75% of the intersections meet the average of street spacing standards as shown on figure 2-18. All measurements on junction spacing will be centerline to centerline.

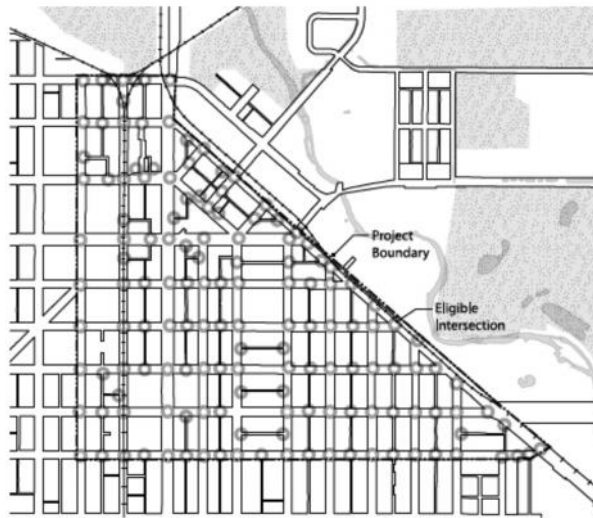


**Figure 2-18: Average through Street Spacing Criteria (meters)  
(The Pearl Rating System for Estidama Community Rating System)**

LEED-ND defines the connectivity as the number of publicly accessible street intersections per square mile, including intersections of streets with dedicated alleys and transit rights-of-way, and intersections of streets with non motorized rights-of way (up to 20% of total intersections). If one must both enter and exit an area through the same intersection, such an intersection and any intersections beyond that point are not counted; intersections leading only to a cul-de-sac are also not counted. The calculation of square mileage excludes water bodies, parks larger than 1/2 acre (2023.43 m<sup>2</sup>), public facility campuses, airports, rail yards, slopes over 15%, and areas non buildable under codified law or the rating system. Street rights-of-way may not be excluded.

LEED determine that the internal connectivity of a designed project should be at least 140 intersections per square mile (54 intersections per square kilometer). Whereas all streets and sidewalks that are counted toward the connectivity requirement must be available for general public use and not gated (figure 2-19).





**Figure 2-19: Project site design with 140 eligible intersections per square mile (54 intersections per square kilometer) on streets that are not gated (LEED for Neighborhood Development Rating System)**

Another level of connectivity is between existing and new development. For this purposes The Pearl Rating System for Estidama argues that 80% of the development’s perimeter streets should provide full movement intersections with existing development.

LEED-ND states that for an infill site the project must be designed with at least one through-street and/or non motorized right-of-way intersecting or terminating at the project boundary at least every 800 feet (240 m), or at existing abutting street intervals and intersections, whichever is the shorter distance. Non motorized rights-of-way may count for no more than 20% of the total. This does not apply to portions of the boundary where connections cannot be made because of physical obstacles, such as prior platting of property, construction of existing buildings or other barriers, slopes over 15%, wetlands and water bodies, railroad and utility rights-of-way, existing limited-access motor vehicle rights-of-way, and parks and dedicated open space. For Projects without internal streets, locate the project such that the connectivity of the existing streets within 1/4 mile (400 m) of the project boundary is at least 90 intersections per square mile (34 intersections per square kilometer). All streets

and sidewalks that are counted toward the connectivity requirement must be available for general public use and not gated. (figure 2-20).



Figure 2-20: Project site with at least 90 eligible intersections per square mile (34 intersections per square kilometer) within ¼ mile (400m) of project boundary (LEED for Neighborhood Development Rating System).

Mobility Urban Quality of Life		Accessibility	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Pedestrian Catchment Area	Pedestrian Catchment Area For Primary Facilities	Maximum walking distance before turning back or opting to drive a bike or a car rather than walk.	Improving public health by encouraging daily physical activity and reducing the negative effects of vehicle emissions.
	Pedestrian Catchment Area For Secondary Facilities		
Connectivity	Direct Route Index	Measure the ease of access from one point to another within the development	
	Connectivity Index		
	Blocks Size		
	External Connectivity		

Table 2-15: Accessibility's indicators, basic needs and general goals.

### **2-3-2 Walkability and Cyclability:**

Regular physical activity is associated with enhanced health and reduced risk of premature deaths. Physical activity reduces risk of cardiovascular disease, stroke, type 2 diabetes, colon cancer, osteoporosis, depression, and fall-related injuries.

Walking is the most commonly promoted moderate-intensity physical activity, therefore walking and cycling are the most convenient and sustainable mode of transport for all local trips. The built environment has to provide a safe walkable and cycle network in order to encourage people to walk or bike rather than use private cars.

The key to the pedestrian friendly neighborhood is to tame than to exclude the car. This means reduce traffic speeds and reclaim much more of the street area for pedestrians but it does not necessarily mean removing cars entirely. Streets can be made more attractive by widening pavements, providing cycle lanes and calming traffic.<sup>46</sup>

#### **2-3-2-1 Walkable Network:**

The pedestrian realm is the area between the curb and the property or building line. Pedestrian areas are also included at junctions and crossings, as well as bus stops, waiting platforms, and taxi lay-bys (figure 2-21).<sup>47</sup>

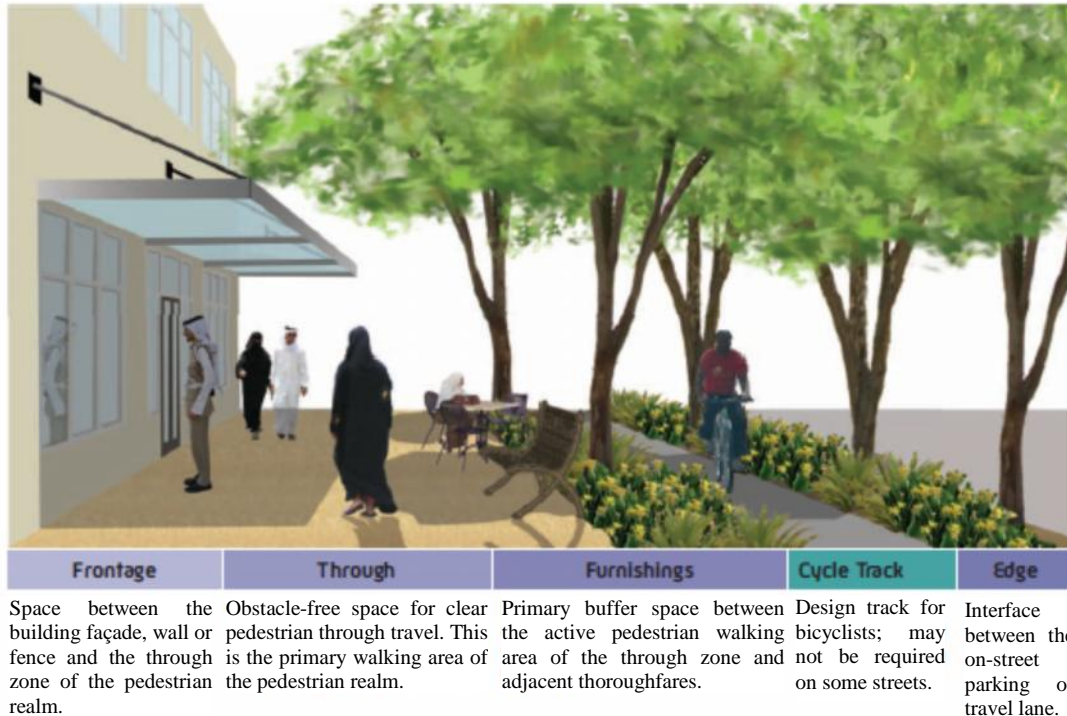
The pedestrian-friendly neighborhood refers to a neighborhood that provides pedestrian ways integrated with street network and safe pedestrian crossings. Some issues must be taken into account to provide safe pedestrian ways, such as minimized block radii to slow cars at intersections, allowing easy crossing for pedestrians; landscaped medians to reduce apparent streets widths; two-way streets that improve pedestrians' crossing safety; properly designed curbs and sidewalks at intersections that accommodate the handicapped;

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<sup>46</sup> Rudlin and Falk, 2009.

<sup>47</sup> Street Manual in Dubai, edition 1.

providing on-street parking that protects pedestrians from the actual and perceived danger of moving traffic.



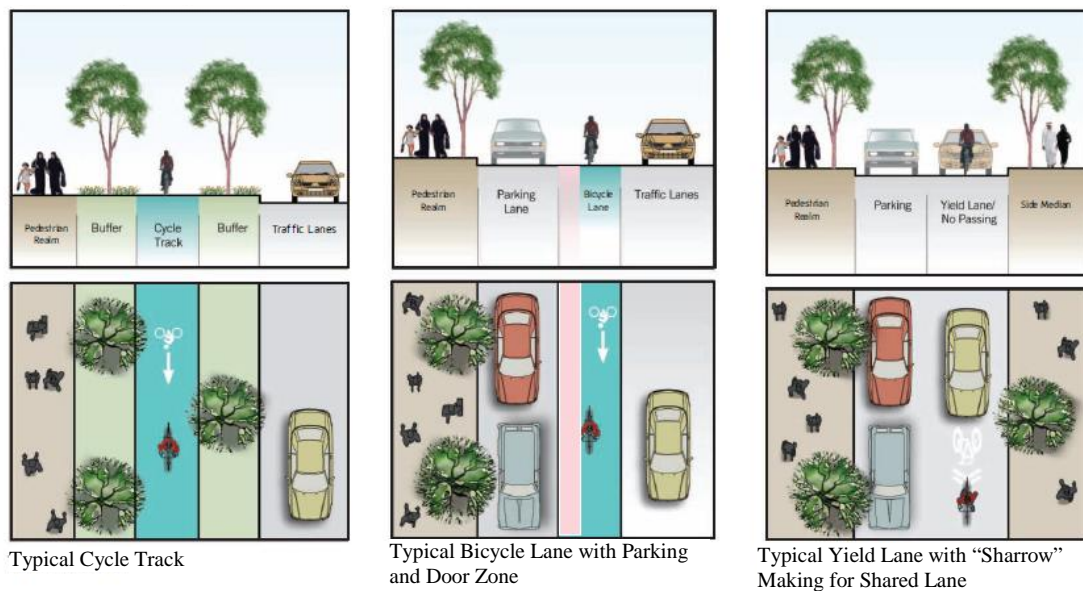
**Figure 2-21: The Function of the Pedestrian Realm Zones (Street Manual in Dubai)**

### 2-3-2-2 Cyclicable Network and Facilities:

Simple, cheap, pollution free, and easy to maintain, the cycle has been used widely in many nations that sought to promote cycling as a convenient way for public transit patrons to reach transit stations.

Many environmental organizations, community activists, and urban planners support cycling because it is an energy efficient and non-polluting transport mode, and some transport planners view space efficient cycling as a way to reduce roadway congestion. Aside from the cost of travel time, cycling is also cheaper than any mode except walking and thus affordable to even the poor. Fitness experts and health professionals advocate cycling for its cardiovascular benefits.

Cycle use can be accomplished through cycle tracks located within the pedestrian realm, bicycle lanes within the traveled way, shared use of frontage lanes, and yield lanes. Cycle requires specific facilities such as bicycle parking (figure 2-22).<sup>48</sup>



**Figure 2-22: Examples of Bicycle Paths (Street Manual in Dubai)**

### 2-3-2-3 Traffic Calming:








The term traffic calming has been used by transportation engineers for several decades in reference to methods for reducing vehicle speeds and creating a safer streetscape condition. The main objective of traffic calming is *“to slow auto traffic and create more urban human environments better suited to other transportation modes”*<sup>49</sup>. It may be seen as part of an effort to humanize public space and reclaim cities for people instead of cars.

The traffic-calming methods depend on a street’s classification. The appropriate methods can be used to create a shared circulation space where pedestrians and cyclists feel comfortable alongside vehicles. Most traffic-

<sup>48</sup> Street Manual in Dubai, edition1.

<sup>49</sup> Stephen M. Wheeler and Timothy Beatley, 2009

calming strategies rely on some combination of horizontal or vertical deflections in the flow of traffic and narrowing the street to slow vehicles down. (Table 2-16)<sup>50</sup>

<p><b>Road narrowing:</b> A narrow street can deter vehicular traffic from entering a street and force traffic to slow down to negotiate in a tight area; it can also convey to drivers that a street is a pedestrian-first zone-that although automobiles are allowed, they must yield to pedestrian.</p>	
<p><b>Woonerfs and shared streets:</b> The design concept involves removing traditional street elements like lanes, curbs, and road signs. This encourage drivers to be more aware of the people and buildings around them and creates a space that is safely shared by pedestrians, cyclists, and vehicles. By removing the lane lines from the center of a street, a broad expanse is created that gives pedestrians and cyclists more space.</p>	
<p><b>Integrating bicycles:</b> modifying striping and lane configurations can serve as an effective and inexpensive method to expand bike use by providing increase safety for cyclists.</p>	
<p><b>Traffic-calming design elements:</b> traffic-calming design elements aim to reduce vehicular traffic and speed while adding beauty to the shared environment, thus creating more pedestrian and bicycle friendly communities. Traffic-calming elements include:</p> <div style="display: flex; justify-content: space-around; text-align: center;"> <div> <p>Curbs extensions</p>  </div> <div> <p>Medians</p>  </div> <div> <p>Chicanes</p>  </div> <div> <p>Intersection treatments</p>  </div> </div>	

**Table 2-16: Traffic-calming practices and their benefits**

The benefits of traffic-calming are reducing the severity and number of accidents in urban areas, reducing local air and noise pollution and vehicle fuel consumption, improving the urban street environment for non-car-users, reducing the car’s dominance on roads by reclaiming road space for living space, reducing the barrier effects of motor traffic on pedestrian and cycle movement, and enhancing local economic activity by creating a better environment for people.<sup>51</sup>

<sup>50</sup> S. Bry Sarte, 2010.

<sup>51</sup> Stephen M. Wheeler and Timothy Beatley, Op.Cit.

<b>Mobility Urban Quality of Life</b>	<b>Walkability and Cyclability</b>
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<b>Indicator</b>	<b>Toolbox for Measuring Indicator</b>	<b>Basic Need</b>	<b>General Goal</b>
<b>Walkable Network</b>	<b>Sidewalk Network Coverage</b>	Continues walkable network along both sides on streets that links the dwellings to diverse uses within the neighborhood.	Encourage pedestrian activity without excluding automobiles altogether.
	<b>Sidewalk quality</b>		
	<b>Safe Pedestrian Crossing</b>		
<b>Cycable Network and Facilities</b>	<b>Bicycle Lane Km</b>	Continues cycable network along the streets that links the dwellings to diverse uses within the neighborhood.	
	<b>Bicycle Facilities</b>		
<b>Traffic Calming</b>	<b>Speed Limit</b>	Reducing vehicle speeds within the neighborhood.	

**Table 2-17: Walkability and Cyclability’s indicators, basic needs and general goals.**

### **2-3-3 Public Transportation:**

Public transportation systems provide links between different parts of the built environment, connecting the city's residents with one another and with the services they need and want to access. An affordable, reliable, safe and attractive public transport system can increase city accessibility can encourage a reduction in the use of private motor vehicles; this in turn reduces congestion, traffic noise and the stress involved in commuting. Public transport that does not rely on fossil fuels can help reduce the impact of fuel pollution on the environment.

Public transit systems are struggling to compete with the private automobile the world over. The pattern of development and pattern of investment that favors the car has to change to one where urban form and its infrastructure encourages and supports public transport.

In general, the intensity and way of travelling may have important consequences for quality of life, since travelling enables one to fulfill various needs and goals, such as working, maintaining social relations, visiting leisure activities and attending classes.....etc.





#### **2-3-3-1 Use of Public Transport:**

The affordable, safe and attractive public transport system can reduce the use of private car.

#### **2-3-3-2 Variety of Transportation Choices:**

Developing multiple modes of transportation reduces overall car travel demand, which reduces traffic congestion and vehicle miles traveled (VMT). The benefits of these reductions include reduced energy consumption, reduced carbon monoxide generation, reduced greenhouse gas emissions, enhanced health and quality of life. Types or classes of transit services can be defined along a continuum according to types of vehicles, passenger-carrying capacities, and operating environments as shown in table (2-18):



<p><b>Paratransit</b></p> 	<p>The smallest carriers that fall between the private automobile and conventional bus in terms of capacities and service features. Often owned and operated by private companies and individuals.</p>
<p><b>Bus transit</b></p> 	<p>Urban bus transit services come in all shapes and sizes, but in most places they are characterized by 45 to 55 passenger that ply fixed routes on fixed schedules. Because they share road space, buses tend to be cheaper and more adaptive than rail services. Bus transit is generally a less efficient user of energy and emits more pollution than urban rail services.</p>
<p><b>Trams and light rail transit</b></p> 	<p>Rail transit systems are mass transit's equivalents to motorized expressways, providing fast, trunk line connections between central business districts, secondary activity centers, and suburban corridors.</p>
<p><b>Heavy rail and metros</b></p> 	<p>In the world's largest cities, the big-volume transit carriers are the heavy rail systems, also called rapid rail transit, and know as metros in Europe, Asia and others. Metros work best in large, dense cities. In city cores, heavy rail systems almost always operate below ground, thus the names undergrounds and subways.</p>
<p><b>Commuter and suburban railways</b></p> 	<p>In terms of operating speed and geographic reach, commuter rail or suburban rail, stands at the top of the rail transit hierarchy. Commuter rail services typically link outlying towns and suburban communities to the edge of a region's central business district. Commuter rail is characterized by heavy equipment, widely spaced stations, and high maximum speeds that compete with cars on suburban freeways.</p>

**Table 2-18: Types or classes of transit services.**

**2-3-3-3 Public Transport Rate:**

The public transport must be comfortable and frequent, linked to fixed public transport nodes (train, bus, tram) and local centers.

**2-3-3-4 Appropriate public Transport:**

The public transport must be safe, convenient, efficient and affordable.

**2-3-3-5 Transit Facilities:**

Provide safe, convenient, and comfortable transit waiting areas and other facilities for transit users.

### 2-3-3-6 Ease of Access to Public Transport Facilities:

Public transport facilities, such as a bus stop or train station, must be accessible for all residents.

Mobility Urban Quality of Life		Public Transportation	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Use of public transport	Use of Public Transport	Minimize car dependency.	Encourage people to use public transportation.
Variety of Transportation Choices	Variety of Transportation Choices	Transit service options.	
Public Transport Rate	Public Transport Frequency	Frequency rate.	
Appropriate public Transport	Convenience of Public Transport	Provide safe, comfortable and affordable way of transportation.	
	Affordability of Public Transport		
	Safety of Public Transport		
Transit Facilities	Transit Facilities	Providing safe and comfortable waiting area.	
Ease of access to public transport facilities	Ease of Access to Public Transport Facilities	Accessible public transport.	

Table 2-19: Public Transportation’s indicators, basic needs and general goals.

### **2-3-4 Traffic Load:**

Humans travel more and more, longer and longer, and further and further than ever before<sup>52</sup>. The continued high dependence on motor vehicles has a negative impact on cities. Issues include congestion pressures with their associated delays in travel time and individual stress, a high human cost through crashes and fatalities, and poor air quality due to vehicle emissions particularly at busy intersections at peak travel times. Increasing traffic volumes also place demand on existing road networks; new road development to meet traffic demand can potentially divide communities and use valuable land that could be utilized for other purposes.

#### **2-3-4-1 Traffic Volume:**

There has been a dramatic increase in private car ownership in Cairo in the last quarter century. A recent report by Business Monitor International predicts that total automotive sales will increase from 2009 to 2014 by 148%.<sup>53</sup> Accordingly new developments must attempt to reduce the traffic volume that causes many problems such as air pollution, waste of energy, waste of time ...etc.

#### **2-3-4-2 Transportation Demand Management:**

Transportation demand management (TDM) is a broad term to describe strategies to change travel behavior. TDM recognizes that there are physical capacity limits to any transportation system, and it seeks to make the most efficient use possible of limited transportation resources.

A wide variety of policies have been proposed with the aims of alleviating the increasingly negative consequences of automobile use and, ultimately, of guiding society towards a better quality of life. Some of these policies are taxation, restrictions on parking places, investment in public transport, density, parking supply pricing, transit service, free transit passes, analysis tools and leadership and policies that prevent road accident, street noise and pollution.

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<sup>52</sup> Garling and Steg, 2007.

<sup>53</sup> UN-Habitat and American University in Cairo, 2011.

Mobility Urban Quality of Life		Traffic Load	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Traffic Volume	Traffic Flow	Reduce traffic volume.	Reduce traffic congestion.
	Motor Vehicle Ownership		
	Means of Travel to Work		
	Distances Travelled by Mode of Transport		
	Population Travelling Outside Their City to Work		
Transportation Demand Management	Measures for Transportation Demand Management	Provide policy options to reduce traffic and its danger effects	

Table 2-20: Traffic Load’s indicators, basic needs and general goals.

## 2-4 Social Urban Quality of Life:

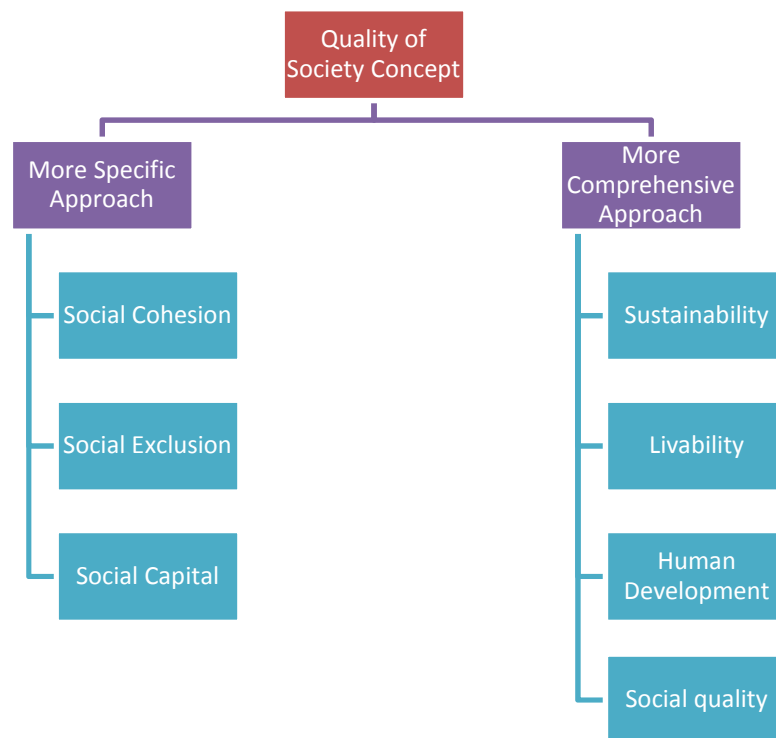
*“Urban space and society are clearly related, it is difficult to conceive of ‘space’ without social content and, equally, to conceive of society without a spatial component.”*<sup>54</sup>

Urban quality of life cannot be realized in the full sense if the urban setting is not acceptable to people as places to live, work and interact. The individuals within a society need to work together and interact in order for societies to be socially sustained. It is important to understand the term **“social urban quality of life”** that refers to the relationship between urban quality and

<sup>54</sup> Carmona and al., 2003.

social quality<sup>55</sup> as a prelude to reach ways of measuring social urban quality of life. It is necessary to have some insight into how urban quality may provide more beneficial social outcomes for different groups of people. Social urban quality of life may save public costs, promote happiness, and contribute to the kind of urban vitality that underpins modern economic competitiveness.

Social scientists argued that social quality should be envisaged with the notions of fairness, social cohesion and social inclusion. They further considered the dimensions of social quality with reference to social conditions and social relations between groups, networks, organizations and the state.<sup>56</sup> Walker and Van der Maesen<sup>57</sup> explained the quality of societies' concept as shown in (figure 2-23). They further delineate specific approaches to the quality of societies, such as social capital, from comprehensive ones, such as human development.



**Figure 2-23: Quality of Society Concept (A. Walker, L. van der Maesen, 2003)**

<sup>55</sup> “The extent to which citizens are able to participate in the social and economic life of their communities under conditions which enhance their well-being and individual potential” (Beck *et.al* 2001: 6-7).

<sup>56</sup> J. Yfantopoulos, the social quality of life, 2001, archives of Hellenic medicine 18(2).

<sup>57</sup> A. Walker, L. van der Maesen, 2003

The importance of a social dimension has also been underlined at policy level; towns and cities are first and foremost places where people live and work, not just as individuals but as communities. The urban areas must provide civilized places for people to live and for communities to prosper; the issue is learning how to build communities rather than just housing.

The concept of community is fundamental to people's overall quality of life and sense of belonging. Informal networks and how people connect with others are important for strong communities and social cohesion, confident and connected communities support social and economic development in cities. Strong communities have fewer social problems, are more adaptable in the face of change and when they do experience difficulty they have internal resources to draw upon. Population growth and change in cities impact on the relationships people have with one another and their sense of belonging to an area.

There are two distinct ways that contribute to social urban quality of life (figure 2-24), that are, the built environment that does not rely for its effectiveness on any specific behavior by the users of the scheme, and the human behavior that refers to actions of those living, working and enjoying their leisure time in a development. These two elements must be used properly in order to achieve urban quality of life. The human behavior could be classified as human behaviors that are not reliant on the physical environment and can be carried out in any given setting, and behaviors supported and affected by the physical environment. The extent to which the physical environment can positively or negatively affect behaviors to achieve social urban quality of life has always been debated.



**Figure 2-24: Built environment and human behavior that contribute to social urban quality of life. (the researcher, 2012)**

Carmona discusses the social dimension of urban design and focuses on six key aspects, namely, people and space, the public realm, neighborhoods, safety and security, accessibility and exclusion, and equitable environments<sup>58</sup>.

The social aspects of urbanization and economic development must be addressed as part of the sustainable urbanization agenda. The Habitat Agenda incorporates relevant principles, including the promotion of equal access to fair and equitable provision of services, social integration by prohibiting discrimination and offering opportunities and physical space to encourage positive interaction, gender and disability sensitive planning and management; and the prevention, and reduction and elimination of violence and crime<sup>59</sup>.

Taylor and Popenoe describe the urban neighborhood as serving six specific functions and needs<sup>60</sup>:

1. Social interaction, as a place to find friendship and support.
2. Social control, as a place in which residents see that others adhere to locally accepted norms.
3. A sense of security and ease, as a place where fear and threat are minimized.
4. Organizational ties, as a place for shared participation, both formally and informally.
5. A sense of collective identity, as a place of symbolic attachment.

<sup>58</sup> Carmona and al., 2003.

<sup>59</sup> The Habitat Agenda Goals and Principles,  
[http://www.unhabitat.org/downloads/docs/1176\\_6455\\_The\\_Habitat\\_Agenda.pdf](http://www.unhabitat.org/downloads/docs/1176_6455_The_Habitat_Agenda.pdf)

<sup>60</sup> Seweedan, 2007.

6. Socialization, as a focus for parent-child and child-to-child interaction.

Accordingly, it could be deduced that there are three recognizable concepts at the core of the notion of social urban quality of life. These are, Social Equity and Inclusion, Social Connectedness, and Behavioral Performance.

### **2-4-1 Social Equity and Inclusion:**

Within many cities, inequalities have deepened between rich and poor, included and excluded, and “formal” and “informal” city. The community should provide equitable opportunities and outcomes for all its members, particularly the poorest and most vulnerable members of the community.

Social justice recognizes the need for a rights-based approach, which demands equal access to ‘equal quality’ urban services, with the needs and rights of vulnerable groups appropriately addressed. Access to services is closely linked to access to land, sites for economic activities and shelter, as recognized by UN-HABITAT’s Global Campaign on Secure Tenure.<sup>61</sup>

Social inclusion in modern societies is the degree to which people are and feel integrated in institutions, organizations and social systems. It means promoting equality of opportunities and respecting difference in order to enable all to reach their potential.

Environment justice embraces the principle that all people and communities are entitled to equal protection by environmental, health, employment, housing, transportation, and civil right laws. Activists even convinced the EPA<sup>62</sup> to develop a definition of environmental justice. The EPA defines environmental justice as: The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of

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<sup>61</sup> Sustainable Urbanisation Achieving Agenda 21, 2002.

<sup>62</sup> Environmental Protection Agency is an agency of the federal government of the United States charged with protecting human health and the environment.



environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

It is argued that there is no magic bullet for creating sustainable, equitable, and peaceful cities<sup>63</sup>. But there are some necessary, if not sufficient conditions, for such transformations, namely, transparent governance, decent work or a basic income, innovative infrastructure to conserve the environment, intelligent land use with integrated community development, and social cohesion along with cultural diversity.

#### **2-4-1-1 Social Justice:**

The University of Groningen developed an instrument to assess effects of environment policies and/or conditions on quality of life in general. This instrument is based on research and theories on values and needs in relation to sustainable development and comprises 22 quality of life indicators. Among those indicators was social justice which has been described as “*Having equal opportunities and having the same possibilities and rights as others; being treated in a righteous way*’.<sup>64</sup>

Many people continue to be limited in their ability to participate in society. Places of learning, employment, leisure, facilities, services and housing continue to be inaccessible for several people such as the disabled, the elderly and certain social classes. Inaccessible design means that these people continue to be excluded, disadvantaged, discriminated against and deprived of the opportunity to fully participate as equal citizens in society.

It cannot be denied that quality of life must be supported by a social and economic system that offers equivalent access for all residents to affordable

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<sup>63</sup> Wheeler, Beatley, 2004.

<sup>64</sup> T. Garling, L. Steg, 2007

housing, social services, and employment and economic development opportunities.

According to The London Plan, 2004 *“Inclusive design creates an environment where everyone can access and benefit from the full range of opportunities available to members of society. It aims to remove barriers that create undue effort, separation or special treatment, and enables everyone to participate equally in mainstream activities independently, with choice and dignity.”*<sup>65</sup>

The policies must ensure that the supply of “land/ housing/ services/ facilities” matches demand and reflects the needs of the current and prospective community demographics. It is also important to make it easier for low-income residents to access land, housing, services and facilities through the formal system.

Housing is the largest single component of many households’ expenditure and is central to the ability to meet basic needs. When housing costs are too high relative to income, people have less to spend on other essentials such as food, power, healthcare and education. People facing substantial housing cost burdens may be forced to live in unsafe, unhealthy or inappropriate accommodation, thus, social justice indicates equal access to ‘equal quality’ of urban opportunities.

#### **2-4-1-2 Inclusive Communities:**

For the disabled, the elderly, those with young children in pushchairs, pregnant women, etc., various physical barriers inhibit their use of the public realm; therefore design of urban environment must remove all barriers that reduce their participation in daily life.

*“If people do not use a place because they feel uncomfortable or afraid there, the public realm is impoverished”*. said M. Carmona<sup>66</sup>.

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<sup>65</sup> The Papworth Trust, 2008.

<sup>66</sup> Carmona and al., 2003.

Parents find that having a baby puts great spatial limits on their public urban life; the urban environment must be developed with the expectation that parents and grandparents with babies and young children will be using them. Changes in scale in urban spaces to accommodate children add liveliness and diversity to the urban scene.

Access to public domain is especially difficult for the elderly. After age sixty-five, many men and women reap the results of a lifetime of low earnings, limited mobility, and self-sacrifice. In a study of 82,000 widows in Chicago, it was found that over half of old women did not go to public places, and over a fifth did not even go visiting.<sup>67</sup>

According to CASBEE for Urban Development, Universal Design is one of the basic indicators to express functionality on that spatial scale. LEED for Neighborhood consider that the objective of Universal Design is to enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.

Burton and Mitchell state that people of all ages benefit from design that helps older people, the disabled and women with children to use, understand, enjoy and find their way around their local streets. In other words, by creating environments that even older people with dementia can use effectively streets and public places will offer a better quality of life<sup>68</sup>.

Rudlin and Falk argue that a walkable city has a number of implications for design such as permeability, personal safety, legibility, taming the car, creative congestion, density, and public transport<sup>69</sup>.

Burton and Mitchell, identify six key street design principles that affect older people's ability to use and enjoy their local neighborhoods; streets need to be familiar, legible, distinctive, accessible, comfortable and safe<sup>70</sup>.

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<sup>67</sup> Wheeler, Beatley, 2004.

<sup>68</sup> Burton and Mitchell, 2006.

<sup>69</sup> D. Rudlin and N. Falk, 2009

Familiarity refers to the extent to which streets are recognizable to older people and easily understood by them. Familiar streets are hierarchical and long established with forms, open spaces, buildings and features in designs familiar to older people. Legibility refers to the extent to which streets help older people to understand where they are and to identify which way they need to go. Legible streets have an easy to understand network of routes and junctions with simple, explicit signs and visible, unambiguous features. Distinctiveness relates to the extent to which streets give a clear image of where they are, what their uses are and where they lead. Distinctive streets reflect the local character of the area and have a variety of uses, built form, features, colors and materials that give the streets and buildings their own identity within the overall character of the neighborhood. Accessibility refers to the extent to which streets enable older people to reach, enter, use and walk around places they need or wish to visit, regardless of any physical, sensory or mental impairment. Accessible streets have local services and facilities, are connected to each other, have wide, flat footways and ground level signal-controlled pedestrian crossings. Comfort refers to the extent to which streets enable people to visit places of their choice without physical or mental discomposure and to enjoy being out of the house. Comfortable streets are calm, welcoming and pedestrian-friendly with the services and facilities required by older people and people experiencing temporary or permanent incapacity. Safety refers to the extent to which streets enable people to use, enjoy and move around the outside environment without fear of tripping or falling, being run-over or being attacked. Safe streets have buildings facing onto them, separate bicycle lanes and wide, well-lit, plain, smooth footways.

People face a variety of threats in the urban environment: crime, terrorism, fast-moving vehicles, air pollution, water contamination, natural disaster, etc.... Security relates to the 'protection' of oneself, one's family and friends, and individual and communal property. Lack of security, perceptions of danger, and fear of victimization, threaten both the use of public realm and

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<sup>70</sup> Burton and Mitchell, 2006.

the creation of successful urban environments. A sense of security and safety is, therefore, an essential prerequisite of successful urban design.<sup>71</sup>

People can walk through a park in the daytime without fear. Newman argues that crime can be reduced if: “*designers can position windows, and entries, and prescribe paths of movement and areas of activity so as to provide inhabitants with continuous natural surveillance of the street*”.<sup>72</sup> Where designs create what Newman calls Defensible Space, people can protect their own communities naturally as they go about their daily lives rather than relying on security guards and police for protection. Finally, it can be deduced that inclusive communities aim at providing adequate urban space for the elderly, the disabled and women with children.

Social Urban Quality of Life		Social Equity and Inclusion	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Social Justice	Equal Access to Affordable Housing	Equal access to ‘equal quality’ of urban opportunities.	Prevent social inequalities and foster a socially inclusive community.
	Equal Access to Services and Facilities		
	Aspirations of Local Community		
Inclusive Communities	Familiarity	To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.	
	Legibility		
	Distinctiveness		
	Accessibility with Disabilities		
	Comfort		
	Personal Safety		

Table 2-21: Social Equity and Inclusion’s indicators, basic needs and general goals.

### 2-4-2 Social Connectedness:

This attribute reflects at how people come together, interact and network. Social connectedness provides an indication of community strength.

<sup>71</sup> Carmona and al., 2003.

<sup>72</sup> Macionis and Parrillo, 2007.

Connecting with other people and networks is important in the development and maintenance of strong communities and feelings of security.

The concept of community is fundamental to people's overall quality of life and sense of belonging. Informal networks and how people connect with others are important for strong communities and social cohesion. Confident and connected communities support social and economic development in cities.<sup>73</sup>

Social connectedness refers to the relationships people have with others and the benefits these relationships can bring to the individual as well as to society. It includes relationships with family, friends, colleagues and neighbors, as well as connections people make through paid work, sport and other leisure activities, or through voluntary work or community service.

#### **2-4-2-1 Social Integration:**

Cities are home to people from diverse cultures and lifestyles. Diversity impacts on how people communicate across cultures and on sense of connectedness and belonging. It is also of crucial importance that spatial diversification and mixed use of housing and services be promoted at the local level in order to meet the diversity of needs and expectations.

Macionis and Parrillo gave an example of a thriving neighborhood "St. Lawrence neighborhood in Toronto", this neighborhood effectively integrates people of all ages and different socioeconomic backgrounds living side by side. They add that planners achieved this mix by strategic placement of a range housing types. This mix nicely blends different levels of affordable housing ranging from private ownership to rent-geared-to-income (RGI) apartments. Finally, what will complement the successful mixture of people and housing types is vibrant economic activity that includes businesses, restaurants, stores, and theaters.<sup>74</sup>

It can be deduced from good practices of housing in Europe some principle concern the social integration issue, such as, varying typology (block

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<sup>73</sup> Quality of Life, [www.qualityoflifeproject.govt.nz](http://www.qualityoflifeproject.govt.nz)

<sup>74</sup> Macionis and Parrillo, 2007.

of flats – row houses – linked semi detached houses); mix of social housing and private development; mixed public and private development; mixed various types of housing tenure (rented + owner occupied); mixed use of space and activities (housing- offices- business activity and educational institutions)<sup>75</sup>.

It can be deduced also that a good mix of housing types, sizes and tenure is important in creating a basis for a balanced community. Also, a mix of housing types, uses and tenure can create more attractive residential environments with greater diversity in building forms and scales, and avoid the differentiation between individual dwellings and parts of the scheme based on their tenure.

#### **2-4-2-2 Social Network:**

Social network represents the interaction between residents within the community. The neighborhood offers to the residents the sense of connection with others and avoids the experience of social isolation.

All residents orient themselves to particular neighbors and specific citizens, the group of people to whom they wish to belong. These social networks comprise individuals and families who share a certain degree of ‘sameness’. People prefer to engage in social networks that are homogeneous in terms of class and ethnicity, household situation, and discourse on ‘good’ family life. The result of these social forces seems to be urban segregation between different like-with-like associations<sup>76</sup>.

Strong social networks between and among neighbors are an important factor that influence the stabilizing of neighborhoods.<sup>77</sup>

The neighborhood must provide spaces for socializing, meeting, temporary activities and events. The quality of the built environment has an important role in creating public spaces that are safe and welcoming and that provide focal points for people to experience community interaction.

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<sup>75</sup> C. Clemente, F. De Matteis, 2010

<sup>76</sup> Lia Karsten, 2007, housing studies vol.22,no1

<sup>77</sup> J. Thomas, 2004.

The space around buildings is as important as the buildings themselves. Any development should be able to provide some public open space, whether it is for children's play and adventure, or for reflection and learning. This brings economic, social, environmental and cultural benefits.

Oldenburg<sup>78</sup> identifies three types of spaces. The "first place" is the home and those that one lives with. The "second place" is the workplace, where people may actually spend most of their time, "third places", are "anchors" of community life that facilitate and foster broader and more creative interaction they are situated outside of home and work and open to the general public where people informally gather on a regular basis; they become established by people informally designating them as places to go to see and be seen. Third places need to be easily accessible for a lot of people, comfortable, available any time within the day or the week for people to drop by.

Oldenburg describes the social interaction in third places as "meet, trust, and form associations". They help to expand people's social networks, facilitating purposeful or happenstance meetings with others who would not normally meet at work or home. Target audience for the third places are preschool children, students, nonworking adults, working professionals, working parents<sup>79</sup>.

For Oldenburg, the core qualities of third places, which could also be regarded as core qualities of the public realm, include:<sup>80</sup>

- Being 'neutral ground', where individuals can come and go as they please;
- Being highly inclusive, accessible and without formal criteria of membership;
- Their 'taken-for-granted-ness' and low profile;
- Being open during, and outside, office hours;
- Being characterized by a 'playful mood';
- Providing psychological comfort and support;

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<sup>78</sup> Robert Oldenburg (born 1932) is an American urban sociologist who is known for writing about the importance of informal public gathering places for a functioning civil society, democracy, and civic engagement.

<sup>79</sup> Douglas Farr, 2008.

<sup>80</sup> Carmona and al., 2003.



- With conversation their ‘cardinal and sustaining’ activity, providing ‘political fora of great importance’.

Macionis and Parrillo argue that a successful neighborhood must contain a community center and a social network of civic organizations. Neighborhood must contain social services where people can interact and participate to social life. Social services include a social unit, community care and training center, girls club, social club for women, cultural services, religious services, arts, culture and social spaces for interaction<sup>81</sup>.

Electronic communication such as telephone and internet can facilitate social interaction and lifelong learning and overcome mobility barriers of participation. Both the telephone and the internet increase people’s ability to keep in touch with family and friends, and to work or conduct their business from home. The internet in particular is becoming an increasingly important means of accessing information and applying for services. Through social media on the internet, people can considerably expand their social networks.

### **2-4-2-3 Social Participation:**

Social participation is seen as the cornerstone for building and maintaining social capital, and in turn social capital is essential to avoid social exclusion. Participation provides an education in democratic practice, fosters a sense of belonging, leads to acceptance of collective decisions, encourages bureaucratic responsiveness and accountability, and brings collective knowledge and new ideas to bear on decision-making.<sup>82</sup>

“At the national level, each individual shall have the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available.”

Principle 10 – Agenda 21<sup>83</sup>.

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<sup>81</sup> Macionis and Parrillo, 2007.

<sup>82</sup> UN Habitat, 2009.

<sup>83</sup> M. Laar, 2011

Intelligent Urbanism views plans and urban designs, and housing configurations as expressions of the people for whom they are planned. The processes of planning must therefore be a participatory involving a range of stakeholders, besides the process must be transparent.

The overall human settlement objective is to improve their urban quality of life, such improvement should be based on technical cooperation activities, partnerships among the public, private and community sectors and participation in the decision-making process by community groups and special interest groups such as women, indigenous people, the elderly and the disabled. These approaches should form the core principles of national settlement strategies<sup>84</sup>.

Municipalities are also required to integrate urban environmental planning, legislation and management with broad-based participatory decision-making, thus legitimizing the role of civil society.<sup>85</sup>

In most developed countries, formal procedures for public participation in planning decisions have long existed. Well established representative democratic political systems in these countries enable citizen participation in urban planning process. Yet this remains tokenistic in some developed and transition countries.<sup>86</sup>

A technocratic blueprint approach to planning persists in many developed countries, inhibiting the direct involvement of citizens or other stakeholders in decision-making. Attempts to adopt participatory planning processes and revise planning legislation accordingly have been minimal in many developing countries.<sup>87</sup>

There are many tools and methods of participatory appraisal that have been used to identify needs and priorities. Those tools provide information inputs into decision-making rather than being itself a decision-making tool.

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<sup>84</sup> The Habitat Agenda Goals and Principles, Commitments and the Global Plan of Action

<sup>85</sup> Sustainable Urbanisation Achieving Agenda 21, 2002.

<sup>86</sup> UN Habitat, 2009.

<sup>87</sup> UN Habitat, Ibid.

Governments need to implement a number of minimum but critical measures with respect to the political and legal environment as well as financial and human resources, in order to ensure that participation is meaningful, socially inclusive and contributes to improve urban planning. These measures include<sup>88</sup>:

1. Establishing a political system that allows and encourage active participation and genuine negotiation.
2. Putting in place a legal basis for local politics and planning that specifies how the outcomes of participatory processes will influence plan preparation and decision-making.
3. Ensuring that local governments have sufficient responsibilities, resources and autonomy to support participatory processes.
4. Ensuring commitment of government and funding agents to resource distribution in order to support implementation of decisions arising from participatory planning processes, thus also making sure that participation has concrete outcomes.
5. Enhancing the capacity of professionals, in terms of their commitment and skills to facilitate participation, provide necessary technical advice and incorporate the outcomes of participation into planning and decision-making.

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<sup>88</sup> UN Habitat, *Ibid.*

Social Urban Quality of Life		Social Connectedness	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Social Integration	Government Housing Provision	Mixed various social derivations.	Promote a strong community.
	Housing Diversity Index		
	Mixed Type of Tenure		
Social Network	Provision of Open Space Network	Support a variety of human activities.	
	Provision of Cultural Facilities		
	Provision of Social Facilities		
	Provision of Religious Facilities		
	Provision of Telecommunication Services		
Social Participation	legislations for Supporting and Organizing Community Participation	Encourage responsiveness to community needs by involving the people who live or work in the community in project design and planning and in decisions about how it should be improved or how it should change over time.	
	Participation in Planning Processes		
	Participation in maintenance and management		

Table 2-22: Social Connectedness's indicators, basic needs and general goals.

### 2-4-3 Behavioral Performance:

An understanding of the relationship between people ('society') and their environment ('space') is essential in urban design. The first idea to be considered is that of architectural or environmental determinism, where the claim is that the physical environment has a determining influence on human behavior.<sup>89</sup>

Urban design can be seen as a means of manipulating the probabilities of certain actions or behaviors occurring. Taking a probabilist or possibilist perspective, it can credibly be argued that environments with, for example, a

<sup>89</sup> Carmona and al., 2003.

high concentration of street-level doors, are more conducive to social interaction than those characterized by fortress-like structures with blank walls; similarly, residential neighborhoods where houses have front porches present a more gregarious setting than those where three-car garage doors face onto public space.<sup>90</sup>

#### **2-4-3-1 Public Awareness:**

The city can organize information days to raise awareness of the general public on their urban quality of life in order to participate to the upgrading of their community. In other words, people must to know more about their quality of life.

#### **2-4-3-2 Neighborhood Stability:**

Areas of high turnover are perceived to be unsettled and undesirable areas. High outflows of residents combined with low or no inflows can mean that an urban community will be literally unsustainable over time. Community stability is often associated with higher levels of social cohesion and associated benefits such as lower crime.

Levels of household tenure (ownership or renting) are a guide to population stability. Many people consider home ownership to be a goal, providing personal independence as well as stability and security for their families and a form of savings for retirement. While renting is often seen as less attractive, it may also be associated with a more mobile lifestyle and less traditional approaches to saving and investment<sup>91</sup>.

#### **2-4-3-3 Neighborhood Vitality:**

Design features have a role in supporting vitality of the neighborhood; building façades should be designed so that buildings reach out to the street and offer an ‘active’ frontage onto public space, adding interest and vitality to the public realm. As windows and doorways suggest a human presence, the more

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<sup>90</sup> Carmona and al., Ibid.

<sup>91</sup> Quality of Life, [www.qualityoflifeproject.govt.nz](http://www.qualityoflifeproject.govt.nz).

doors and windows onto public space the better. The interface needs to enable indoor and ‘private’ activities to exist in close physical proximity with outdoor and ‘public’ ones. Views into buildings provide interest to passers-by, while views output ‘eyes on the street’ and contribute to its safety. The number of doors/entrances generating activity directly visible from public space is a good indicator of the potential for a better street life.<sup>92</sup>

Social Urban Quality of Life		Behavioral Performance	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Public Awareness	Urban Quality of life Awareness	The awareness of general public on their urban quality of life.	Behavioral control.
	Secure Tenure	Sense of stability.	
Neighborhood Stability	Percent of Temporary Private Dwellings		
Neighborhood Vitality	Active Frontage	Vital public realm.	

Table 2-23: Behavioral Performance’s indicators, basic needs and general goals.

## 2-5 Psychological Urban Quality of Life:

Psychology is the study of the mind, occurring partly via the study of behavior. Psychologists are concerned with the inner workings of the individual; they study the drives, motives, habits, and personalities of people. Psychologists try to understand the environmental conditions under which humans will behave in a decent and creative manner.

<sup>92</sup> Carmona and al., 2004.

It is important to understand the way people react to places, and be aware of the factors involved in the perception of place such as the instinctive reaction of the individual to a place, the feeling of people towards the space, the inspiration of the space, the familiarity of the space and the spaces that can cause the individual to experience happiness, satisfaction, dissatisfaction or unhappiness. The individual's perception towards a space affects the individual's quality of life.

### **2-5-1 Community Identity:**

Identity is an object's distinction from other things, as a separable entity. In other words every place has some elements of uniqueness to create a sense of place and identity. Lynch defines 'identity of place' simply as that which provides 'individuality or distinction from other places'<sup>93</sup>.

A wide variety of factors are involved in developing the impression that a place belongs to particular people, factors such as the characteristics of a place with which people are proud to be associated<sup>94</sup>.

It is often argued that people need a sense of identity, of belonging to a specific territory and/or group; it is argued that the "identity, self-respect" is one of the quality of life indicators<sup>95</sup>.

Von Meiss identified three design strategies to assist the sense of identity for people and groups<sup>96</sup>:

- Creation of an environment responsive to, and based on the designer's deep understanding of the values and behavior of the people and groups concerned, and the environmental features crucial to their identity.
- Participation of future users in the design of their environment, this too, requires understanding of the designer-user gap.

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<sup>93</sup> Carmona and al., Ibid.

<sup>94</sup> R. Beer, 1990.

<sup>95</sup> Garling and Steg, 2007.

<sup>96</sup> Carmona and al, Op.Cit.

- Creation of environments that users can modify and adapt. The potential for group and individual personalization should be considered within the design process.

### **2-5-1-1 Urban Image:**

A neighborhood identity results from the layout of its streets, the cumulative impact of its buildings, landmarks, vistas, boundaries and focal points. These elements allow people to locate themselves within an urban area, provide points of orientation, and linger in the memory when they leave.

People normally need to have the feeling ‘I know where I am’, without it they can experience a sense of alienation. In part, people develop this feeling through using landmarks to orientate themselves, the landmarks are endless, and psychologists have shown that in a local neighborhood even small-scale objects, which to an outsider seem insignificant, such as shop on a corner, are the landmarks that make up our mental map of the area in which we live.<sup>97</sup>

Smart growth promotes development that uses natural and man-made boundaries and landmarks to create a sense of defined neighborhoods, towns, and regions.

### **2-5-1-2 Responsive Design:**

The development that responds to local character contributes to the reinforcing of its own identity. The site planner needs to know in detail about any existing houses in the project area and, in general terms, about any residential areas around it, to establish whether there are any characteristics which should be reflected in the new development.

The form or style of development must reflect objects or sites of interest on or near the project site. External color schemes should be carefully considered to reflect residents’ tastes.

A design that reflects and improves the site and its surroundings will help create a sense of character. It does not have to copy the style of

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<sup>97</sup> Beer, 1990.



surrounding architecture to belong to an area, but may benefit by responding to the scale and materials of surrounding buildings, the aspect of the site and particular views. Successful places tend to be those that have their own distinct identity. How a neighborhood looks affects how residents feel about where they live. Character and quality help increase community pride. The ability of a scheme to create a sense of place greatly depends on the quality of the buildings and the spaces around them. This not only needs architecture of a high standard but a strong landscape strategy; it is about character, identity and variety<sup>98</sup>.

### **2-5-1-3 Preserve Heritage Sites and Historical Remains:**

Beer argues that “*traces of the past should be seen by the site planner as a valuable cultural resource, not something to be bulldozed away in the interest of short-term profit*”<sup>99</sup> she adds that these traces are important because they add to the local sense of place. Historic environments and local landmarks can help give a neighborhood a strong sense of identity, attracting residents and investors.

### **2-5-1-4 Space Personalization:**

Each person is surrounded by an invisible bubble of personal space. People prefer to maintain themselves without overlapping with the bubbles of others. People will space themselves out often at fairly regular intervals.<sup>100</sup>

It is argued that the ‘Privacy’ is one of the quality of life indicators; it is described as “*Having the opportunity to be yourself, to do your own things and to have a place for your own*”<sup>101</sup>.

There are acceptable personal spaces that people prefer in different social settings. These differ with culture, but the distances that are acceptable in a local culture are important for the site planner to understand. A design must

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<sup>98</sup> Building for Life.

<sup>99</sup> A. R. Beer, 1990

<sup>100</sup> R. Beer, 1990.

<sup>101</sup> Garling and Steg, 2007.

allow people to perceive that they have sufficient space to choose between social interaction and privacy.<sup>102</sup>

In urban design terms, ‘privacy’ is usually defined in terms of selective control of access and interaction. Need for privacy and interaction varies among individuals, with respect to personality, life stage, etc., as well as across different cultures and societies. Privacy can be attained in a number of ways, including strategies involving physical distance, the use of visual or sonic ‘screens’, barriers and filters<sup>103</sup>.

Psychological Urban Quality of Life		Community Identity	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Urban Image	Identified Paths	Define neighborhood.	Evoking identity for any spaces.
	Identified Boundaries		
	Identified Focal Point		
	Identified Landmarks		
Responsive Design	Local Vernacular	The development responds to local character whilst reinforcing its own identity.	
Preserve Heritage Sites and Historical Remains	Preserve Heritage Sites and Historical Remains	Preservation heritage and historical Site Features.	
Space Personalization	Personal Territory	Creation of environments that users can modify and adapt.	
	Personal additions		
	Added Privacy		
	Entry Personalization		

Table 2-24: Community Identity’s indicators, basic needs and general goals.

<sup>102</sup> R. Beer, 1990.

<sup>103</sup> Carmona and al., 2004.

## **2-5-2 Pleasing Milieu:**

The total visual milieu of a housing scheme is an important component of resident satisfaction. 'Aesthetic beauty' is one of quality of life indicators; it is described as "*Being able to enjoy the beauty of nature and culture.*"<sup>104</sup> There can be no generally accepted rule as to what constitutes beauty. The differences of opinion in relation to aesthetic issues mean that the site planner almost inevitably has to consult expert opinion on the aesthetics of a culture. The visual-aesthetic character of the urban environment is derived not only from its spatial qualities but also from the color, texture and detailing of its defining surfaces.

### **2-5-2-1 Architectural Quality:**

Architectural quality is about being fit for purpose, durable, well built and pleasing to the mind and the eye. Good architecture has less to do with a particular style and more to do with the successful co-ordination of proportions, materials, color and detail. Windows need to be arranged to look good but also to benefit of the view and introduce light inside the home. Details need to be considered as an important part of the building and not as an add-on; particular care should be given to corners, roof lines and how the building meets the ground; these have a significant effect on the overall impression of a building.<sup>105</sup>

It is argued that façades must have character and coherence that acknowledge conventions and enter into a dialogue with adjacent buildings, they should have compositions that create rhythm and repose and hold the eye, have a sense of mass and materials expressive of the form of construction, they should also have substantial, tactile and decorative natural materials that weather gracefully, and finally they must have decoration that distracts, delights and intrigues<sup>106</sup>.

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<sup>104</sup> Garling and Steg, 2007.

<sup>105</sup> [www.buildingforlife.org](http://www.buildingforlife.org)

<sup>106</sup> Carmona and al., 2004.

### 2-5-2-2 Landscape Quality:

Landscaping and site layout contribute highly to resident satisfaction; most people base their notions of attractiveness on what they can see from their windows<sup>107</sup>. Well designed landscapes add quality, visual interest and color. On the other hand, poorly designed landscapes detract from well-designed developments.

Psychological Urban Quality of Life		Pleasing Milieu	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Architectural Quality	Architectural Quality	Good architecture.	Realize the visual-aesthetic.
Landscape Quality	Landscape Quality	Attractive outdoor scenery.	

Table 2-25: Pleasing Milieu's indicators, basic needs and general goals.

### 2-6 Economical Urban Quality of Life:

Economic Development helps to underpin quality of life and enhances prosperity in urban communities. People's ability to purchase goods and services, obtain adequate food and housing and participate in the wider community are some of the most important factors influencing quality of life in general.

<sup>107</sup> Marcus and Sarkissian, 1986.

## **2-6-1 Economic Development:**

Indicators of economic development provide important information on whether or not there has been a sustainable increase in living standards; such a rise implies increased per capita income, better education and health of local residents. This in turn helps stimulate further opportunities for economic growth and development within a community or nation.

As economic activity fluctuates, some groups are more likely to be vulnerable to unemployment, particularly the unskilled, those without qualifications and those living in areas of declining employment.

An increasing rate of productivity is associated with sustainable economic development, including international competitiveness, better employment opportunities and wellbeing for future generations and the more efficient use of natural resources<sup>108</sup>.

### **2-6-1-1 Employment:**

Paid employment is a major factor determining personal income, which in turn determines the ability of households to purchase goods and services. It also affects health, housing, education and crime outcomes. Employment is also related to an individual's ability to participate in social activities and enjoy a sense of belonging in his/her community.

### **2-6-1-2 Local Business:**

Locally owned businesses build strong communities by sustaining vibrant town centers, linking neighbors in a web of economic and social relationships, and contributing to local causes. More people have strong emotional arguments for supporting locally owned businesses. They list such reasons as better service and a wider choice of goods. Recent research has also shown that there is a strong economic reason to shop locally. Money spent at a locally owned business is more likely to stay in the region and have a greater

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<sup>108</sup> Quality of Life, [www.qualityoflifeproject.govt.nz](http://www.qualityoflifeproject.govt.nz).

economic impact than money spent at a national chain.<sup>109</sup> In addition, the local workforce needs to be well-educated and skilled to sustain growth and improve productivity.

Economical Urban Quality of Life		Economic Development	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Employment	Employment	Employment opportunities.	Create additional permanent jobs within the local area.
	Labor and Skills		
	Jobs-Housing Balance		
Local Business	Locally Owned Businesses	Promote local business.	
	Business Priority Sectors		
	New Business		

Table 2-26: Economic Development’s indicators, basic needs and general goals.

## 2-6-2 Economic Standard of Living:

Levels of income and wealth are key determinates of individual or family wellbeing. Economic standard of living involves a complex combination of factors such as income, living costs, and household size and composition. The more prosperous an economy, the better off the residents of that economy are in terms of opportunities to gain a higher income, buy material possessions and access quality health care. In general, this leads to greater social connectedness, educational advancement, wider employment options and increased life expectancy.

### 2-6-2-1 Cost of Living:

A major component to any city’s quality of life is its cost of living. Affordable living and stable employment are important aspects to everyone’s

<sup>109</sup> Farr, 2008

quality of life. The physical community (housing, roads, schools, health care, recreation facilities, and water and sewer systems) must be efficient, affordable, and adequate to serve expanding community needs that enhance the quality of life.

Cost of living assesses the ability of people to purchase essential and nonessential goods and services including food, housing, health services and transport. Households on lower incomes are particularly vulnerable to changes in price.

The household contents and services are considered among household expenditure; the household contents and services incorporate the costs of energy, communications, appliances, furniture and furnishings, cleaning products, insurance and other services.

Housing is the largest single component of many households' expenditure and is central to the ability to meet basic needs. When housing costs are too high relative to income, people have less to spend on other essentials such as food, power, healthcare and education. People facing substantial housing cost burdens may be forced to live in unsafe, unhealthy or inappropriate accommodation. Public and Private sectors should work to reduce housing financing barriers for households.

Economical Urban Quality of Life		Economic Standard of Living	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Cost of Living	Housing Price Index	Individual's ability to purchase adequate housing and accommodations.	Affordable living.
	Cost of Services and Facilities		
	Mixed Way of Housing Finance		

Table 2-27: Economic Standard of Living's indicators, basic needs and general goals.

## **2-7 Political Urban Quality of Life:**

The national policies play a big role to support the quality of life through the development of urban policies, strategies, laws, legislations and promoting the creation of urban design codes and guidelines; in addition these policies have to promote the participation in the civil and political life.

### **2-7-1 Urban Policies and Strategies:**

While there may be some differences between countries, in general the word ‘policy’ refers to the broad approach and direction taken by a government (and other stakeholders) toward an issue which is usually written down in the form of a ‘White Paper’, policy report or similar official document. The word ‘strategy’ refers to the mechanisms used to implement such a policy, which typically includes laws, budgetary allocations, special funding channels, reorganization of functions within government and so on.

#### **2-7-1-1 Urban Quality of Life Policies:**

Any country has to develop clear national policies to support urban quality of life, and translate these policies into strategies that can be effectively implemented.

#### **2-7-1-2 Urban Quality of Life Strategies:**

The urban quality of life of neighborhoods and districts will be improved with urban design codes and development guidelines agreed by the community. Codes and guidelines manage change in a predictable manner.

#### **2-7-1-3 Urban Governance and Management:**

It is also possible to support good governance and urban management in cities and towns; this might involve providing capacity-building for decision-makers in cities and towns and/or technical support to improve the operational management of local governments; it might also involve training and technical support to enable the public, private and community sectors to work in



partnership, it may also involve supporting the introduction or improvement of planning and resource allocation systems, procedures and practices. Institutional development or reorganization may also be involved.

Most new urban developments are unsustainable and becoming increasingly so, putting at risk the quality of life of inhabitants. Conflicts and tensions in urban development can become a source of increasing pressures on city governments to deliver a better way forward. The integrated and collective response to urban governance contribute to enhance urban quality of life<sup>110</sup>.

Political Urban Quality of Life		Urban Policies and Strategies	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
Urban quality of Life Policies	Urban quality of Life Policies	Develop clear national policies to support urban quality of life.	New development that support quality of life.
	Efficient Law Enforcement	Improve urban quality of life in the neighborhood with urban design codes and legislations.	
Codes and Guidelines			
Urban Governance and Management	Good Governance and Good Urban Management	Provide the framework and general conditions for the realization of urban quality of life the neighborhood.	
	Integrated Urban Governance		

Table 2-28: Urban Policies and Strategies' indicators, basic needs and general goals.

<sup>110</sup> European Environment Agency, 2009.

## **2-7-2 Civil and Political Rights:**

Finally, the participation of residents in representative governance and decision making processes at local and national levels should be reviewed. Civil and political rights are a fundamental aspect of human rights, protecting the ability of people to participate in politics and decision making by expressing views, protesting, having input and voting.

Enabling democratic local decision making is one of the key purposes of local government and is also important in promoting the social, economic, environmental and cultural wellbeing of communities. Effective civil and political systems allow the communities to be governed in a way that promotes justice and fairness and supports people's quality of life.

The population in cities is becoming increasingly diverse, with more people from different ethnic groups and cultural backgrounds. It is important to understand how institutions and processes can continue to support people's civil and political involvement. This understanding can help in removing barriers that limit people's ability to exercise their civic rights and to participate in decision making<sup>111</sup>.

### **2-7-2-1 Community Involvement in Council Decision Making:**

Community involvement in decision making is critical for local government. For example, the introduction of new land uses into any area with well-established settlement patterns may cause problems and be perceived by people who live there as something that will detract from the quality of life.

Societies have stronger governance and institutional frameworks when elected representation reflects the community that it governs. Local governance bodies must be operated in a way that encourages the formal involvement of all groups in society<sup>112</sup>.

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<sup>111</sup> Quality of Life, [www.qualityoflifeproject.govt.nz](http://www.qualityoflifeproject.govt.nz).

<sup>112</sup> Quality of Life, *Ibid*.

Political Urban Quality of Life		Civil and Political Rights	
Indicator	Toolbox for Measuring Indicator	Basic Need	General Goal
<b>Community Involvement in Council Decision Making</b>	<b>Understanding How Councils Make Decisions</b>	Participation of residents in representative governance and decision making processes at local and national levels.	Community involvement in decision making.
	<b>Having a Say in What the Council Does</b>		
	<b>Confidence That Council Decisions Are in the Best Interests of the City</b>		
	<b>Public Influence on Council Decision Making</b>		
	<b>Representation by Women on Local Councils</b>		

Table 2-29: Civil and Political Rights' indicators, basic needs and general goals.

## Chapter Three: The Assessment Model's Set-Up

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After delineating the final set of urban quality of life indicators, an Urban Quality of Life Assessment Model for a neighborhood may be developed. Noting that this assessment model is discussed theoretically and could further be tested. The assessment methodology will be based on five main steps:

1. Hierarchical Structure of Decision Problem.
2. Network Structure of Decision Problem.
3. Finding the Indicators' Relative Weight.
4. Toolbox for Measure Indicators.
5. The Evaluation Model Results.

### **3-1 Hierarchical Structure of Decision Problem**

The first step for the assessment model is to establish a hierarchical structure for the decision problem in (figure 3-1), the first level represents the main target to be fulfilled, in this case it is urban quality of life; the second level represents the seven urban quality of life dimensions which are in their turn decomposed into 25 sub-dimensions. The third level represents urban quality of life indicators and finally the last level represents the toolbox for measuring indicators.





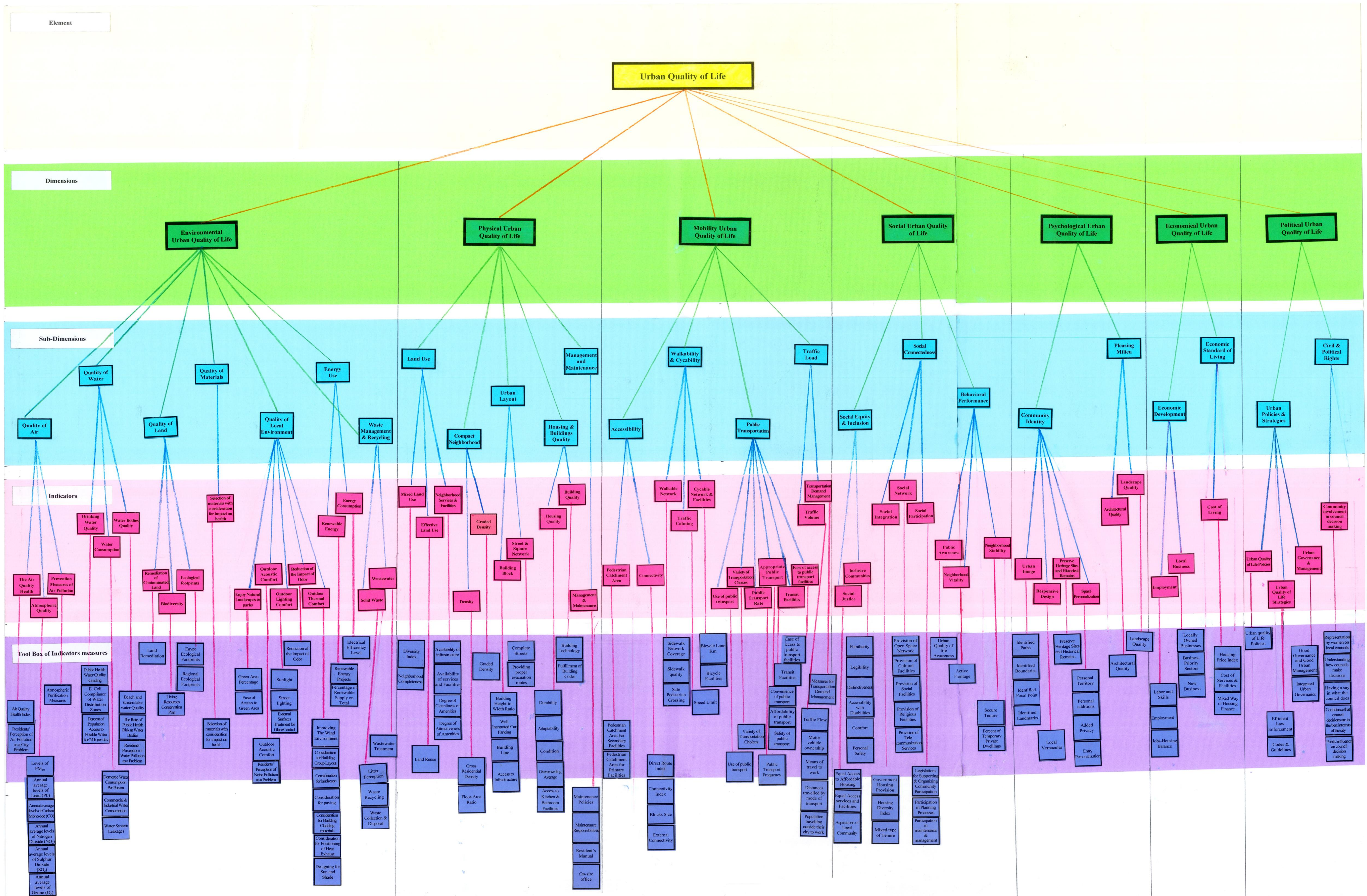


Figure 3-1: The Hierarchical Structure of Decision Problem (researcher, 2012)



### 3-2 Network Structure of Decision Problem

The urban quality of life is a complex and multi-disciplinary concept. Consequently, the decision problem must not be structured in a hierarchical manner, the interactions and dependencies that exist between the decision elements must be considered. So, there is a need to make an evolution in the decision model by passing from the linear hierarchical structure, to a network structure derived from the Analytic Network Process (ANP).

This technique that was elaborated by Thomas L. Saaty, makes it possible to consider a multiplicity of quantitative-qualitative criteria according to a network model. The Analytic Network Process (ANP) is particularly indicated when there is an abundance of problems and complex systems, characterized by dependencies and interactions.

The first step to implement the model requires the identification of a cluster of alternatives according to which the system could be calibrated (figure 3-2). To decrease complexity of decision model, the second level of the model which represents the seven dimensions will be deliberately omitted (figure 3-3).

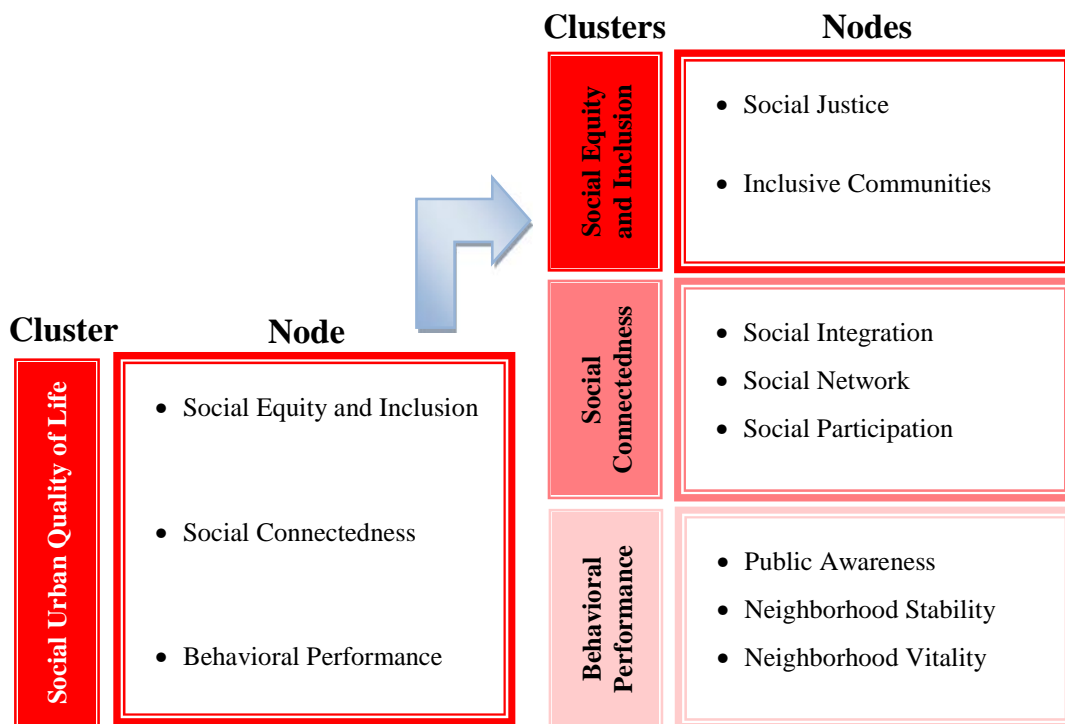


Figure 3-2: Example of a cluster of alternatives. Figure 3-3: The level of seven dimensions has been omitted

The next step is to construct the system. It is necessary to identify the nodes that compose the groups, called clusters. These clusters in their turn combine homogeneous elements. In this case the clusters are the urban quality of life sub-dimensions, namely, *Quality of Air, Quality of Water, Quality of Land, Quality of Materials, Quality of Local Environment, Energy Use, Waste Management & Recycling, Land Use, Compact Neighborhood, Urban Layout, Housing & Buildings Quality, Management & Maintenance, Accessibility, Walkability & Cyclability, Public Transportation, Traffic Load, Social Equity & Inclusion, Social Connectedness, Behavioral Performance, Community Identity, Pleasing Milieu, Economic Development, Economic Standard of Living, Urban Policies & Strategies, Civil & Political Rights*; the nodes are not less than sixty-two urban quality of life indicators that represent the actions to be performed to satisfy the cluster's requirements.

Then the inter-relationships between the clusters and the nodes are identified (table 3-1). The following table points out, for each cluster, the possible relationships either inside the cluster or between the nodes belonging to different clusters. Obviously, the inter-relationships differ according to the project to be assessed (Appendix 2).

QUALITY OF AIR		
Indicators		Interaction with:
QA1	Atmospheric Quality	<b>QE:</b> Quality of Local Environment <b>HBQ:</b> Housing and Building Quality <b>SE:</b> Social Equity and Inclusion <b>PM:</b> Pleasing Milieu <b>BP:</b> Behavioral Performance
QA2	The Air Quality Health	
QA3	Prevention Measures of Air Pollution	
<b>Inner Connections</b>		<b>Outer Connections</b>
QA1	QA2	QE1, QE2, QE5 / HBQ1, HBQ2 / SE2 / PM2
QA2		HBQ1, HBQ2 / SE2 / BP2 / PM2
QA3	QA1, QA2	QE1, QE2, QE5 / HBQ1, HBQ2 / PM2

**Table 3-1: Inner and outer connections between nodes.**

The following chart (figure 3-4) represents the suggested inter-relationships between nodes (the urban quality of life indicators) and the clusters (the urban quality of life sub-dimensions). The light blue arrows,



located over each group, come out from a cluster and re-enter the same, these point out the retro-action or loop effect and emphasize the link between indicators of the same group. The green arrows represent the bi-directional relationships that are the reciprocal influence existing between the nodes belonging to different clusters, while the red arrows identify the mono-direction of the influences between nodes (Appendix 3).

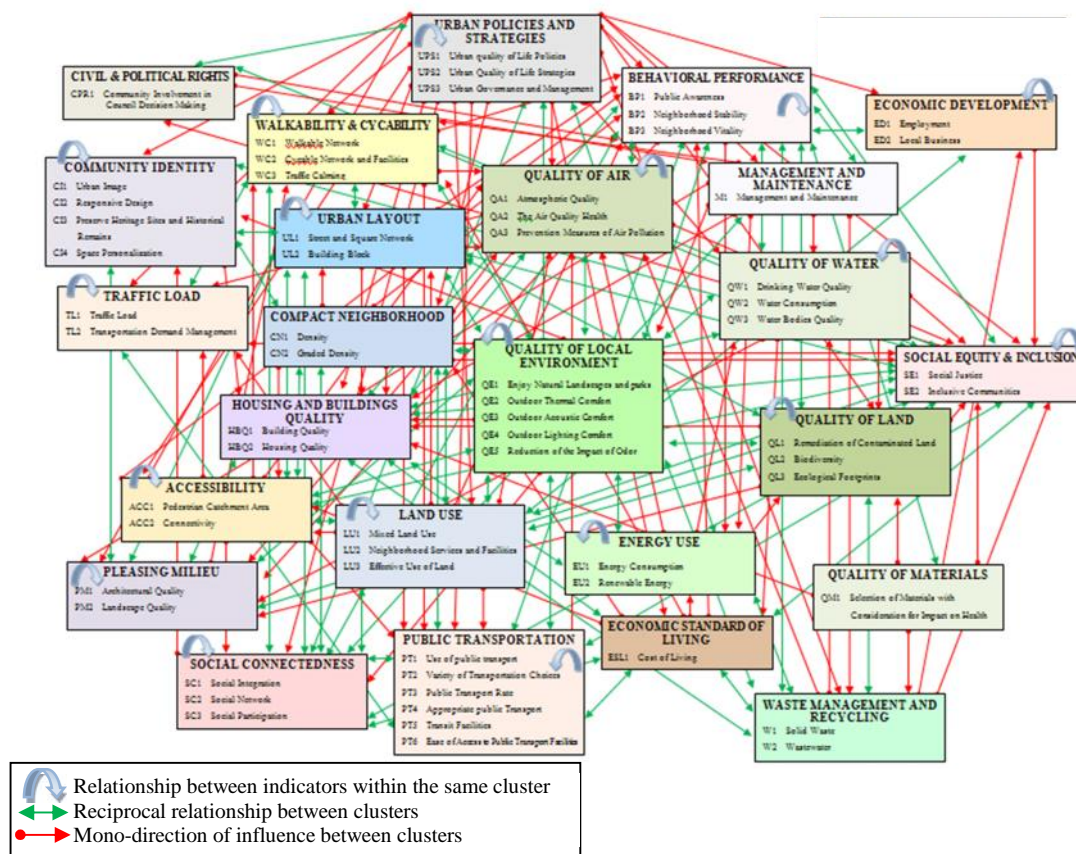


Figure 3-4: The network structure of the decision problem-Appendix 3. (the researcher).

### 3-3: Finding the Indicators' Relative Weight

The objective of this step is to find the relative weight that each node (indicator) has with respect to the totality of the decision system by using the Analytical Network Process (ANP). This study suggests that the relative weight of indicators will differ according to the assessed area.

The simulation of the ANP evaluation process must be carried out during a focus group, noting that the participants are to be selected according to the assessed area.

Two typologies of questionnaires could be submitted during the workshop, they should be formed of a sequence of questions of comparison in couples of the decision elements, where participants are asked to evaluate the importance of two elements with respect to a third one, through a scale of values called Fundamental Scale of Saaty or Semantic Differential questionnaire, as previously described (figure 1-8).

- 1) Clusters Questionnaire, in which the comparison is expressed by the judgment of two sub-dimensions with respect to a third one.

Quality of Air																		
Housing & Building Quality	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Social Equity & Inclusion

- 2) Nodes Questionnaire, in which the judgment is expressed on the basis of the importance level of two indicators with respect to a third one where existing relationships between those indicators are previously proven in (figure 3-4).

Quality of Air																		
Compared with "QA3" (Prevention measures of air pollution)																		
QA1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	QA2

Quality of Air																		
Compared with "HBQ2" (Housing Quality)																		
QA1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	QA2
QA1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	QA3
QA2	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	QA3

Where the numerical value refer to:

<b>1</b>	Equally important	The two elements equally contribute to the goal accomplishment
<b>3</b>	Moderately important	The assessment lightly supports one element
<b>5</b>	Strongly important	The assessment strongly supports one element
<b>7</b>	Very strongly important	The element predominance is strongly demonstrated
<b>9</b>	Extremely important	One element evidence belongs to the highest level
<b>2, 4, 6 and 8</b> used as intermediate values when there is not agreement between preferences		

The results attributed in this phase of double comparison between elements will be subsequently reported in the SuperDecisions software (figure 3-5, 3-6, 3-7, 3-8, and 3-9) which will proceed by processing the data. Thus, the weight of each indicator is established.

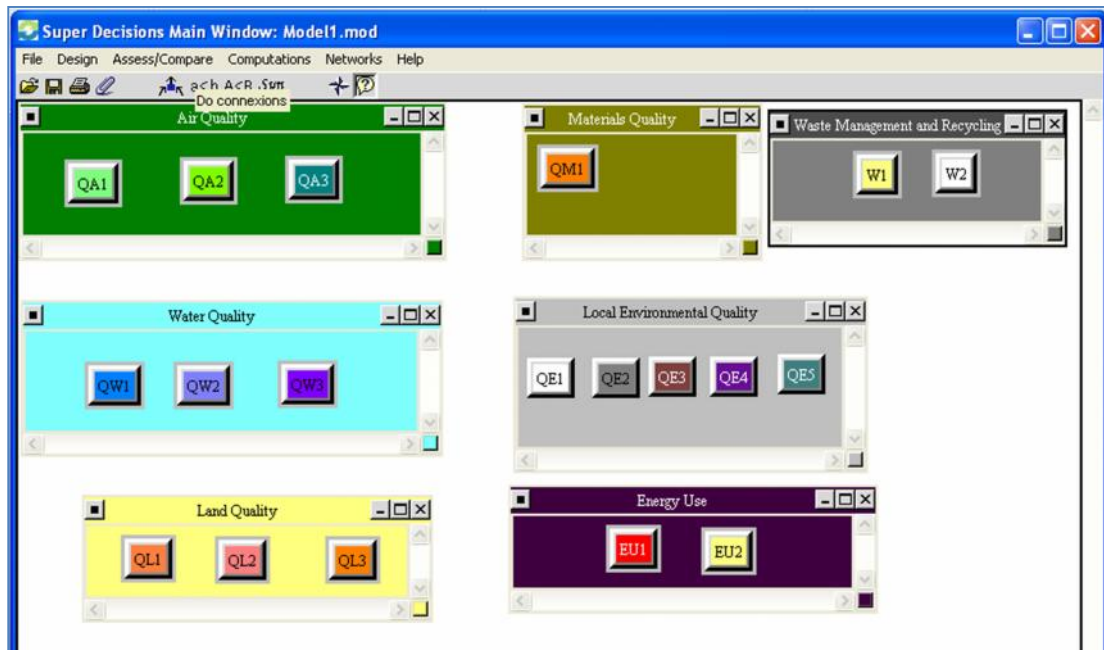


Figure 3-5: Design the clusters and nodes

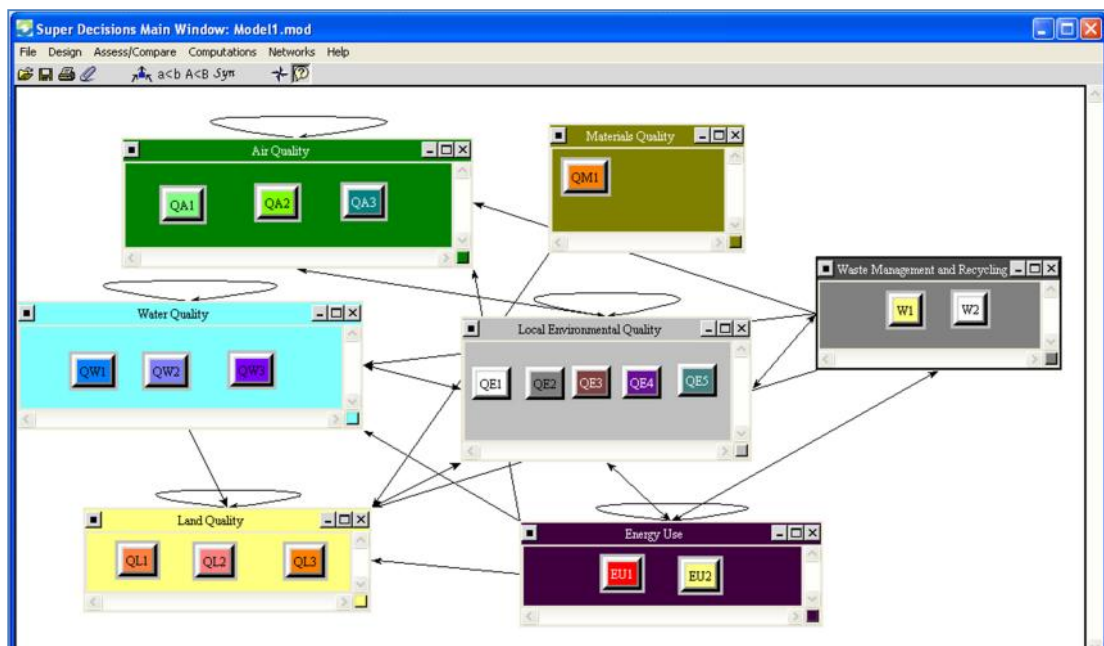


Figure 3-6: Find connections between clusters and nodes.

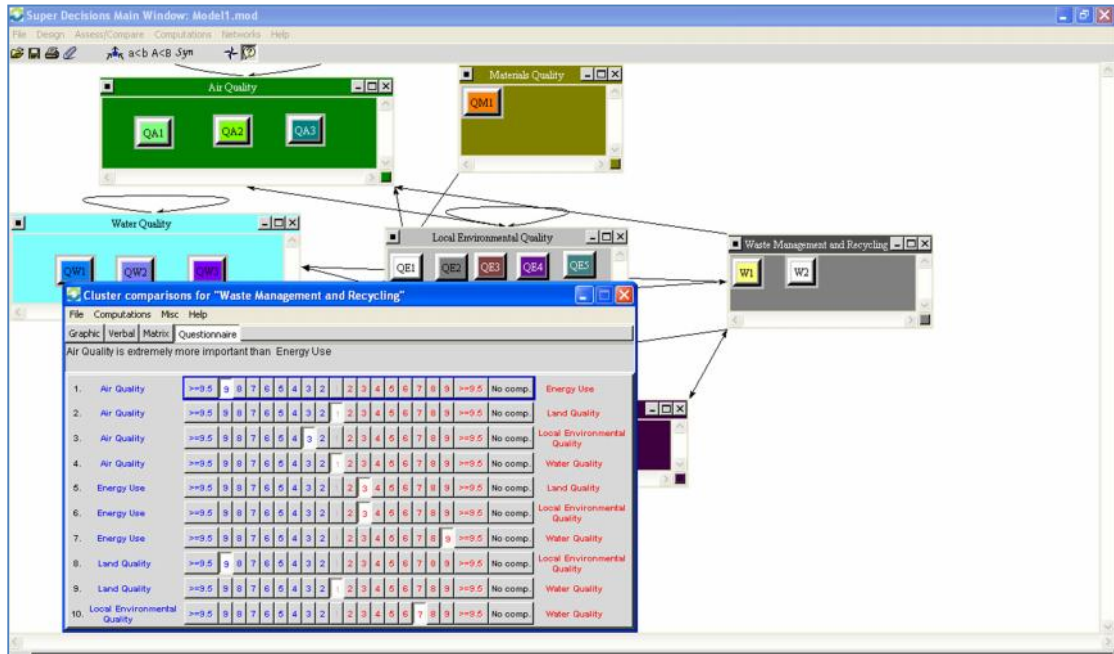


Figure 3-7: Putting the answers of first questionnaire, where the comparison will be between clusters.

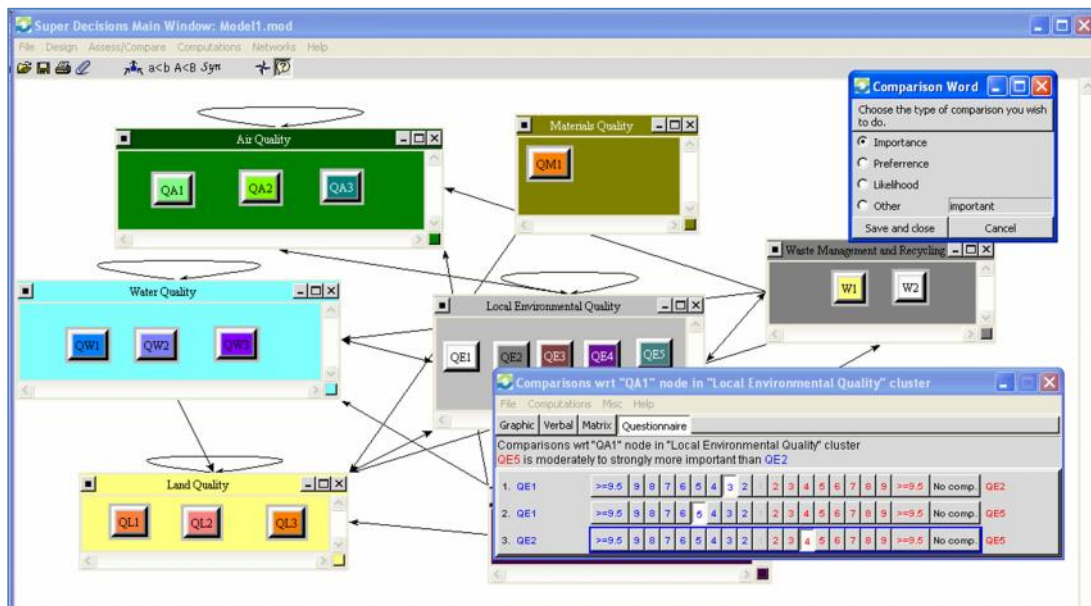


Figure 3-8: Putting the answers of second questionnaire, where the comparison will be between nodes.



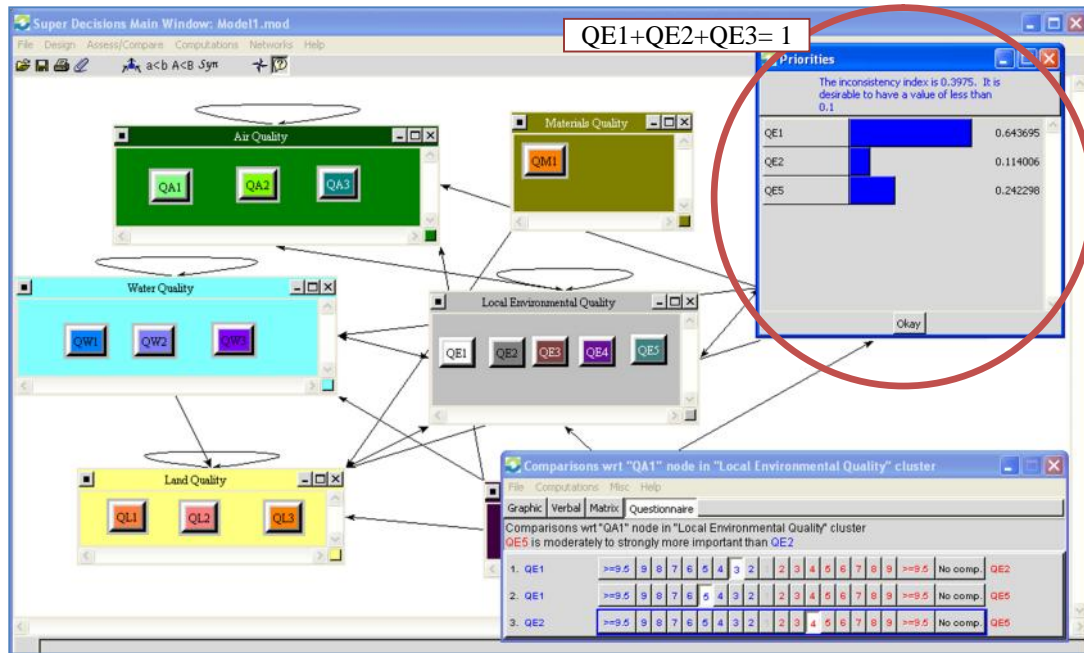


Figure 3-9: Priority of each indicator could be calculated within one cluster.

The SuperDecisions software permits to elaborate three typologies of Super-Matrix. First typology is the un-weighted Super-Matrix (figure 3-10) which is made up of the local priority vectors obtained from the comparisons of the nodes (nodes questionnaire).

Cluster Node Labels		Land Quality	Local Environmental Quality					Materials Quality	Waste Management and Recycling
		QL3	QE1	QE2	QE3	QE4	QE5	QM1	W1
Land Quality	QL3	0.000000	0.059247	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Local Environmental Quality	QE1	0.000000	0.000000	0.666667	1.000000	0.875000	1.000000	0.000000	0.000000
	QE2	0.000000	1.000000	0.000000	0.000000	0.125000	0.000000	0.000000	0.833333
	QE3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	QE4	0.000000	0.000000	0.333333	0.000000	0.000000	0.000000	0.000000	0.000000
	QE5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.166667
Materials Quality	QM1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Waste Management and Recycling	W1	0.000000	0.000000	0.000000	0.000000	0.000000	0.500000	0.000000	0.000000

Figure 3-10: The un-weighted Super-Matrix.

Second typology is the weighted Super-Matrix (figure 3-11), where the local priority vectors in the un-weighted Super-matrix have been multiplied

times the cluster weights obtained from the comparisons of the clusters (clusters questionnaire). The process here is to multiply every element in a component of the un-weighted super matrix by the corresponding component value in the cluster matrix (figure 3-12). The result of weighted Super-Matrix is that the priority vectors in each column are weighted by their cluster importance weight and this makes each column stochastic<sup>1</sup> (i.e., sum to 1) in the weighted Super-Matrix.

Cluster Node Labels		Land Quality	Local Environmental Quality					Materials Quality	Waste Management and Recycling
		QL3	QE1	QE2	QE3	QE4	QE5	QM1	W1
Land Quality	QL3	0.000000	0.003413	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Local Environmental Quality	QE1	0.000000	0.000000	0.666667	1.000000	0.370175	0.153224	0.000000	0.000000
	QE2	0.000000	0.187117	0.000000	0.000000	0.052882	0.000000	0.000000	0.082170
	QE3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	QE4	0.000000	0.000000	0.333333	0.000000	0.000000	0.000000	0.000000	0.000000
	QE5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.016434
Materials Quality	QM1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Waste Management and Recycling	W1	0.000000	0.000000	0.000000	0.000000	0.000000	0.132420	0.000000	0.000000

Figure 3-11: The weighted Super-Matrix.

Cluster Node Labels	Air Quality	Energy Use	Land Quality	Local Environmental Quality	Materials Quality	Waste Management and Recycling	Water Quality
Air Quality	0.166667	0.267058	0.000000	0.450183	0.000000	0.271368	0.000000
Energy Use	0.000000	0.294444	0.000000	0.161650	0.000000	0.042375	0.000000
Land Quality	0.000000	0.024948	0.833333	0.036493	1.000000	0.298570	0.593634
Local Environmental Quality	0.833333	0.092005	0.166667	0.118533	0.000000	0.066981	0.157056
Materials Quality	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Waste Management and Recycling	0.000000	0.249478	0.000000	0.204880	0.000000	0.000000	0.000000
Water Quality	0.000000	0.072067	0.000000	0.028261	0.000000	0.320705	0.249310

Figure 3-12: The cluster matrix.

<sup>1</sup> A stochastic matrix is a matrix that has non-negative real entries with each column summing to 1.

Third Typology is the Limit Super-Matrix (figure 3-13), obtained by multiplying the weighted Super-Matrix for itself a number of time tending toward the infinity until it stabilizes which means that all the columns in the matrix have the same value. The entries in a column are the priorities of the nodes (they are “weighted” by cluster weights) so each cluster’s nodes need to be normalized to make the sum of their priorities equal to one. As the result of limit Super-Matrix the priorities of all the nodes or urban quality of life indicators in the network model are obtained.

Cluster Node Labels		Land Quality	Local Environmental Quality					Materials Quality	Waste Management and Recycling
		QL3	QE1	QE2	QE3	QE4	QE5	QM1	W1
Local Environmental Quality	QE1	0.105525	0.105525	0.105525	0.105525	0.105525	0.105525	0.105525	0.105525
	QE2	0.086781	0.086781	0.086781	0.086781	0.086781	0.086781	0.086781	0.086781
	QE3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	QE4	0.031213	0.031213	0.031213	0.031213	0.031213	0.031213	0.031213	0.031213
	QE5	0.023627	0.023627	0.023627	0.023627	0.023627	0.023627	0.023627	0.023627
Materials Quality	QM1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Waste Management and Recycling	W1	0.006569	0.006569	0.006569	0.006569	0.006569	0.006569	0.006569	0.006569
	W2	0.006569	0.006569	0.006569	0.006569	0.006569	0.006569	0.006569	0.006569

Figure 3-13: The Limit Super-Matrix.

In particular, two types of “priority” have been obtained by the SuperDecisions software:

- The “Experimental Priorities”, which represent the not normalized weight of each indicator with respect to one (it is not normalized with respect to the cluster) (figure 3-14).
- The “Priorities”, that are the weight of each normalized indicator with respect to the importance of the cluster (figure 3-15). The Priority of each indicator takes place by dividing the value of each “Experimental Priorities” in a cluster by the total of value of all “Experimental Priorities” of this cluster.

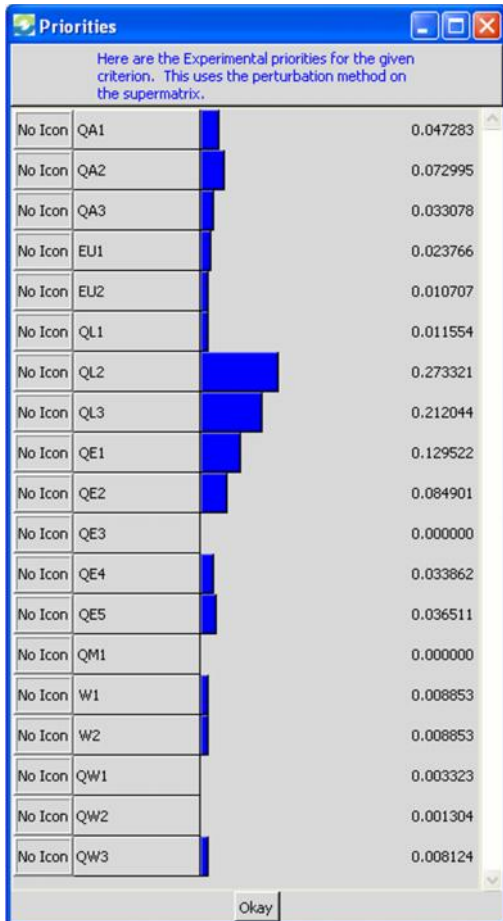


Figure 3-14: Experimental Priorities' table.



Figure 3-15: Priorities' table.

### 3-4 Toolbox for measure Indicators

It is important to establish how to measure the neighborhood urban quality of life indicators. Among those indicators there are qualitative indicators and quantitative indicators which have different measurement units. The problem is how to convert the outcome of the assessment of qualitative and quantitative indicators into a numerical value that could be added or compared. Also, every indicator has one or more measurement tool, as was mentioned previously in chapter two, which makes the issue more problematic.

This step is an attempt to design a measuring toolbox for each neighborhood urban quality of life indicator. Each tool will be represented through a table that contains some information useful measuring the indicator,




such as, the typology of the measurement tool (qualitative or quantitative), the process stage of the project where the measurement tool could be used (ex-ante, in itinere, ex-post), the requirement of the indicator that will be fulfilled; the way of assessment (objectively or subjectively), the model of assessment, the method of assessment, the existent methodologies and references used in designing this tool, laws and regulations used as reference for the assessment tool, and finally the points or the score of the assessment tool (ranging from 1 point to 5)

In the case of there are multiple tools for measuring any given indicator, the average value of these tools is to be taken. For example, if the toolbox of one indicator contains four tools, the sum of the value of those tools is to be divided by four, and if it contains two tools the sum of their value is to be divided by two.

The following tables (table 3-2 and 3-3) are example of assessment tools for measuring neighborhood urban quality of life indicators (noting that all tools are represented in appendix 4).

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>				
<b>QUALITY OF AIR</b>				
<b>QA 2-1</b>	<b>THE AIR QUALITY HEALTH</b>	<b>AIR QUALITY HEALTH INDEX</b>		
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>		Preservation of public health.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	The Air Quality Health Index (AQHI) is calculated based on the relative risks of a combination of common air pollutants which are known to harm human health (PM10, Pb, CO, NO2, SO2, O3).			
<b>METHOD</b>	Consultation of Ministry of Environment and Ministry of Health and Population on air quality and human health.			
<b>POINTS</b>	1	Very high health risk		
	2	High health risk		
	3			
	4	Moderate health risk		
	5	Low health risk		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Air quality health index ( <a href="http://www.toronto.ca/health/airquality/aqhi/about.htm">http://www.toronto.ca/health/airquality/aqhi/about.htm</a> )				
<b>LAWS AND REGULATIONS</b>				

**Table 3-2: A toolbox for measuring an environmental indicator.**

MOBILITY URBAN QUALITY OF LIFE				
ACCESSIBILITY				
ACC 2-1	CONNECTIVITY		DIRECT ROUTE INDEX	
TYPOLGY	QUANTITATIVE			
PROCESS STAGE	EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT	Increasing options for pedestrian activity			
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	$\text{Direct Route Index (DRI)} = \frac{\text{Length of Actual Path}}{\text{Length of Direct Path}}$			
METHOD	<p>A random plot (A) was selected as the origin of three different routes: the first leads to an exit point (B); the second route to the transit and commercial hub (C); and the third link to another random plot (D). Solid lines on the map represent the actual route, whereas dashed lines show direct routes. This model may be used for both vehicle and pedestrian routes.</p> 			
POINTS	1	An actual path that is more than 1.5 times its direct path.		
	2			
	3	An actual path that is less than or equal to 1.5 times its direct path.		
	4			
	5	The best possible result is an index of 1.		
EXISTENT METHODOLOGY AND REFERENCES				
The Pearl Rating System for Estidama Community Rating System-Design and Construction, Abu Dhabi Urban Street Design Manual				
LAWS AND REGULATIONS				

**Table 3-3: A toolbox for measuring a mobility indicator.**

### **3-5 The Evaluation Model Result**

Finally, after reaching the relative weight of each indicator using the ANP approach and designing the measuring toolbox for each indicator, this step tries to find the model's result. It designs an Excel Sheet (table 3-4) which contains different indicators, a toolbox for measuring those indicators, and the weight of each one.

Finally, the evaluation's methodology is based on few crucial steps:

1. Calculation each indicator through the use of its measuring toolbox.
2. Taking the average of the measuring toolbox value.
3. Multiplication of the result obtained for each indicator with its relative weight (ANP Priority).
4. Calculating the sum of the values obtained.

**Excel Sheet**

Indicators		Toolbox of Indicators Measurements		Points	Average	Weight	Score	
Quality of Air	QA1	Atmospheric Quality	QA1-1	Annual average Levels of PM <sub>10</sub>				
			QA1-2	Annual Average Levels of Lead (Pb)				
			QA1-3	Annual Average Levels of Carbon Monoxide (CO)				
			QA1-4	Annual Average Levels of Nitrogen Dioxide (NO <sub>2</sub> )				
			QA1-5	Annual Average Levels of Sulphur Dioxide (SO <sub>2</sub> )				
			QA1-6	Annual Average Levels of Ozone (O <sub>3</sub> )				
				<b>Total</b>	<b>Total/6</b>			
	QA2	The Air Quality Health	QA2-1	Air Quality Health Index				
			QA2-2	Residents' Perception of Air Pollution as a Problem				
				<b>Total</b>	<b>Total/2</b>			
	QA3	Prevention Measures of Air Pollution	QA3-1	Atmospheric Purification Measures				
				<b>Total</b>	<b>Total/1</b>			
						<b>1,00</b>		
Quality of Water	QW1	Drinking Water Quality	QW1-1	Public Health Water Quality Grading				
			QW1-2	E. Coli Compliance of Water Distribution Zones				
			QW1-3	%Population Access to Potable Water for 24 h/ day				
	QW2	Water Consumption	QW2-1	Domestic Water Consumption Per Person				
			QW2-2	Commercial and Industrial Water Consumption				
			QW2-3	Water Leak Detection				
	QW3	Water Bodies Quality	QW3-1	Beach and Stream/Lake Water Quality				
			QW3-2	The Rate of Public Health Risk at Water Bodies				
			QW3-3	Residents' Perception of Water Pollution as Problem				
						<b>1,00</b>		
Q. of Land	QL1	Remediation of Contaminated Land	QL1-1	Land Remediation				
	QL2	Biodiversity	QL2-1	Living Resources Conservation Plan				
	QL3	Ecological Footprints	QL3-1	Egypt Ecological Footprints				
			QL3-2	Regional Ecological Footprints				
							<b>1,00</b>	
Materials	QM1	of materials with consideration for impac	QM1-1	Selection of Materials with Consideration for Impact on Health				
						<b>1,00</b>		
Quality of Local Environment	QE1	Enjoy Natural Landscapes and parks	QE1-1	Green Area Percentage				
			QE1-2	Ease of Access to Green Area				
	QE2	Outdoor Thermal Comfort	QE2-1	Improving The Wind Environment				
			QE2-2	Consideration for Building Group Layout				
			QE2-3	Consideration for Landscape				
			QE2-4	Consideration for Paving				
			QE2-5	Consideration for Building Cladding Materials				
			QE2-6	Consideration for Positioning of Heat Exhaust				
			QE2-7	Designing for Sun and Shade				
	QE3	Outdoor Acoustic Comfort	QE3-1	Outdoor Acoustic Comfort				
			QE3-2	Residents' Perception of Noise Pollution as a Problem				
	QE4	Outdoor Lighting Comfort	QE4-1	Sunlight				
			QE4-2	External Surfaces Treatment for Glare Control				
			QE4-3	Street Lighting				
	QE5	Reduction of the Impact of Odor	QE5-1	Reduction of the Impact of Odor				
						<b>1,00</b>		
Energy Use	EU1	Energy Consumption	EU1-1	Electrical Efficiency Level				
	EU2	Renewable Energy	EU2-1	Renewable Energy Projects				
			EU2-2	Percentage of Renewable Supply on Total				
						<b>1,00</b>		
Wastes	W1	Solid Waste	W1-1	Litter Perception				
			W1-2	Waste Collection and Disposal				
			W1-3	Waste Recycling				
	W2	Wastewater	W2-1	Wastewater Treatment				
							<b>1,00</b>	
						<b>Total of Scores</b>	.....	

Table 3-4: Excel Sheet for Calculating the Model's Results.

## **Research Recommendations:**

This part presents the final recommendations for planners, decision makers and the users of assessment tool based on the research findings which will be summarized as follows:

1. The planners and decision makers should take into consideration individual quality of life when developing or redeveloping urban areas.
2. There is not agreement worldwide on a definition for what a quality of life should be or what components should be included. On the other hand, this concept is still new in Egypt and has no clear definition or settled criteria till now. Each group of people has their own definition of what constitutes quality of life. So, residents' preferences should be carefully considered by planners and decision makers when designing new communities or upgrading an existing one.
3. Decision makers should give special attention to possible effects on individual quality of life while designing and implementing sustainable development since some sustainable development issues are acceptable and others are unacceptable to individual.
4. Urban quality of life is a multidisciplinary concept that should be represented by a reticular relationship between their dimensions, so planners and decision makers should take into consideration all the seven dimensions (environmental, physical, mobility, social, physiological, economical, political) and their influences on each other.
5. The urban quality of life seven dimensions suggested by this study help the planners and decision makers to determine the vulnerable dimension in order to deal with.

6. The designed urban quality of life assessment tool helps planners and decision makers to explore the weakness and the strength of a neighborhood. In addition it helps them to study the residents' satisfaction towards some areas and some urban issues.
7. New urban planning theories and approaches have been appeared in the late twentieth as response to challenges and problems facing the conventional urban development especially those occurred after World War II. So, decision makers and planners should address these new trends in urban planning in order to avoid the problems occurred in new cities in Egypt.
8. It is important to underline that the relative weight of urban quality of life indicators differs between different groups of people. So, planners and decision makers should take into consideration these differences when designing new communities or upgrading an existing one. The relative weight should be achieved through a focus group whereas participants should be selected according to the target assessed area.
9. The relationship between the urban planning and individual quality of life could explain why people prefer to live in some areas rather than others; therefore the urban quality of life assessment tool proposed by the researcher could give the planners and decision makers a guideline for developing or redeveloping communities.

## **Related Themes for Future Research:**

The preceding discussion and results shed light on several themes for the future research that would be elaborated as follows:

1. Applying the proposed evaluation's model for different socioeconomic level.
2. Updating the evaluation's model indicators.
3. Design another evaluation model useful for regional scale.



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- , بإصدار قانون في شأن البيئة ولائحته التنفيذية.
- .
- بإصدار قانون التخطيط العمراني ولائحته التنفيذية.
- في شأن المحال الصناعية والتجارية وغيرها من المحال المنفذة لأحكامه.
- و الخاص بتنظيم التمويل

## **Appendix 1: Applications Approaches for Measuring Urban Quality of Life:**

### **1-1 Applications of the Hedonic Model Approach:**

Clark and Kahn used a two-stage hedonic model approach to estimate willingness to pay for urban cultural amenities such as museums, theater, dance, instrumental music and zoos. For a typical city, the marginal benefits from improving these cultural goods are estimated to be in the 0.85\$-57.9\$ million range for an additional theater and an additional zoo, respectively.<sup>1</sup>

In Giannias research, a structural approach to hedonic equilibrium models is used to estimate a quality of life ranking of five cities in the United States. Quality of life is a function of housing and neighborhood characteristics (number of rooms, air quality and travel time to work) and of city-wide amenities. Resulting quality of life values and ranking are different from those implied by previous study.<sup>2</sup>

Hoong Chor Chin and Kok Wai Foong argue that the accessibility to schools, especially prestigious ones, is often recognized as an important attribute that determines housing prices. It is usually cited as a major selling point for new housing developments in Singapore. They explore the relationship between accessibility to prestigious schools and the value of housing properties using a hedonic housing price model based on data drawn from the sales records of individual housing transactions in Singapore for 4 years from 2000 to 2003. While traditional hedonic analysis have employed straight-line distance measurements to focal points such as the Central Business District, as an indicator of accessibility, this study employs accessibility measurements computed zones where the properties are located. The findings indicate that the accessibility to prestigious schools does affect residential property price, and it significantly explains the variation in housing prices in Singapore. However, these are not valued as highly as other attributes, such as neighborhood prestige and tenure

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<sup>1</sup> Journal of social sciences, 2009

<sup>2</sup> Journal of social sciences, 2009

of the property. Sensitivity studies of housing prices show that the extent of the influence varies with distances to the Central Business District, school enrollment, and performance ranking.<sup>3</sup>

Mixing land uses has become one of the key planning principles of the Smart Growth movement and other land use planning strategies. Yan Song and Gerrit-Jan Knaap analyze the prices of single family houses when mixed land uses are included in neighborhoods. They first develop several quantitative measures of mixed land uses through the use of Geographic Information System (GIS) data and compute these measures for various neighborhoods in Washington County, OR. They then incorporate those measures in a hedonic price analysis. They conclude from this research that housing prices increase with their proximity to-or with increasing amount of –public parks or neighborhood commercial land uses. They also find, however, that housing prices are higher in neighborhoods dominated by single family residential land use, where non-residential uses were evenly distributed, and where more service jobs are available. Finally, they find that housing prices tended to fall with proximity to multi-family residential units.<sup>4</sup>

Alastair Adair and al., focus in their study upon factors affecting the price structure of residential property in the Belfast Urban Area, examining the relative influence of property characteristics, soci-economic factors and the impact of accessibility. The model employs an accessibility index computed for each of 182 traffic zones and uses transaction data for a sample of 2648 residential properties sold during 1996. Results indicate that accessibility is of little significance in explaining variation in house prices at a city-wide scale but at a sub-market level, particularly in lower-income areas, accessibility can be an important influence. At the end, the analysis highlights the importance of investigation at a sub-market level and draws conclusions regarding the complexity of relationships within an urban area.<sup>5</sup>

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<sup>3</sup> Influence of school accessibility on housing values, 2006

<sup>4</sup> Measuring the effects of mixed land uses on housing values, 2004

<sup>5</sup> House prices and accessibility :the testing of relationships within the Belfast urban area, 2000

## **1-2 Applications of the Life Satisfaction Approach:**

McCrea et al used survey data collected from households living in the Brisbane-South East Queensland region, a rapidly growing metropolis in Australia. Path analysis is used to test links between urban residents' assessment of various urban attributes and their level of satisfaction in three urban domains - housing, neighborhood or local area, and the wider metropolitan region - moderated by selected demographic characteristics of respondents. The analysis also shows the relative contribution of those urban domains to overall life satisfaction. Neighborhood satisfaction is shown to be much less important in predicting overall life satisfaction than is satisfaction with housing and the region. However, neighborhood satisfaction impacts directly on overall life satisfaction, mediated by regional satisfaction and housing satisfaction. In predicting regional satisfaction, the cost of living and government service provision are shown to be most important, with pollution important for younger people and parents, while improvements to transport systems are more important for the baby boomer generation. Neighborhood satisfaction is best predicted by neighborhood interaction and perceived crime, with neighborhood interaction being more important for older people, while perceived crime is more important for younger and single people. Access to facilities is a poor predictor of neighborhood satisfaction, except for parents. Satisfaction with housing is shown to be best predicted by housing age, temperature and home ownership. However, larger homes are important for parents, while young people prefer smaller homes. The importance of various urban attributes does not vary between genders. While material concerns like the cost of living and the provision of services are shown to be primary factors underlying overall satisfaction with urban living, the importance of environmental issues and demand for smaller homes might be expected to increase over time.<sup>6</sup>

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<sup>6</sup> McCrea et al., 2005.

### **1-3 Applications of Combining the Hedonic and (LS) Approaches:**

Eduardo Lora et al try to find criteria to prioritize policy actions for improving the quality of life in the region's rapidly growing cities. They use a methodology that combines the hedonic pricing method and the life-satisfaction approach to identify and value housing characteristics and neighborhood amenities and services. The valuations, in turn, are used to produce quality of life indices to compare neighborhoods and assess the potential impact of improved public amenities and services on housing prices and quality of life for different socioeconomic groups. They looked at eight cities in six Latin American countries as case studies.<sup>7</sup>

### **1-4 Applications of Conjoint Analysis Approach:**

Ulengin et al used a multidimensional approach to urban quality of life. The purpose of this study is to model the priorities, expectations and needs of the inhabitants of Istanbul, a city with a population of about 10 million, from a multidimensional perspective. In this way, effective allocation of the city's resources can be achieved to improve the quality of life for such a large number of people, which is the primary concern of the local authorities as well as the urban planners. For this reason, a survey is conducted in Istanbul so that the priorities of the inhabitants are revealed and the city where they would like to live is portrayed. The data obtained are used as input for hierarchical conjoint analysis. The survey is primarily based on the evaluation of hypothetical, experimentally designed city profiles for four different constructs on a 0-10 rating scale. The relative importance of the constructs is estimated through the Eigenvector approach.<sup>8</sup>

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<sup>7</sup> Eduardo Lora, Andrew Powell and others, 2010

<sup>8</sup> Ulengin, URBAN QUALITY OF LIFE IN ISTANBUL



### **1-5 Applications of Analytic Hierarchy Process Approach:**

Because of AHP flexibility, this approach has been successfully applied in different areas. In the field of regional and urban planning, including urban regeneration and sustainable development, AHP has been often used for evaluating alternative courses of action and/or design solutions, assessing their impacts on the built and natural environment.<sup>9</sup>

Sedigheh Lotfi and Karim Solaimani argued that researches of quality of life are concentrated mainly on the urban nature in the recent years and the urban quality of life gained many attentions in empirical studies. The concept of urban quality of life is a multi-dimensional and complex issue. So, needless to say that this concept can be used in planning when there is an appropriate and reliable framework for measuring. Their present study tried to create a framework on the base of Analytic Hierarchy Process (AHP) for objective measuring of urban quality of life and to apply it for a comparative study of two northern cities of Iran. The results showed that using analytic hierarchy process model creates opportunity to involving the different groups' views of urban users with respect to their duties and functions in the stage of criteria weighting. This process not only provided an appropriate bed for objective measuring of urban quality of life but it facilitated the participation of urban authorities in the process of measuring and analyzing the urban quality. Also one of the advantages of the model was its high level of clarity and simplicity which could be perceived by all urban decision makers.<sup>10</sup>

### **1-6 Applications of Analytic Network Process Approach:**

Giordano tried to develop an evaluation model and a user friendly assessment tool for the logistic projects based on recognized and agreed sustainable development principles. Through the study, she deduced a core set of environmental indicators. This set was submitted to a group of stakeholders belonging to the design, logistic and assessment fields. Stakeholders' view was useful for capturing the needs, skills and

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<sup>9</sup> Deakin and al., 2007.

<sup>10</sup> Journal of social sciences, 2009

availability of the final users. Their feedback was used to compose a final core set of indicators that represents the issues involved in the suggested environmental assessment model. The latter is based on the Analytic Network Process (ANP), an advanced version of the Analytic Hierarchy Process, which seems more appropriate for representing and supporting decision making in this field. The model consists of clusters, elements, interrelationship between clusters, and interrelationship between elements. It allows interactions and feedbacks within and between clusters and provides a process to derive ratio scales priorities from the elements. The results consist in the creation of a fully-operative decision making tool to support policy makers in the localization of logistic settlements, following a participative design process.<sup>11</sup>

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<sup>11</sup> Giordano, 2012.

## Appendix 2: Table of Inner and Outer Node Connections

QUALITY OF AIR		
Indicators		Interaction with:
QA1	Atmospheric Quality	<b>QE:</b> Quality of Local Environment <b>HBQ:</b> Housing and Building Quality <b>SE:</b> Social Equity and Inclusion <b>PM:</b> Pleasing Milieu <b>BP:</b> Behavioral Performance
QA2	The Air Quality Health	
QA3	Prevention Measures of Air Pollution	
<b>Inner Connections</b>		<b>Outer Connections</b>
QA1	QA2	QE1, QE2, QE5 / HBQ1, HBQ2 / SE2 / PM2
QA2		HBQ1, HBQ2 / SE2 / BP2 / PM2
QA3	QA1, QA2	QE1, QE2, QE5 / HBQ1, HBQ2 / PM2

QUALITY OF WATER		
Indicators		Interaction with:
QW1	Drinking Water Quality	<b>QL:</b> Quality of Land <b>QE:</b> Quality of Local Environment <b>HBQ:</b> Housing and Building Quality <b>SE:</b> Social Equity and Inclusion <b>BP:</b> Behavioral Performance <b>PM:</b> Pleasing Milieu <b>ESL:</b> Economic Standard of Living
QW2	Water Consumption	
QW3	Water Bodies Quality	
<b>Inner Connections</b>		<b>Outer Connections</b>
QW1		HBQ1, HBQ2 / SE1, SE2 / BP2
QW2	QW1, QW3	QL2, QL3 / HBQ1, HBQ2 / ESL1
QW3		QL1, QL2 / QE1 / HBQ1, HBQ2 / SE2 / BP2 / PM2

QUALITY OF LAND		
Indicators		Interaction with:
QL1	Remediation of Contaminated Land	<b>QE:</b> Quality of Local Environment <b>W:</b> Waste Management and Recycling <b>LU:</b> Land Use <b>UL:</b> Urban Layout <b>HBQ:</b> Housing and Building Quality <b>SE:</b> Social Equity and Inclusion <b>BP:</b> Behavioral Performance <b>PM:</b> Pleasing Milieu
QL2	Biodiversity	
QL3	Ecological Footprints	
<b>Inner Connections</b>		<b>Outer Connections</b>
QL1	QL2, QL3	QE1, QE5 / W1, W2 / LU3 / HBQ1, HBQ2 / BP2 / PM2
QL2	QL3	QE2 / UL1 / HBQ1, HBQ2 / BP2
QL3	QL2	SE1 / BP2

QUALITY OF MATERIALS		
Indicators		Interaction with:
QM1	Selection of Materials with Consideration for Impact on Health	<b>QL:</b> Quality of Land <b>W:</b> Waste Management and Recycling <b>HBQ:</b> Housing and Building Quality <b>SE:</b> Social Equity and Inclusion <b>BP:</b> Behavioral Performance
<b>Inner Connections</b>		<b>Outer Connections</b>
QM1		QL1, QL2 / HBQ1, HBQ2 / SE1, SE2 / BP2 / W1, W2

QUALITY OF LOCAL ENVIRONMENT		
Indicators		Interaction with:
QE1	Enjoy Natural Landscapes and parks	<b>QA:</b> Quality of Air <b>QW:</b> Quality of Water <b>QL:</b> Quality of Land <b>EU:</b> Energy Use <b>W:</b> Waste Management and Recycling <b>LU:</b> Land Use <b>CN:</b> Compact Neighborhood <b>UL:</b> Urban Layout <b>HBQ:</b> Housing and Building Quality <b>ACC:</b> Accessibility <b>WC:</b> Walkability and Cyclability <b>PT:</b> Public Transportation <b>SE:</b> Social Equity and Inclusion <b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance <b>CI:</b> Community Identity <b>PM:</b> Pleasing Milieu <b>UPS:</b> Urban Policies and Strategies
QE2	Outdoor Thermal Comfort	
QE3	Outdoor Acoustic Comfort	
QE4	Outdoor Lighting Comfort	
QE5	Reduction of the Impact of Odor	
Inner Connections		Outer Connections
QE1	QE2	QA1, QA2, QA3 / QW3 / QL1, QL2, QL3 / LU1, LU3 / CN1, CN2 / UL1, UL2 / HBQ1, HBQ2 / ACC1, ACC2 / WC1, WC2 / SE1, SE2 / SC2 / BP3 / CI1 / PM2
QE2	QE1, QE4	LU1, LU3 / CN1, CN2 / UL1, UL2 / HBQ1, HBQ2 / EU1 / ACC1, ACC2 / PT1 / BP2, BP3 / PM2 / UPS1, UPS2
QE3	QE1	LU1 / HBQ1, HBQ2 / WC1, WC2 / PT1 / BP2 / CI1, CI4 / PM2 / UPS1, UPS2
QE4	QE1, QE2	EU1 / UL2 / HBQ1, HBQ2 / WC1, WC2 / PT3 / SE1, SE2 / SC2 / BP2 / CI4 / PM2
QE5	QE1	QA1, QA2, QA3 / W1, W2 / HBQ1, HBQ2 / BP2 / CI1 / PM2 / UPS1, UPS2

ENERGY USE		
Indicators		Interaction with:
EU 1	Energy Consumption	<b>QA:</b> Quality of Air <b>QW:</b> Quality of Water <b>QL:</b> Quality of Land <b>QE:</b> Quality of Local Environment <b>W:</b> Waste Management and Recycling <b>HBQ:</b> Housing and Building Quality <b>UPS:</b> Urban Policies and Strategies
EU 2	Renewable Energy	
Inner Connections		Outer Connections
EU 1	EU2	QA1, QA2, QA3 / QL2, QL3 / QE2, QE4 / W1, W2 / HBQ1, HBQ2 / UPS1, UPS2, UPS3
EU 2	EU1	QA1, QA2, QA3 / QW2 / QL2, QL3 / QE2, QE4 / HBQ1, HBQ2 / UPS1, UPS2, UPS3

WASTE MANAGEMENT AND RECYCLING		
Indicators		Interaction with:
W 1	Solid Waste	QA: Quality of Air QW: Quality of Water QL: Quality of Land QE: Quality of Local Environment EU: Energy Use
W 2	Wastewater	HBQ: Housing and Building Quality SE: Social Equity and Inclusion BP: Behavioral Performance PM: Pleasing Milieu ED: Economic Development ESL: Economic Standard of Living
Inner Connections		Outer Connections
W 1		QA1, QA2, QA3 / QL1, QL2 / QE2, QE5 / EU1, EU2 / HBQ1, HBQ2 / SE1, SE2 / BP2 / PM2 / ED1, ED2 / ESL1
W 2		QW1, QW2, QW3 / QL1, QL2 / QE2, QE5 / EU1, EU2 / HBQ1, HBQ2 / SE1, SE2 / BP2 / PM2 / ESL1

LAND USE		
Indicators		Interaction with:
LU 1	Mixed Land Use	QA: Quality of Air QL: Quality of Land QE: Quality of Local Environment CN: Compact Neighborhood UL: Urban Layout
LU 2	Neighborhood Services and Facilities	HBQ: Housing and Building Quality ACC: Accessibility PT: Public Transportation TL: Traffic Load
LU 3	Effective Use of Land	SE: Social Equity and Inclusion SC: Social Connectedness BP: Behavioral Performance ED: Economic Development
Inner Connections		Outer Connections
LU 1	LU2, LU3	QA1, QA2 / QE1, QE2, QE3, QE5 / CN1, CN2 / UL1, UL2 / ACC1 / PT1, PT6 / TL1, TL2 / SE2 / SC1, SC2 / BP3 / ED1, ED2
LU 2	LU1, LU3	CN1 / CN2 / HBQ1, HBQ2 / PT1, PT6 / SE1, SE2 / SC2 / BP2, BP3
LU 3	LU1, LU2	QL1, QL2, QL3 / QE1, QE2, QE5 / CN1

COMPACT NEIGHBORHOOD		
Indicators		Interaction with:
CN 1	Density	<b>QA:</b> Quality of Air <b>QE:</b> Quality of Local Environment <b>LU:</b> Land Use <b>UL:</b> Urban Layout <b>HBQ:</b> Housing and Building Quality <b>ACC:</b> Accessibility
CN 2	Graded Density	<b>PT:</b> Public Transportation <b>TL:</b> Traffic Load <b>SE:</b> Social Equity and Inclusion <b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance <b>CI:</b> Community Identity <b>ESL:</b> Economic Standard of Living
<b>Inner Connections</b>		<b>Outer Connections</b>
CN 1		QA1, QA2 / QE1, QE2 / LU1 / UL1, UL2 / HBQ1, HBQ2 / ACC1, ACC2 / PT1, PT6 / TL2 / SE2 / SC2 / BP3 / CI1, CI2, CI4 / ESL1
CN 2		LU1 / ACC1 / PT1, PT6

URBAN LAYOUT		
Indicators		Interaction with:
UL 1	Street and Square Network	<b>QA:</b> Quality of Air <b>QL:</b> Quality of Land <b>QE:</b> Quality of Local Environment <b>ACC:</b> Accessibility <b>WC:</b> Walkability and Cyclability <b>PT:</b> Public Transportation
UL 2	Building Block	<b>TL:</b> Traffic Load <b>SE:</b> Social Equity and Inclusion <b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance <b>CI:</b> Community Identity <b>PM:</b> Pleasing Milieu
<b>Inner Connections</b>		<b>Outer Connections</b>
UL 1	UL2	QA1, QA2/ QL2 / ACC2 / WC1, WC2, WC3 / PT1, PT6 / TL1, TL2 / SE2 / SC2 / BP3 / CI1, CI2
UL 2	UL1	QE2 / ACC2 / WC1, WC2 / BP3 / CI1, CI2 / PM1, PM2

HOUSING AND BUILDINGS QUALITY		
Indicators		Interaction with:
HBQ1	Building Quality	QA: Quality of Air QW: Quality of Water EU: Energy Use W: Waste Management and Recycling
HBQ2	Housing Quality	SE: Social Equity and Inclusion BP: Behavioral Performance PM: Pleasing Milieu ESL: Economic Standard of Living
Inner Connections		Outer Connections
HBQ1		QA1, QA2 / QW2 / EU1, EU2 / W1, W2 / SE1, SE2 / PM1 / ESL1 /
HBQ2		QW1, QW2, QW3 / EU1, EU2 / W1, W2 / SE1, SE2 / BP2 / PM1 / ESL1

MANAGEMENT AND MAINTENANCE		
Indicators		Interaction with:
M1	Management and Maintenance	QW: Quality of Water QE: Quality of Local Environment EU: Energy Use W: Waste Management and Recycling HBQ: Housing and Building Quality WC: Walkability and Cyclability SC: Social Connectedness BP: Behavioral Performance PM: Pleasing Milieu
Inner Connections		Outer Connections
M1		QW1, QW2, QW3 / QE1, QE4 / EU1 / W1, W2 / HBQ1, HBQ2 / WC1, WC2, WC3 / SC3 / BP2 / PM1, PM2 /

ACCESSIBILITY		
Indicators		Interaction with:
ACC1	Pedestrian Catchment Area	QA: Quality of Air QE: Quality of Local Environment LU: Land Use CN: Compact Neighborhood UL: Urban Layout WC: Walkability and Cyclability
ACC2	Connectivity	PT: Public Transportation TL: Traffic Load SE: Social Equity and Inclusion SC: Social Connectedness BP: Behavioral Performance ESL: Economic Standard of Living
Inner Connections		Outer Connections
ACC1	ACC2	QA1, QA2 / QE1 / LU1 / CN1, CN2 / WC1, WC2 / PT1, PT6 / TL1, TL2 / SE1, SE2 / SC2 / BP3 / ESL1
ACC2	ACC1	QA1, QA2 / QE1 / UL1, UL2 / WC1, WC2 / PT1, PT6 / TL1, TL2 / SE1, SE2 / ESL1

<b>WALKABILITY AND CYCLABILITY</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>WC1</b>	Walkable Network	<b>QA:</b> Quality of Air <b>QE:</b> Quality of Local Environment <b>UL:</b> Urban Layout
<b>WC2</b>	Cycable Network and Facilities	<b>PT:</b> Public Transportation <b>TL:</b> Traffic Load <b>SE:</b> Social Equity and Inclusion
<b>WC3</b>	Traffic Calming	<b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance <b>ESL:</b> Economic Standard of Living
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>WC1</b>		QA1, QA2 / QE1, QE2, QE3 / UL1 / PT1, PT6 / TL1, TL2 / SE1, SE2 / SC2 / BP2, BP3 / ESL1
<b>WC2</b>		QA1, QA2 / QE1, QE2, QE3 / UL1 / PT1, PT6 / TL1, TL2 / SE1, SE2 / SC2 / BP2, BP3 / ESL1
<b>WC3</b>	WC1, WC2	QE1 / PT1, PT6 / TL1, TL2 / SE1, SE2 / BP2, BP3 / ESL1

<b>PUBLIC TRANSPORTATION</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>PT1</b>	Use of public transport	<b>QA:</b> Quality of Air <b>QE:</b> Quality of Local Environment <b>CN:</b> Compact Neighborhood
<b>PT2</b>	Variety of Transportation Choices	<b>TL:</b> Traffic Load
<b>PT3</b>	Public Transport Rate	<b>SE:</b> Social Equity and Inclusion
<b>PT4</b>	Appropriate public Transport	<b>SC:</b> Social Connectedness
<b>PT5</b>	Transit Facilities	<b>BP:</b> Behavioral Performance
<b>PT6</b>	Ease of access to public transport facilities	<b>ESL:</b> Economic Standard of Living
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>PT1</b>		QA1, QA2 / QE2, QE3 / TL1, TL2 / SE1, SE2 / SC2 / BP3
<b>PT2</b>	PT1, PT4	QA1, QA2 / QE2, QE3 / TL1, TL2 / SE1, SE2 / BP3
<b>PT3</b>	PT1, PT4	QA1, QA2 / QE2, QE3 / TL1, TL2 / SE1, SE2 / BP3
<b>PT4</b>	PT1	QA1, QA2 / QE2, QE3 / TL1, TL2 / SE1, SE2 / BP3 / ESL1
<b>PT5</b>	PT1, PT4	QA1, QA2 / QE2, QE3 / TL1, TL2 / SE1, SE2 / BP3
<b>PT6</b>	PT1, PT4	QA1, QA2 / QE2, QE3 / CN1, CN2 / TL1, TL2 / SE1, SE2 / BP3

<b>TRAFFIC LOAD</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>TL1</b>	Traffic Load	<b>QA:</b> Quality of Air <b>QE:</b> Quality of Local Environment <b>WC:</b> Walkability and Cyclability
<b>TL2</b>	Transportation Demand Management	<b>PT:</b> Public Transportation
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>TL1</b>	TL2	QA1, QA2 / QE2, QE3 / WC1, WC2, WC3 /
<b>TL2</b>		QA1, QA2 / WC1, WC2, WC3 / PT1, PT2, PT3, PT4, PT5, PT6 /



<b>SOCIAL EQUITY AND INCLUSION</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>SE1</b>	Social Justice	<b>LU:</b> Land Use <b>UL:</b> Urban Layout <b>HBQ:</b> Housing and Building Quality <b>ACC:</b> Accessibility <b>WC:</b> Walkability and Cyclability <b>PT:</b> Public Transportation
<b>SE2</b>	Inclusive Communities	<b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance <b>CI:</b> Community Identity <b>PM:</b> Pleasing Milieu <b>ESL:</b> Economic Standard of Living <b>CPR:</b> Civil and Political Rights
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>SE1</b>	SE2	LU1, LU2 / UL1, UL2 / HBQ1, HBQ2 / WC1, WC2, WC3 / PT2, PT3, PT4, PT5, PT6 / SC1, SC2, SC3 / BP2, BP3 / CI1, CI2, CI4 / ESL1 / CPR1
<b>SE2</b>	SE1	UL1, UL2 / HBQ1, HBQ2 / ACC1, ACC2 / WC1, WC2, WC3 / PT2, PT3, PT4, PT5, PT6 / SC1, SC2, SC3 / BP2, BP3 / CI1, CI2, CI4 / PM1, PM2

<b>SOCIAL CONNECTEDNESS</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>SC1</b>	Social Integration	<b>LU:</b> Land Use <b>CN:</b> Compact Neighborhood <b>UL:</b> Urban Layout <b>M:</b> Management and Maintenance
<b>SC2</b>	Social Network	<b>WC:</b> Walkability and Cyclability <b>PT:</b> Public Transportation <b>SE:</b> Social Equity and Inclusion <b>BP:</b> Behavioral Performance
<b>SC3</b>	Social Participation	<b>CI:</b> Community Identity <b>ESL:</b> Economic Standard of Living <b>UPS:</b> Urban Policies and Strategies <b>CPR:</b> Civil and Political Rights
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>SC1</b>	SC2	LU1 / CN1, CN2 / UL1, UL2 / WC1, WC2, WC3 / PT1, PT2, PT3, PT4, PT5, PT6 / SE1 / BP2, BP3 / CI1 / ESL1 / CPR1
<b>SC2</b>	SC1, SC3	LU1, LU2 / CN1, CN2 / UL1, UL2 / WC1, WC2, WC3 / PT1, PT2, PT3, PT4, PT5, PT6 / BP2, BP3 / ESL1 / CPR1
<b>SC3</b>	SC1, SC2	LU1, LU2, LU3 / M1 / SE1, SE2 / BP1, BP2 / CI1, CI2, CI4 / UPS3 / CPR1

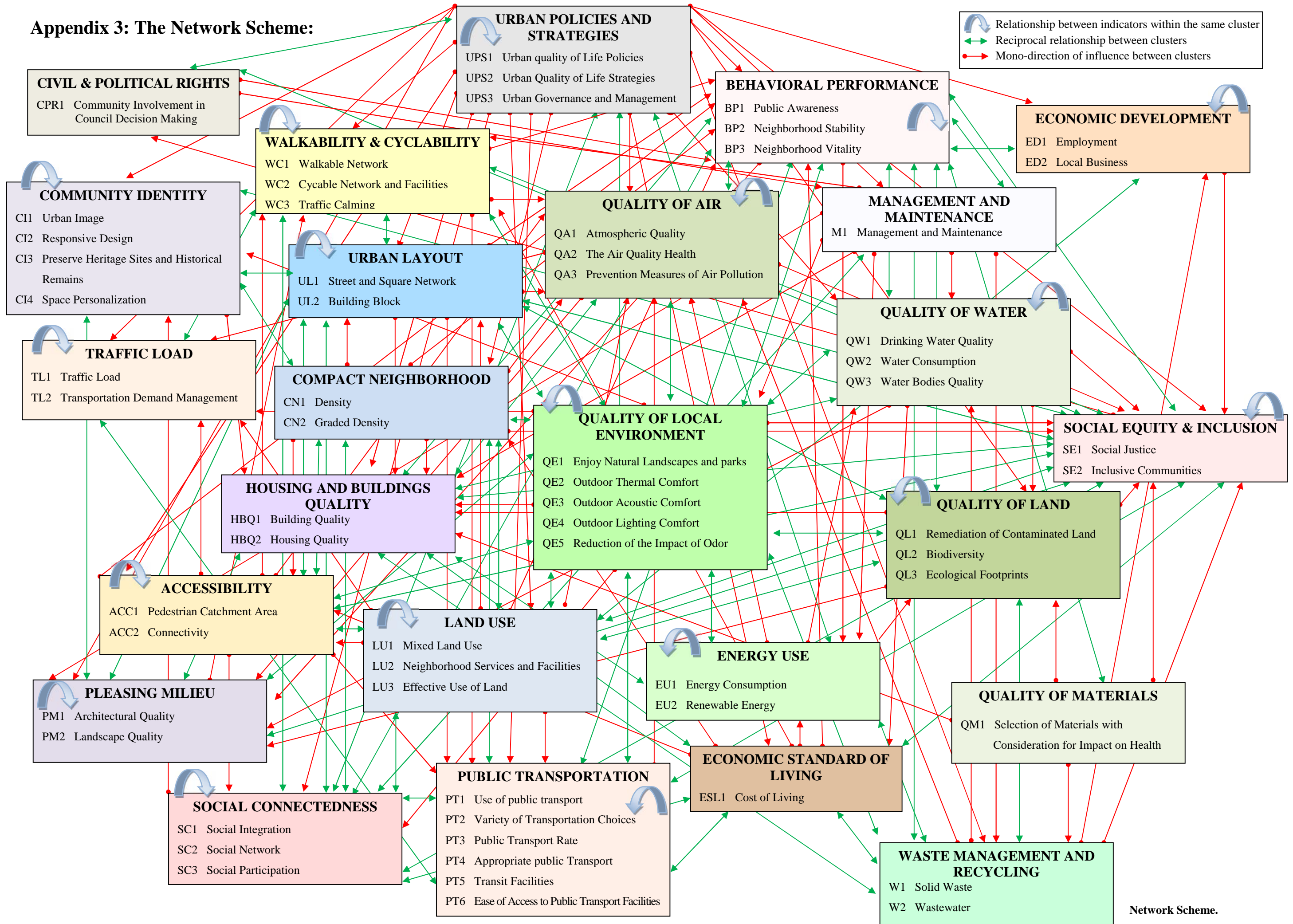
<b>BEHAVIORAL PERFORMANCE</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>BP1</b>	Public Awareness	<b>QA:</b> Quality of Air <b>QW:</b> Quality of Water <b>QL:</b> Quality of Land <b>QM:</b> Quality of Materials <b>QE:</b> Quality of Local Environment <b>EU:</b> Energy Use <b>W:</b> Waste Management and Recycling <b>HBQ:</b> Housing and Building Quality <b>M:</b> Management and Maintenance <b>PT:</b> Public Transportation <b>SE:</b> Social Equity and Inclusion <b>SC:</b> Social Connectedness <b>PM:</b> Pleasing Milieu <b>ED:</b> Economic Development
<b>BP2</b>	Neighborhood Stability	
<b>BP3</b>	Neighborhood Vitality	
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>BP1</b>		QA2 / QW2, QW3 / QL3 / QM1 / QE3, QE5 / EU1, EU2 / W1, W2 / HBQ1, HBQ2 / M1 / PT1 / SE1, SE2 / SC3 / PM1, PM2
<b>BP2</b>	BP3	HBQ1, HBQ2 / SE1 / SC1, SC2, SC3 / ED1, ED2
<b>BP3</b>	BP2	HBQ1, HBQ2 / SE2 / SC1, SC2 / ED1, ED2

<b>COMMUNITY IDENTITY</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>CI1</b>	Urban Image	<b>CN:</b> Compact Neighborhood <b>UL:</b> Urban Layout <b>HBQ:</b> Housing and Building Quality <b>SE:</b> Social Equity and Inclusion <b>SC:</b> Social Connectedness <b>PM:</b> Pleasing Milieu
<b>CI2</b>	Responsive Design	
<b>CI3</b>	Preserve Heritage Sites and Historical Remains	
<b>CI4</b>	Space Personalization	
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>CI1</b>		CN1, CN2 / UL1, UL2 / SE2 / PM1, PM2
<b>CI2</b>	CI1, CI3	CN1, CN2 / UL1, UL2 / SE2 / SC3 / PM1, PM2
<b>CI3</b>	CI1, CI2	UL1, UL2 / SE2 / PM1, PM2
<b>CI4</b>		CN1, CN2 / UL1, UL2 / HBQ2 / SE2 / SC3 / PM1, PM2

<b>PLEASING MILIEU</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>PM1</b>	Architectural Quality	<b>QE:</b> Quality of Local Environment <b>UL:</b> Urban Layout <b>HBQ:</b> Housing and Building Quality
<b>PM2</b>	Landscape Quality	<b>WC:</b> Walkability and Cyclability <b>SE:</b> Social Equity and Inclusion <b>CI:</b> Community Identity
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>PM1</b>	PM2	HBQ1, HBQ2 / SE1 / CI1, CI2, CI3
<b>PM2</b>	PM1	QE1, QE4 / UL1, UL2 / WC1 / SE1, SE2 / CI1, CI2, CI3
<b>ECONOMIC DEVELOPMENT</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>ED1</b>	Employment	<b>LU:</b> Land Use
<b>ED2</b>	Local Business	<b>SE:</b> Social Equity and Inclusion <b>BP:</b> Behavioral Performance
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>ED1</b>	ED2	LU1, LU2 / SE1 / BP2, BP3
<b>ED2</b>	ED1	LU1, LU2 / BP2, BP3
<b>ECONOMIC STANDARD OF LIVING</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>ESL1</b>	Cost of Living	<b>EU:</b> Energy Use <b>W:</b> Waste Management and Recycling <b>HBQ:</b> Housing and Building Quality <b>PT:</b> Public Transportation <b>SE:</b> Social Equity and Inclusion <b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>ESL1</b>		EU1, EU2 / W1, W2 / HBQ2 / PT1, PT4 / SE1, SE2 / SC2 / BP2, BP3 /
<b>CIVIL AND POLITICAL RIGHTS</b>		
<b>Indicators</b>		<b>Interaction with:</b>
<b>CPR1</b>	Community Involvement in Council Decision Making	<b>M:</b> Management and Maintenance <b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance <b>UPS:</b> Urban Policies and Strategies
<b>Inner Connections</b>		<b>Outer Connections</b>
<b>CPR1</b>		M1 / SC3 / BP1, BP2, BP3 / CI2, CI4 / UPS1, UPS2, UPS3

URBAN POLICIES AND STRATEGIES		
Indicators		Interaction with:
UPS1	Urban quality of Life Policies	<b>QA:</b> Quality of Air <b>QW:</b> Quality of Water <b>QL:</b> Quality of Land <b>QM:</b> Quality of Materials <b>QE:</b> Quality of Local Environment <b>EU:</b> Energy Use <b>W:</b> Waste Management and Recycling <b>LU:</b> Land Use
UPS2	Urban Quality of Life Strategies	<b>CN:</b> Compact Neighborhood <b>UL:</b> Urban Layout <b>HBQ:</b> Housing and Building Quality <b>M:</b> Management and Maintenance <b>ACC:</b> Accessibility <b>WC:</b> Walkability and Cyclability <b>PT:</b> Public Transportation <b>TL:</b> Traffic Load
UPS3	Urban Governance and Management	<b>SE:</b> Social Equity and Inclusion <b>SC:</b> Social Connectedness <b>BP:</b> Behavioral Performance <b>CI:</b> Community Identity <b>PM:</b> Pleasing Milieu <b>ED:</b> Economic Development <b>ESL:</b> Economic Standard of Living <b>CPR:</b> Civil and Political Rights
<b>Inner Connections</b>		<b>Outer Connections</b>
UPS1	UPS2, USP3	QA1, QA3 / QW1, QW2, QW3 / QL1, QL2, QL3 / QE1, QE2, QE3, QE4, QE5 / EU1, EU2 / W1, W2 / LU1, LU2, LU3 / CN1, CN2 / UL1, UL2 / HBQ1, HBQ2 / M1 / ACC1, ACC2 / WC1, WC2, WC3 / PT1, PT2, PT3, PT4, PT5, PT6 / TL1, TL2 / SE1, SE2 / SC1, SC2, SC3 / BP1, BP2, BP3 / CI1, CI2, CI3, CI4 / PM1, PM2 / ED1, ED2 / ESL1 / CPR1
UPS2	USP1, USP3	QA1, QA3 / QW1, QW2, QW3 / QL1, QL2, QL3 / QM1 / QE1, QE2, QE3, QE4, QE5 / EU1, EU2 / W1, W2 / LU1, LU2, LU3 / CN1, CN2 / UL1, UL2 / HBQ1, HBQ2 / M1 / ACC1, ACC2 / WC1, WC2, WC3 / PT1, PT2, PT3, PT4, PT5, PT6 / TL1, TL2 / SE1, SE2 / SC1, SC2, SC3 / BP2, BP3 / CI1, CI2, CI3, CI4 / PM1, PM2 / ED1, ED2 / ESL1
UPS3	UPS1, UPS2	QA1, QA3 / QW1, QW2, QW3 / QL1, QL2, QL3 / QE1, QE2, QE3, QE4, QE5 / EU1, EU2 / W1, W2 / LU1, LU2, LU3 / CN1, CN2 / UL1, UL2 / HBQ1, HBQ2 / M1 / ACC1, ACC2 / WC1, WC2, WC3 / PT1, PT2, PT3, PT4, PT5, PT6 / TL1, TL2 / SE1, SE2 / SC1, SC2, SC3 / BP1, BP2, BP3 / CI1, CI2, CI3, CI4 / PM1, PM2 / ED1, ED2 / ESL1 / CPR1

### Appendix 3: The Network Scheme:



Network Scheme.

## Appendix 4: Toolboxes for Measuring Urban Quality of life Indicators

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF AIR				
QA 1-1	ATMOSPHERIC QUALITY	ANNAL AVERAGE LEVELS OF PM <sub>10</sub>		
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Control emissions and pollutants.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
<b>ASSESSMENT</b>	The limit value of the annual average level of PM <sub>10</sub> concentrations according to Egyptian Environmental Law is 70 µg/m <sup>3</sup>			
<b>METHOD</b>				
<b>POINTS</b>	1	Above the annual average.		
	2			
	3			
	4			
	5	Below or equal to the annual average.		
EXISTENT METHODOLOGY AND REFERENCES				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .				
LAWS AND REGULATIONS				
Egyptian Environmental Law, 1994.				

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF AIR				
QA 1-2	ATMOSPHERIC QUALITY		ANNUAL AVERAGE LEVELS OF LEAD (Pb)	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Control emissions and pollutants.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	The limit value of the annual average level of Pb concentrations according to Egyptian Environmental Law is 0.5 µg/m <sup>3</sup> for 24 hours average concentration over one year in urban areas.			
METHOD				
POINTS	1	Above the annual average.		
	2			
	3			
	4			
	5	Below or equal to the annual average.		
EXISTENT METHODOLOGY AND REFERENCES				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .				
LAWS AND REGULATIONS				
Egyptian Environmental Law, 1994.				

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF AIR				
QA 1-3	ATMOSPHERIC QUALITY		ANNUAL AVERAGE LEVELS OF CARBON MONOXIDE (CO)	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Control emissions and pollutants.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	The limit value of exposure to CO has been set by the Egyptian Environmental Law is 30 mg/m <sup>3</sup> for one hour and 10 mg/m <sup>3</sup> for an eight hour average			
METHOD				
POINTS	1	Above the annual average.		
	2			
	3			
	4			
	5	Below or equal to the annual average.		
EXISTENT METHODOLOGY AND REFERENCES				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .				
LAWS AND REGULATIONS				
Egyptian Environmental Law, 1994.				



ENVIRONMENTAL URBAN QUALITY OF LIFE			
QUALITY OF AIR			
QA 1- 4	ATMOSPHERIC QUALITY	ANNUAL AVERAGE LEVELS OF NITROGEN DIOXIDE (NO <sub>2</sub> )	
TYPOLOGY		QUANTITATIVE	
PROCESS STAGE		EX-ANTE	IN ITINERE
REQUIRMENT		EX-POST	
Control emissions and pollutants.			
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		OBJECTIVELY	
ASSESSMENT	The limit value of NO <sub>2</sub> has been set by the Egyptian Environmental Law is 400 µg/m <sup>3</sup> for a one hour average concentration.		
METHOD			
POINTS	1	Above the annual average.	
	2		
	3		
	4		
	5	Below or equal to the annual average.	
EXISTENT METHODOLOGY AND REFERENCES			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
LAWS AND REGULATIONS			
Egyptian Environmental Law, 1994.			

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF AIR				
QA 1-5	ATMOSPHERIC QUALITY		ANNUAL AVERAGE LEVELS OF SULPHUR DIOXIDE (SO <sub>2</sub> )	
TYPOLOGY			QUANTITATIVE	
PROCESS STAGE			EX-ANTE	IN ITINERE
REQUIRMENT			Control emissions and pollutants.	
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT			OBJECTIVELY	
ASSESSMENT	The limit value of SO <sub>2</sub> has been set by the Egyptian Environmental Law at a maximum of 350 µg/m <sup>3</sup> for a one hour average concentration.			
METHOD				
POINTS	1	Above the annual average.		
	2			
	3			
	4			
	5	Below or equal to the annual average.		
EXISTENT METHODOLOGY AND REFERENCES				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .				
LAWS AND REGULATIONS				
Egyptian Environmental Law, 1994.				

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF AIR</b>			
<b>QA 1-6</b>	<b>ATMOSPHERIC QUALITY</b>	<b>ANNUAL AVERAGE LEVELS OF OZONE (O<sub>3</sub>)</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Control emissions and pollutants.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	The limit value of O <sub>3</sub> has been set by the Egyptian Environmental Law at a maximum of 200 µg/m <sup>3</sup> for a one hour average concentration.		
<b>METHOD</b>			
<b>POINTS</b>	1	Above the annual average.	
	2		
	3		
	4		
	5	Below or equal to the annual average.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			
Egyptian Environmental Law, 1994.			

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF AIR				
QA 2-1	THE AIR QUALITY HEALTH		AIR QUALITY HEALTH INDEX	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Preservation of public health.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	The Air Quality Health Index (AQHI) is calculated based on the relative risks of a combination of common air pollutants which are known to harm human health (PM10, Pb, CO, NO2, SO2, O3).			
METHOD	Consultation of Ministry of Environment and Ministry of Health and Population on air quality and human health.			
POINTS	1	Very high health risk		
	2	High health risk		
	3			
	4	Moderate health risk		
	5	Low health risk		
EXISTENT METHODOLOGY AND REFERENCES				
Air quality health index ( <a href="http://www.toronto.ca/health/airquality/aqhi/about.htm">http://www.toronto.ca/health/airquality/aqhi/about.htm</a> )				
LAWS AND REGULATIONS				

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF AIR</b>			
<b>QA 2-2</b>	<b>THE AIR QUALITY HEALTH</b>		<b>RESIDENTS' PERCEPTION OF AIR POLLUTION AS A PROBLEM</b>
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Preservation of public health.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Do residents perceive air pollution as a problem?		
<b>METHOD</b>			
<b>POINTS</b>	1	Yes	
	2		
	3	Fair	
	4		
	5	No	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF AIR				
QA 3-1	PREVENTION MEASURES OF AIR POLLUTION		ATMOSPHERIC PURIFICATION MEASURES	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		The purification of the atmosphere.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT				
METHOD	<p>Evaluate efforts to purify the atmosphere in general.</p> <ul style="list-style-type: none"> <li>• Formation of buffer zones.</li> <li>• Use of plants for atmospheric purification.</li> <li>• Use of trees suitable for atmospheric purification.</li> <li>• Introduction of atmospheric purification systems (photocatalysts, mechanical purification etc.).</li> </ul>			
POINTS	1	No item addressed.		
	2			
	3	Use of plants for atmospheric purification.		
	4			
	5	Use of trees suitable for atmospheric purification.		
EXISTENT METHODOLOGY AND REFERENCES				
CASBEE for Urban Development.				
LAWS AND REGULATIONS				



<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF WATER</b>			
<b>QW 1-1</b>	<b>DRINKING WATER QUALITY</b>	<b>PUBLIC HEALTH WATER QUALITY GRADING</b>	
<b>TPOLOGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Access to a continuous and high quality supply of water.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	What is water treatment plant grading?		
<b>METHOD</b>	Treatment plant and source grading is based on the likely health risks to the community.		
<b>POINTS</b>	1	Unsatisfactory level of risk	
	2	Marginally satisfactory, low level of microbiological risk when the water leaves the treatment plant, but may not be satisfactory chemically	
	3	Satisfactory, very low level of risk when the water leaves the treatment plant	
	4	Completely satisfactory, extremely low level of risk	
	5	Completely satisfactory, negligible level of risk, demonstrably high quality	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			



<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF WATER</b>			
<b>QW 1-2</b>	<b>DRINKING WATER QUALITY</b>	<b>E. COLI COMPLIANCE OF WATER DISTRIBUTION ZONES</b>	
<b>TYPOLGY</b>		QUALITATIVE	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		Access to a continuous and high quality supply of water.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		SUBJECTIVELY	
<b>ASSESSMENT</b>			
<b>METHOD</b>	E. coli compliance can be achieved by regular monitoring of the distribution zone (i.e. at the tap) to demonstrate that E. coli is not present in water.		
<b>POINTS</b>	1	No measures used	
	2		
	3	No regular monitoring of the distribution zone to demonstrate that E. coli is not present in water	
	4		
	5	Regular monitoring of the distribution zone to demonstrate that E. coli is not present in water	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF WATER				
QW 1-3	DRINKING WATER QUALITY	PERCENT OF POPULATION ACCESS TO POTABLE WATER FOR 24 HOURS PER DAY		
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Access to a continuous and high quality supply of water.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	What is the percent of population with access to potable water for 24 hours per day?			
METHOD				
POINTS	1	Lower than 80%		
	2			
	3	80%		
	4			
	5	100%		
EXISTENT METHODOLOGY AND REFERENCES				
European Green City Index: Economist Intelligence Unit. European Green City Index. Munich/Germany 2009				
LAWS AND REGULATIONS				

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF WATER				
QW 2-1	WATER CONSUMPTION		DOMESTIC WATER CONSUMPTION PER PERSON	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Reduce water consumption.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	What is the total domestic water consumption? expressed in liters per person per day			
METHOD				
POINTS	1	110 Liters per person per day		
	2			
	3	105 Liters per person per day		
	4			
	5	80 Liters per person per day		
EXISTENT METHODOLOGY AND REFERENCES				
The BREEAM for Communities.				
LAWS AND REGULATIONS				

ENVIRONMENTAL URBAN QUALITY OF LIFE					
QUALITY OF WATER					
QW 2-2	WATER CONSUMPTION		COMMERCIAL AND INDUSTRIAL WATER CONSUMPTION		
TYPOLOGY		QUANTITATIVE			
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT		Reduce water consumption.			
ASSESSMENT METHODOLOGY					
THE WAY OF ASSESSMENT			OBJECTIVELY		
ASSESSMENT					
METHOD	<p>The water consumption (litres/person/day) for the assessed non-residential building is compared against the Egyptian Code for Engineering Sanitary Wares baseline.</p> <p>Reduce the consumption of potable water for sanitary use in new buildings from all sources through the use of water efficient components and water recycling systems.</p>				
POINTS	1	Improvement in water consumption of 12.5% compared against the Code baseline.			
	2	Improvement in water consumption of 25% compared against the Code baseline.			
	3	Improvement in water consumption of 40% compared against the Code baseline.			
	4	Improvement in water consumption of 50% compared against the Code baseline.			
	5	Improvement in water consumption of 55% compared against the Code baseline.			
EXISTENT METHODOLOGY AND REFERENCES					
BREEAM New Construction, Non-Domestic Buildings, 2011.					
LAWS AND REGULATIONS					
The Egyptian Code for Engineering Sanitary Wares, 2000.					

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF WATER</b>			
<b>QW 2-3</b>	<b>WATER CONSUMPTION</b>	<b>WATER LEAK DETECTION</b>	
<b>TYPOLGY</b>	<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>	EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>	Reduce water consumption.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Demonstrate that water transmission and distribution facilities are designed and installed with water consumption meters in order to monitor the water network and be capable of detecting major system-wide leaks.		
<b>POINTS</b>	1	Any measure adopted	
	2		
	3	Meter of water's consumption only for drinking water	
	4		
	5	Meter of water's consumption divided in typology of use	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Silvia PHD, 2009 - The Pearl Community Rating System for Estidama.			
<b>LAWS AND REGULATIONS</b>			

ENVIRONMENTAL URBAN QUALITY OF LIFE					
QUALITY OF WATER					
QW 3-1	WATER BODIES QUALITY		BEACH AND STREAM/LAKE WATER QUALITY		
TYPOLOGY		QUALITATIVE			
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT		Safe water for human recreational use and activities.			
ASSESSMENT METHODOLOGY					
THE WAY OF ASSESSMENT			SUBJECTIVELY		
ASSESSMENT	Evaluate devise efforts for maintaining water quality in natural bodies of water within the designated area.				
METHOD	<ul style="list-style-type: none"> <li>- “No water purification treatment etc.” for natural bodies of water refers to cases where a body of water is present with excessive amounts of organic substances causing severe pollution.</li> <li>- “Standard level of water purification treatment” refers to mechanical purification, such as mechanical purification of waste water flowing into the natural body of water and dredging of sludge sediments.</li> <li>- A “system employing natural purification mechanisms” refers to systems that employ the purification mechanisms of nature within the body of water itself, such as using water plants to absorb and fix nitrogen and phosphorous and stimulating microorganisms with highly porous materials, aeration and other methods, to encourage their digestion of organic substances.</li> </ul>				
POINTS	1	No water purification treatment etc.			
	2				
	3	Standard level of water purification treatment.			
	4				
	5	In addition to a standard level of water purification treatment, there is a system employing natural purification mechanisms.			
EXISTENT METHODOLOGY AND REFERENCES					
CASBEE for Urban Development.					
LAWS AND REGULATIONS					

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF WATER</b>			
<b>QW 3-2</b>	<b>WATER BODIES QUALITY</b>	<b>THE RATE OF PUBLIC HEALTH RISK AT WATER BODIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Safe water for human recreational use and activities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Analysis the rate of public health risk at water bodies. Water quality data is analyzed using the national Guidelines. The rate of public health risk at water bodies relates to the bacteria concentrations that must not exceed the guidelines.		
<b>POINTS</b>	1	Relatively high	
	2		
	3		
	4		
	5	Relatively low	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF WATER</b>			
<b>QW 3-4</b>	<b>WATER BODIES QUALITY</b>	<b>RESIDENTS' PERCEPTION OF WATER POLLUTION AS A PROBLEM</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Safe water for human recreational use and activities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Whether residents perceived water pollution as a problem?		
<b>METHOD</b>			
<b>POINTS</b>	1	Yes	
	2		
	3		
	4		
	5	No	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>			
<b>LAWS AND REGULATIONS</b>			





ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF LAND				
QL1-1	REMEDIATION OF CONTAMINATED LAND		LAND REMEDIATION	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Promote the reuse of contaminated land in an appropriate and suitable manner by preventing the generation of waste arising from site.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT				
METHOD	A: Prevent generation of waste arising from site. B: In-situ remediation treatment (excluding capping systems). C: Ex-situ treatment at the site of generation or off site treatment facility and return for re-use where feasible. D: On site containment or capping.			
POINTS	1	C or D		
	2			
	3	B		
	4			
	5	A		
EXISTENT METHODOLOGY AND REFERENCES				
The BREEAM for Communities.				
LAWS AND REGULATIONS				

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>				
<b>QUALITY OF LAND</b>				
<b>Q L2-1</b>	<b>BIODIVERSITY</b>		<b>LIVING RESOURCES CONSERVATION PLAN</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Habitat preservation.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	The existing of living resources conservation plan.			
<b>METHOD</b>	<p>The plan should include four components:</p> <p>a- A list of plant and animal species, noting any that are locally rare, threatened, or endangered.</p> <p>b- A record of the kinds and extent of sensitive areas and special habitats.</p> <p>c- Documentation of the amount and proportion of sensitive areas to be altered by the development.</p> <p>d- A description of the measures to be taken to protect or restore sensitive areas.</p>			
<b>POINTS</b>	1	a-b-c		
	2			
	3	a-b-c-d		
	4			
	5	a-b-c-d PLUS the provision of a biodiversity action plan to ensure the ecological enhancement of the site.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Land and Natural Development (LAND) code, 2007; The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF LAND</b>			
<b>Q L3-1</b>	<b>ECOLOGICAL FOOTPRINTS</b>	<b>EGYPT ECOLOGICAL FOOTPRINTS</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		The land must accommodate all the human activities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Calculate the difference between Egypt biocapacity (global ha per person) and Its Ecological Footprint (global ha per person).		
<b>METHOD</b>	If a country does not have enough ecological resources within its own territory, then there is a local ecological deficit and it is called an ecological debtor country. Otherwise, it has an ecological remainder and it is called an ecological creditor country.		
<b>POINTS</b>	1	Ecological debtor country	
	2		
	3		
	4		
	5	Ecological creditor country	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>QUALITY OF LAND</b>			
<b>Q L3-2</b>	<b>ECOLOGICAL FOOTPRINTS</b>	<b>REGIONAL ECOLOGICAL FOOTPRINTS</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		The land must accommodate all the human activities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Comparing regional ecological footprints (local ha per resident) with the national average.		
<b>METHOD</b>			
<b>POINTS</b>	1	Higher than the national average	
	2		
	3	Near the national average	
	4		
	5	Lower than the national average	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>				
<b>QUALITY OF MATERIALS</b>				
<b>QM 1-1</b>	<b>SELECTION OF MATERIALS WITH CONSIDERATION FOR IMPACT ON HEALTH</b>		<b>SELECTION OF MATERIALS WITH CONSIDERATION FOR IMPACT ON HEALTH</b>	
<b>TIPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Discourage the use of construction materials and products that create pollution during their life cycle.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	<p>Evaluate the level of use of materials in the four areas below, which do not contain chemical substances specified under the Law.</p> <ol style="list-style-type: none"> <li>1. Main constituent materials of structures.</li> <li>2. Exterior paints.</li> <li>3. Anti-rust treatments, preservatives, adhesives etc.</li> <li>4. Fertilizers and agricultural chemicals etc.</li> </ol> <p>Award level three if the use of materials has been considered in one or two of the four types above, and level five for three or more types.</p>			
<b>POINTS</b>	1	Not used		
	2			
	3	Partial use (use of materials, which do not contain chemical substances specified under the Law, has been considered in one or two of the four types above)		
	4			
	5	Full use (use of materials, which do not contain chemical substances specified under the Law, has been considered in three or more of the four types above)		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				



<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>				
<b>QUALITY OF LOCAL ENVIRONMENT</b>				
<b>QE 1-1</b>	<b>ENJOY NATURAL LANDSCAPES AND PARKS</b>		<b>GREEN AREA PERCENTAGE</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Being able to enjoy natural landscapes, and parks.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	This measure looks at the hectares of public green space per 1,000 residents for each city. Green space is defined as ‘open space’ under the management and control of, or leased by, councils and includes sports areas, parks and gardens (including passive recreational spaces, historic reserves and scenic reserves), riverside/lakeside/beachside walks and other similar areas.			
<b>POINTS</b>	1	Less than 1 hectare		
	2			
	3			
	4			
	5	1 to 3 hectares per 1,000 residents		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Quality of Life, www.qualityoflifeproject.govt.nz – Shafak El Wakil, second part, 2007.				
<b>LAWS AND REGULATIONS</b>				
Egyptian Code for Housing Design, 2009.				



ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF LOCAL ENVIRONMENT				
QE 1-2	ENJOY NATURAL LANDSCAPES AND PARKS		EASE OF ACCESS TO GREEN AREA	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Being able to enjoy natural landscapes, and parks.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT	Residents were asked to rate the ease of access to their local park or other green area.			
METHOD				
POINTS	1	Very difficult		
	2	Difficult		
	3	Neither		
	4	Easy		
	5	Very easy		
EXISTENT METHODOLOGY AND REFERENCES				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .				
LAWS AND REGULATIONS				

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF LOCAL ENVIRONMENT				
QE 2-1	OUTDOOR THERMAL COMFORT		IMPROVING THE WIND ENVIRONMENT	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	Countermeasures against strong winds. Excluded from assessment if there are no strong wind with regional characteristics			
METHOD	<ul style="list-style-type: none"> <li>- If the region has a characteristic wind which causes problems, use countermeasures such as planting barrier trees to reduce winds blowing into the designated area, and positioning or screening entrances against wind.</li> <li>- Evaluate whether barrier trees, wind fences, entrance position planning etc. have been used against characteristic local winds, and the suitability of those measures.</li> </ul>			
POINTS	1	No countermeasures		
	2			
	3			
	4	Trees, fences etc. used to eliminate strong wind areas.		
	5	Wind Countermeasures devised after verification of their efficacy.		
EXISTENT METHODOLOGY AND REFERENCES				
CASBEE for Urban Development.				
LAWS AND REGULATIONS				

ENVIRONMENTAL URBAN QUALITY OF LIFE					
QUALITY OF LOCAL ENVIRONMENT					
QE 2-2	OUTDOOR THERMAL COMFORT	CONSIDERATION FOR BUILDING GROUP LAYOUT			
TYPOLOGY		QUALITATIVE			
PROCESS STAGE		EX-ANTE		IN ITINERE	EX-POST
REQUIRMENT		Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.			
ASSESSMENT METHODOLOGY					
THE WAY OF ASSESSMENT		OBJECTIVELY			
ASSESSMENT	Building group layout and form to provide continuous open space at ground level for wind movement				
METHOD	<ul style="list-style-type: none"> <li>•In planning the form and layout of buildings, identify the wind situation around the designated area, ensure continuity with open spaces around the designated area, and take steps to guide wind to pedestrian spaces etc. within the designated area.</li> <li>•Evaluate whether, where there is open space adjacent to the designated area, effort has been made to secure continuity in a majority of open space, by arranging such spaces together, and by reducing the height of buildings that block such continuity or placing them on piloti.</li> </ul>				
POINTS	1	There are open spaces adjacent to the designated area, but no consideration is given to continuity.			
	2				
	3	Buildings which interrupt linkages between open spaces are made low-rise, raised on piloti or otherwise mitigated, so that there is continuity in a majority of open space.			
	4	Layout is planned with efforts to adequately ensure the continuity of open space.			
	5	The assessment is qualitative, the layout and form of building groups and open space are considered and the efficacy of the wind flow is verified using simulations or other methods.			
EXISTENT METHODOLOGY AND REFERENCES					
CASBEE for Urban Development.					
LAWS AND REGULATIONS					

ENVIRONMENTAL URBAN QUALITY OF LIFE					
QUALITY OF LOCAL ENVIRONMENT					
QE 2-3	OUTDOOR THERMAL COMFORT		CONSIDERATION FOR LANDSCAPE		
TYPOLOGY		QUANTITATIVE			
PROCESS STAGE		EX-ANTE		IN ITINERE	EX-POST
REQUIREMENT		Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.			
ASSESSMENT METHODOLOGY					
THE WAY OF ASSESSMENT			OBJECTIVELY		
ASSESSMENT	Measuring the exterior coverage ratio for water and greenery.				
METHOD	<ul style="list-style-type: none"> <li>- Provision of green areas of lawn, meadow or shrubbery etc., or of open water, limits the rise in ground temperature, and in air temperature near the ground. Such efforts are particularly effective in areas with strong sunshine, such as the south and west sides of buildings.</li> <li>- Evaluate according to the area of greenery, such as lawn, meadow and shrubbery, and of open water.</li> <li>- Vegetation in the form of medium and tall trees not accompanied by lawn, meadow or shrubbery etc. should not be included in the area.</li> <li>- Exterior coverage ratio for water and greenery is defined as <math>\frac{\text{green area} + \text{open water area}}{\text{Total area of the designated area}} \times 100(\%)</math>.</li> </ul>				
POINTS	1	Exterior coverage ratio for water and greenery is 0%			
	2	Less than 5%			
	3	5% or more, less than 10%			
	4	10% or more, less than 15%			
	5	15% or more			
EXISTENT METHODOLOGY AND REFERENCES					
CASBEE for Urban Development.					
LAWS AND REGULATIONS					

ENVIRONMENTAL URBAN QUALITY OF LIFE			
QUALITY OF LOCAL ENVIRONMENT			
QE 2-4	OUTDOOR THERMAL COMFORT	CONSIDERATION FOR PAVING	
TYPOLOGY		QUANTITATIVE	
PROCESS STAGE		EX-ANTE	EX-POST
REQUIREMENT		Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.	
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		OBJECTIVELY	
ASSESSMENT	Calculate paved area ratio in the designated area.		
METHOD	<ul style="list-style-type: none"> <li>- Endeavor to reduce the area of paving in the designated area. In particular, try to avoid expansive paved areas (parking lots etc.) in areas with strong sunshine, such as the south and west sides of buildings.</li> <li>- Use materials with a minimum Solar Reflective Index (SRI) of 29.</li> <li>- Paved area ratio is defined as <math>\frac{\text{Paved area}}{\text{Total area of the designated area}} \times 100(\%)</math>.</li> <li>- Paved area which will clearly not be reached by direct sunlight or beneath piloti etc. may be excluded.</li> </ul>		
POINTS	1	Paved area ratio 40% or more	
	2	30% or more, less than 40%	
	3	20% or more, less than 30%	
	4	10% or more, less than 20%	
	5	Less than 10%	
EXISTENT METHODOLOGY AND REFERENCES			
CASBEE for Urban Development.			
LAWS AND REGULATIONS			

ENVIRONMENTAL URBAN QUALITY OF LIFE					
QUALITY OF LOCAL ENVIRONMENT					
QE 2-5	OUTDOOR THERMAL COMFORT	CONSIDERATION FOR BUILDING CLADDING MATERIALS			
TYPOLOGY		QUANTITATIVE			
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT		Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.			
ASSESSMENT METHODOLOGY					
THE WAY OF ASSESSMENT		OBJECTIVELY			
ASSESSMENT	Evaluate cladding materials for rooftops and walls.				
METHOD	<ul style="list-style-type: none"> <li>- Evaluate the area of roof treated with measures to reduce thermal impact on the designated area, such as roof planting and the use of roofing materials with high sunlight reflectivity or long-wave radiation emission, relative to the total roof area.</li> <li>- Materials with high sunlight reflectivity or long-wave radiation emission should only be counted in the treated area of they are highly reflective materials used as a heat island countermeasure or for load reduction. Areas simply covered with light or white materials cannot be counted as treated area.</li> <li>- Evaluate the ratio between the area of the exterior walls that has been planted, as a measure to reduce thermal impact beyond the designated area, and the total area of the walls (including windows).</li> </ul>				
POINTS	1				
	2				
	3	Roof area covering rate less than 20% <b>or/and</b> Wall planting rate less than 10%.			
	4	Roof area covering rate is 20% or more, less than 40% <b>or/and</b> Wall planting rate is 10% or more, less than 20%.			
	5	Roof area covering rate is 40% or more <b>or/and</b> Wall planting rate is 20% or more.			
EXISTENT METHODOLOGY AND REFERENCES					
CASBEE for Urban Development.					
LAWS AND REGULATIONS					

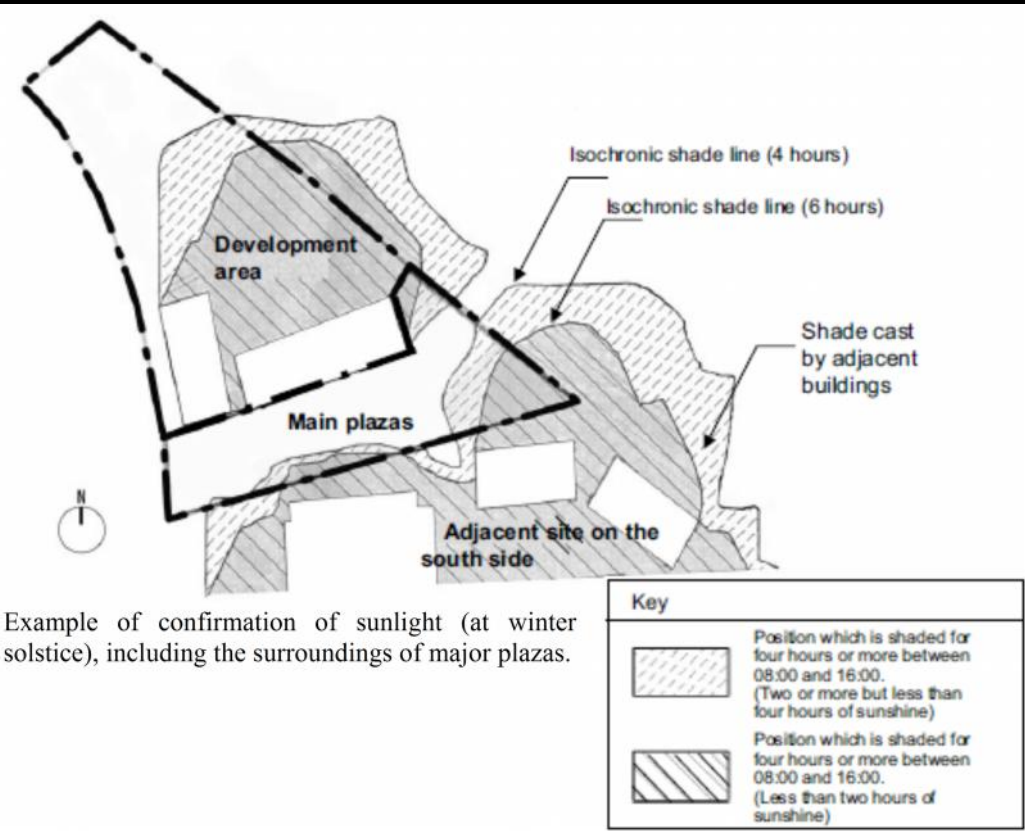






ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF LOCAL ENVIRONMENT				
<b>QE 2-6</b>	<b>OUTDOOR THERMAL COMFORT</b>	<b>CONSIDERATION FOR POSITIONING OF HEAT EXHAUST</b>		
<b>TIPOLOGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>		Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.		
ASSESSMENT METHODOLOGY				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	<p>High-temperature waste heat generated by sources such as air conditioning heat discharge and local heat sources (burner equipment) is vented from high positions, and care is taken to reduce the impact on pedestrians.</p> <ul style="list-style-type: none"> <li>- Evaluate according to the height of the heat emission position above the ground level at that position.</li> <li>- Air conditioning heat emission refers to air conditioning cooling towers and external units etc.</li> <li>- High-temperature heat emissions from local heat sources (burner equipment) refers to emissions at 100°C or more close to the equipment vent.</li> </ul>			
<b>POINTS</b>	1	There is emission from low-rise portions (5m or below) and no care is taken to reduce impact on pedestrians.		
	2			
	3	There is emission from low-rise portions (5m or below), but care is taken to reduce impact on pedestrians.		
	4	There is no emission from low-rise portions (5m or below).		
	5	There is no emission from low-rise portions (10m or below).		
EXISTENT METHODOLOGY AND REFERENCES				
CASBEE for Urban Development.				
LAWS AND REGULATIONS				

ENVIRONMENTAL URBAN QUALITY OF LIFE			
QUALITY OF LOCAL ENVIRONMENT			
QE 2-7	OUTDOOR THERMAL COMFORT	DESIGNING FOR SUN AND SHADE	
TYPOLOGY	QUANTITATIVE		
PROCESS STAGE	EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT	Increase outdoor thermal comfort during transition months and reduce thermal discomfort during summer months in public spaces and walkways.		
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		OBJECTIVELY	
ASSESSMENT	<p>- Horizontal shaded area ratio from medium and tall trees, piloti, eaves, pergolas etc. is evaluated using the definition stated below.</p> <p style="text-align: center;">Horizontal shaded area ratio = <math>(2 \times \text{horizontal shaded area from medium and tall trees} + \text{horizontal shaded area from piloti, eaves, pergolas etc.}) / \text{Total area of designated area} \times 100(\%)</math></p> <p>- Shade from medium and tall trees is calculated as double the area, to take into account effects other than the thermal environment.</p> <p style="text-align: center;">Horizontal shaded area from medium and tall trees is taken as: (area of crown of medium and tall trees) <math>\times</math> (No. of trees)</p> <p>- Ignore overlapping of shade areas.</p> <p>- Tree crown area is calculated by taking 0.7 times the tree height for newly-planted trees (<math>H \times 0.7</math>) as the crown diameter. For existing trees, such as roadside trees and those preserved on site, the crown diameter should be calculated as 0.5 times the tree height (<math>H \times 0.5</math>).</p> <p>- Horizontal shade areas for piloti, eaves, pergolas etc. are calculated as illustrated below.</p>		
METHOD	<p>The diagram shows three buildings with different shading features: a building with a piloti, a building with eaves, and a building with a pergola. Below each building, the horizontal shaded area is indicated with a double-headed arrow. To the right, two tree diagrams are shown: 'Newly-planted trees' with a crown diameter of 0.7H and 'Established trees' with a crown diameter of 0.5H, where H represents the tree height.</p>		
POINTS	1	Horizontal shaded area ratio from medium and tall trees, piloti, eaves, pergolas etc. is 0%.	
	2	Horizontal shaded area ratio from medium and tall trees, piloti, eaves, pergolas etc. is less than 10%.	
	3	Horizontal shaded area ratio from medium and tall trees, piloti, eaves, pergolas etc. is 10% or more, but less than 20%.	
	4	Horizontal shaded area ratio from medium and tall trees, piloti, eaves, pergolas etc. is 20% or more, but less than 30%.	
	5	Horizontal shaded area ratio from medium and tall trees, piloti, eaves, pergolas etc. is 30% or more.	
EXISTENT METHODOLOGY AND REFERENCES			
CASBEE for Urban Development.			
LAWS AND REGULATIONS			



ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF LOCAL ENVIRONMENT				
QE 3-1	OUTDOOR ACOUSTIC COMFORT		OUTDOOR ACOUSTIC COMFORT	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Secure an appropriate sonic environment.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT	Noise must not exceed the environmental standard mentioned by the Environmental Egyptian Law 1994 otherwise considers must be taken.			
METHOD	<ul style="list-style-type: none"> <li>- Formation of buffer zones (green space etc.) at suitable positions.</li> <li>- Evaluate buffer zone efforts (acoustic walls etc.) against noise and vibration from the surroundings of the designated area.</li> </ul>			
POINTS	1	Formation of buffer zones at suitable positions; <b>not considered.</b>		
	2			
	3	Formation of buffer zones at suitable positions; <b>considered.</b>		
	4			
	5	Formation of buffer zones at suitable positions; <b>adequate consideration.</b>		
EXISTENT METHODOLOGY AND REFERENCES				
CASBEE for Urban Development.				
LAWS AND REGULATIONS				
Environmental Egyptian Law, 1994 - Egyptian Code for Housing Design, 2009.				

ENVIRONMENTAL URBAN QUALITY OF LIFE			
QUALITY OF LOCAL ENVIRONMENT			
<b>QE 3-2</b>	<b>OUTDOOR ACOUSTIC COMFORT</b>	<b>RESIDENTS' PERCEPTION OF NOISE POLLUTION AS A PROBLEM</b>	
<b>TYPOLGY</b>		QUALITATIVE	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		Secure an appropriate sonic environment.	
ASSESSMENT METHODOLOGY			
<b>THE WAY OF ASSESSMENT</b>		SUBJECTIVELY	
<b>ASSESSMENT</b>	This measure looks at whether or not residents perceived noise pollution as a problem.		
<b>METHOD</b>			
<b>POINTS</b>	1	Yes	
	2		
	3		
	4		
	5	No	
EXISTENT METHODOLOGY AND REFERENCES			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
LAWS AND REGULATIONS			

ENVIRONMENTAL URBAN QUALITY OF LIFE										
QUALITY OF LOCAL ENVIRONMENT										
QE 4-1	OUTDOOR LIGHTING COMFORT	SUNLIGHT								
TYOLOGY	QUANTITATIVE									
PROCESS STAGE	EX-ANTE	IN ITINERE	EX-POST							
REQUIRMENT	Improve the visual comfort.									
ASSESSMENT METHODOLOGY										
THE WAY OF ASSESSMENT		OBJECTIVELY								
ASSESSMENT	<p>Evaluate consideration for sunlight access in plazas in the designated area.</p> <ul style="list-style-type: none"> <li>- Evaluate how many hours of sunlight are guaranteed at winter solstice in important plazas and other such open public spaces.</li> <li>- Ascertain and evaluate compound shade cast by buildings etc. around the designated area.</li> <li>- As the assessment criterion, consider how many hours of sunlight are ensured at ground level (H=0m) for the large majority of main plaza space.</li> </ul>									
METHOD	 <p>Example of confirmation of sunlight (at winter solstice), including the surroundings of major plazas.</p> <table border="1"> <thead> <tr> <th colspan="2">Key</th> </tr> </thead> <tbody> <tr> <td></td> <td>Position which is shaded for four hours or more between 08:00 and 16:00. (Two or more but less than four hours of sunshine)</td> </tr> <tr> <td></td> <td>Position which is shaded for four hours or more between 08:00 and 16:00. (Less than two hours of sunshine)</td> </tr> </tbody> </table>				Key			Position which is shaded for four hours or more between 08:00 and 16:00. (Two or more but less than four hours of sunshine)		Position which is shaded for four hours or more between 08:00 and 16:00. (Less than two hours of sunshine)
Key										
	Position which is shaded for four hours or more between 08:00 and 16:00. (Two or more but less than four hours of sunshine)									
	Position which is shaded for four hours or more between 08:00 and 16:00. (Less than two hours of sunshine)									
POINTS	1	The layout plan takes no action and the area is shaded all day.								
	2									
	3	Action taken in the layout plan.								
	4	Sunlight has been calculated and at least 2 hours of sunlight (8am to 4pm) at winter solstice have been ensured.								
	5	Sunlight has been calculated and at least 4 hours of sunlight (8am to 4pm) at winter solstice have been ensured.								
EXISTENT METHODOLOGY AND REFERENCES										
CASBEE for Urban Development.										
LAWS AND REGULATIONS										

ENVIRONMENTAL URBAN QUALITY OF LIFE				
QUALITY OF LOCAL ENVIRONMENT				
<b>QE 4-2</b>	<b>OUTDOOR LIGHTING COMFORT</b>	<b>EXTERNAL SURFACES TREATMENT FOR GLARE CONTROL</b>		
<b>TIPOLOGY</b>		QUALITATIVE		
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>		Improve the visual comfort.		
ASSESSMENT METHODOLOGY				
<b>THE WAY OF ASSESSMENT</b>		OBJECTIVELY		
<b>ASSESSMENT</b>				
<b>METHOD</b>	Evaluate consideration of building cladding and measures to mitigate the glare cast on the surrounding area by reflection of daylight from walls.			
<b>POINTS</b>	1	Not considered.		
	2			
	3	Standard measures.		
	4			
	5	Comprehensive measures (floorings, building envelope, glasses).		
EXISTENT METHODOLOGY AND REFERENCES				
Giordano, 2010				
LAWS AND REGULATIONS				

ENVIRONMENTAL URBAN QUALITY OF LIFE					
QUALITY OF LOCAL ENVIRONMENT					
QE 4-3	OUTDOOR LIGHTING COMFORT		STREET LIGHTING		
TYPOLOGY		QUALITATIVE			
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT		Improve the visual comfort.			
ASSESSMENT METHODOLOGY					
THE WAY OF ASSESSMENT			OBJECTIVELY		
ASSESSMENT	Presence of street lights.				
METHOD					
POINTS	1	Not available			
	2				
	3	Available but not sufficient			
	4				
	5	Available and designed according to Egyptian Outdoor Lighting Code			
EXISTENT METHODOLOGY AND REFERENCES					
Abdel Atty, 2007.					
LAWS AND REGULATIONS					
Egyptian Code for design and Implementation of outdoor lighting, 2008.					

ENVIRONMENTAL URBAN QUALITY OF LIFE			
QUALITY OF LOCAL ENVIRONMENT			
QE 5-1	REDUCTION OF THE IMPACT OF ODOR	REDUCTION OF THE IMPACT OF ODOR	
TYPOLOGY		QUALITATIVE	
PROCESS STAGE		EX-ANTE	IN ITINERE
REQUIRMENT		EX-POST	
Measures for controlling unpleasant odor.			
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		OBJECTIVELY	
ASSESSMENT	Take measures to reduce the odor emission itself and reduce the diffusion of odor through the placement of the source and restriction of odor generation.		
METHOD	<ul style="list-style-type: none"> <li>- Evaluate countermeasures against odor sources.</li> <li>- “Standard measures” refers to measures to prevent emitted odor from leaking to the exterior, such as sealing waste collection areas and installing deodorizing systems.</li> <li>- “Comprehensive measures” refers to measures to prevent the generation of odor, such as pneumatic waste conveying and collection systems and on-site preprocessing of odor sources.</li> </ul>		
POINTS	1	Not considered	
	2		
	3	Standard measures	
	4		
	5	Comprehensive measures	
EXISTENT METHODOLOGY AND REFERENCES			
CASBEE for Urban Development.			
LAWS AND REGULATIONS			



ENVIRONMENTAL URBAN QUALITY OF LIFE				
ENERGY USE				
EU 1-1	ENERGY EFFICIENCY		ELECTRICAL EFFICIENCY LEVEL	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIREMENT		Decrease of the primary energy demand.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	$E_e = \frac{\left( \sum_{e=1}^{e=n} kWh_e \right) / m^2 - \left( \sum_{eRUE=1}^{eRUE=n} kWh_{eRUE} \right) / m^2}{\left( \sum_{e=1}^{e=n} kWh_e \right) / m^2} \cdot 100$ <p> <math>E_e</math> = Electrical efficiency [%]            kWh<sub>e</sub> = standard electrical measures            kWh<sub>eRUE</sub> = electrical efficient power measures            RUE = Rational use of Energy            m<sup>2</sup> = useable floor area         </p>			
	METHOD	Expert required: Energy Manager To evaluate the electrical consumption per m <sup>2</sup> , with and without efficient measures.		
POINTS	1	less than 10%		
	2	more than 10% but less than 25%		
	3	more than 25% but less than 30%		
	4	more than 30% but less than 40%		
	5	more than 40%		
EXISTENT METHODOLOGY AND REFERENCES				
Giordano, 2010				
LAWS AND REGULATIONS				



ENVIRONMENTAL URBAN QUALITY OF LIFE				
ENERGY USE				
EU 2-1	RENEWABLE ENERGY	RENEWABLE ENERGY PROJECTS		
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Alternative use of resources supply.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT	Evaluate efforts to convert natural or unused energy (including solar generation, equipment using solar heat, wind-powered generation, fuel cells, river water etc.) in the designated area to electricity, and use it.			
METHOD	<ul style="list-style-type: none"> <li>- New Energy: <ul style="list-style-type: none"> <li>- Photovoltaic generation</li> <li>- Wind-powered generation</li> <li>- Solar heat use</li> <li>- Thermal energy</li> <li>- Waste power generation</li> <li>- Waste heat use</li> <li>- Waste fuel production</li> <li>- Biomass generation</li> <li>- Biomass heat use</li> <li>- Biomass fuel production</li> <li>- Natural gas cogeneration</li> <li>- Fuel cells</li> </ul> </li> <li>- Unused Energy: <ul style="list-style-type: none"> <li>- Waste heat from super-high voltage underground power transmission lines.</li> <li>- Waste heat from substations.</li> <li>- Heat from river and sea water.</li> <li>- Waste heat from factories.</li> <li>- Waste heat from cooling.</li> </ul> </li> </ul>			
POINTS	1	Not used.		
	2			
	3			
	4	Any such efforts, regardless of scale, are used in the designated area (less than 10% of annual electrical power demand in the designated area, or of annual heating demand).		
	5	They have been installed more extensively (10% or more of those demand quantities).		
EXISTENT METHODOLOGY AND REFERENCES				
CASBEE for Urban Development.				
LAWS AND REGULATIONS				

ENVIRONMENTAL URBAN QUALITY OF LIFE				
ENERGY USE				
EU 2-2	RENEWABLE ENERGY		PERCENTAGE OF RENEWABLE SUPPLY ON TOTAL	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Alternative use of resources supply.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	RES = Renewable energy on total [%]			
	$RES = \frac{\left[ \frac{kWh_{e,RES}}{m^2} + \frac{kWh_{t,RES}}{m^2} + \frac{kWh_{m,RES}}{m^2} \right]}{\frac{kWh_{TOT}}{m^2}} \cdot 100$ <p> kWh<sub>e,RES</sub> = electrical from renewable (per year)  kWh<sub>m,RES</sub> = the energy from renewable(per year)  kWh<sub>t,RES</sub> = transportation powered by renewable (per year)  kWh<sub>TOT</sub> = total energy consumption (per year) </p>			
METHOD	Expert required: Energy Manager			
POINTS	1	less than 10%		
	2	more than 10% but less than 25%		
	3	more than 25% but less than 30%		
	4	more than 30% but less than 40%		
	5	more than 40%		
EXISTENT METHODOLOGY AND REFERENCES				
Giordano, 2010				
LAWS AND REGULATIONS				



ENVIRONMENTAL URBAN QUALITY OF LIFE			
WASTE MANAGEMENT AND RECYCLING			
W 1-1	SOLID WASTE		LITTER PERCEPTION
TYPOLOGY		QUALITATIVE	
PROCESS STAGE		EX-ANTE	IN ITINERE
REQUIRMENT		EX-POST	
Decrease of the environment load due to materials and components.			
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		SUBJECTIVELY	
ASSESSMENT	Asked residents whether or not they perceived litter as a problem in their city in the past 12 months.		
METHOD			
POINTS	1	Yes	
	2		
	3		
	4		
	5	No	
EXISTENT METHODOLOGY AND REFERENCES			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
LAWS AND REGULATIONS			

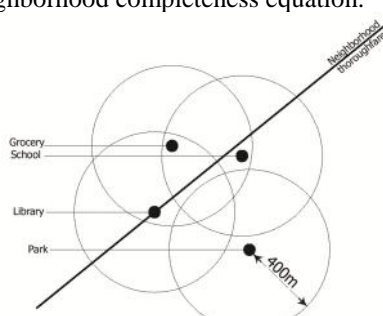
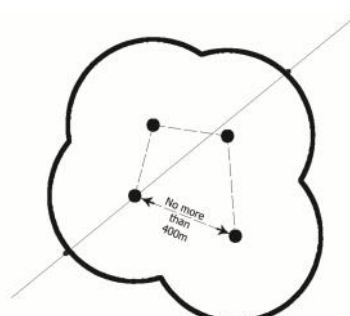
<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>				
<b>WASTE MANAGEMENT AND RECYCLING</b>				
<b>W 1-2</b>	<b>SOLID WASTE</b>	<b>WASTE COLLECTION AND DISPOSAL</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Decrease of the environment load due to materials and components.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	Evaluate efforts to reduce the burden of collecting waste generated in the designated area using centralized-storage facilities.			
<b>POINTS</b>	1	No centralized-storage facilities.		
	2			
	3	Most buildings have their own individual collection areas, but part of the designated area is provided with stockyards shared by multiple buildings.		
	4			
	5	The entire area is served by such facilities.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				
Egyptian Code for Housing Design, 2009.				

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>			
<b>WASTE MANAGEMENT AND RECYCLING</b>			
<b>W 1-3</b>	<b>SOLID WASTE</b>	<b>WASTE RECYCLING</b>	
<b>TYOLOGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>	Decrease of the environment load due to materials and components.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	<p>Waste sorting is the first step in promoting recycling. The more detailed the sorting, the smaller the burden of recycling processes. However, the level of detail in sorting varies, depending on the local authority which treats and disposes of the waste.</p> <p>Therefore, Provide a service to collect recyclable materials (paper and card, plastic, glass, steel and aluminum cans) from households at the kerbside. As well as providing facilities for residents to dispose of these same types of recyclable materials at drop-off stations.</p>		
<b>POINTS</b>	1	Waste is not sorted because there is no facilities to collect recyclable materials from households	
	2		
	3	Waste is sorted, but treatment and disposal are not addressed.	
	4		
	5	Waste is sorted, and treatment and disposal routes are arranged.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
CASBEE for Urban Development – Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>ENVIRONMENTAL URBAN QUALITY OF LIFE</b>				
<b>WASTE MANAGEMENT AND RECYCLING</b>				
<b>W 2-1</b>	<b>WASTEWATER</b>	<b>WASTEWATER TREATMENT</b>		
<b>TPOLOGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Reduce pollution from wastewater and encourage water reuse.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Percentage of wastewater recycled.			
<b>METHOD</b>	Provide on-site treatment to a quality required by state and local regulations for the proposed reuse.			
<b>POINTS</b>	1			
	2			
	3	Retain on-site (recycle) at least 25% of the average annual wastewater generated by the project, and reuse that wastewater to replace potable water.		
	4			
	5	Retain on-site (recycle) at least 50% of the average annual wastewater generated by the project, and reuse that wastewater to replace potable water.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
European Green City Index: Economist Intelligence Unit. European Green City Index. Munich/Germany 2009, LEED for Neighborhood Development Rating System.				
<b>LAWS AND REGULATIONS</b>				

PHYSICAL URBAN QUALITY OF LIFE				
LAND USE				
LU 1-1	MIXED LAND USE		DIVERSITY INDEX	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Combine more than one use or purpose within a shared building or compact project area.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	$H_1 = \frac{- \sum_{i=1}^s (p_i) \ln (p_i)}{\ln (s)}$ <p>H= diversity  <i>p<sub>i</sub></i> = proportion of each land use types such as industrial, public and commercial uses.  <i>s</i> = the number of land uses</p>			
	METHOD	Analysis of neighborhood plan.		
POINTS	1	A lower value indicates the presence of single dominant use.		
	2			
	3			
	4			
	5	A higher value indicates more evenly distributed land use.		
EXISTENT METHODOLOGY AND REFERENCES				
Knaap and Song, 2004.				
LAWS AND REGULATIONS				



MOBILITY URBAN QUALITY OF LIFE														
LAND USE														
LU 1-2	MIXED LAND USE		NEIGHBORHOOD COMPLETENESS											
TYPOLOGY		QUANTITATIVE												
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST										
REQUIRMENT		Combine more than one use or purpose within a shared building or compact project area.												
ASSESSMENT METHODOLOGY														
THE WAY OF ASSESSMENT		OBJECTIVELY												
ASSESSMENT	$\text{Neighborhood Completeness} = \frac{\text{Number of pedestrian destinations}}{\text{Proportional area balance of all pedestrian destinations in pedestrian shed}}$													
METHOD	<p>1- Determine completeness level:</p> <table border="1"> <thead> <tr> <th>Level of Neighborhood Completeness</th> <th>Percentage of Identified Uses Present in Neighborhood (of the total set of uses mentioned by GOPP)</th> </tr> </thead> <tbody> <tr> <td>Excellent</td> <td>70% or greater</td> </tr> <tr> <td>Satisfactory</td> <td>30-70%</td> </tr> <tr> <td>Minimal</td> <td>10-30%</td> </tr> <tr> <td>Poor</td> <td>Less than 10%</td> </tr> </tbody> </table> <p>2- From the list of amenities that has been put together, identify those in the vicinity and their respective walking catchment areas- for example, walking distances of one-quarter to one-half mile. Delineate pedestrian sheds for each amenity (figure A).</p> <p>3- Identify a critical mass of pedestrian destinations (uses) by mapping clusters where destinations are no further apart than one-quarter mile (figure B). The number of destinations that meet this proximity threshold is called the critical mass and is the first value in the neighborhood completeness equation.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Figure A</p> </div> <div style="text-align: center;">  <p>Figure B</p> </div> </div> <p>4- Use balance is the proportional balance of developed uses in the critical mass pedestrian shed, by land area, expressed on a scale of 0 (low) to 1 (high). The resulting use balance score is the second value in the neighborhood completeness.</p>				Level of Neighborhood Completeness	Percentage of Identified Uses Present in Neighborhood (of the total set of uses mentioned by GOPP)	Excellent	70% or greater	Satisfactory	30-70%	Minimal	10-30%	Poor	Less than 10%
Level of Neighborhood Completeness	Percentage of Identified Uses Present in Neighborhood (of the total set of uses mentioned by GOPP)													
Excellent	70% or greater													
Satisfactory	30-70%													
Minimal	10-30%													
Poor	Less than 10%													
POINTS	1	Less than 3 (Poor)												
	2	3-5 (Minimal)												
	3													
	4	5-10 (Satisfactory)												
	5	10-20 (Excellent)												
EXISTENT METHODOLOGY AND REFERENCES														
Douglas Farr, 2008.														
LAWS AND REGULATIONS														

<b>PHYSICAL URBAN QUALITY OF LIFE</b>				
<b>LAND USE</b>				
<b>LU 2-1</b>	<b>NEIGHBORHOOD SERVICES AND FACILITIES</b>	<b>AVAILABILITY OF INFRASTRUCTURE</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Appropriate community services and facilities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Asking people about the availability of formal infrastructure (roads, water supply networks, sanitation, drainage, solid-waste management, electricity, gas supply networks, telephone network, information and communication technology (ICT)).			
<b>METHOD</b>				
<b>POINTS</b>	1	Not available.		
	2			
	3	Available but not sufficient.		
	4			
	5	Availability of sufficient infrastructure.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The researcher.				
<b>LAWS AND REGULATIONS</b>				

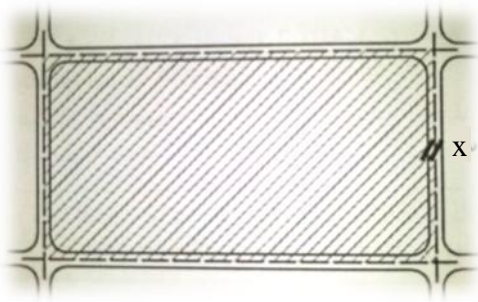
<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>LAND USE</b>			
<b>LU 2-2</b>	<b>NEIGHBORHOOD SERVICES AND FACILITIES</b>	<b>AVAILABILITY OF SERVICES AND FACILITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	The availability of sufficient primary and secondary services and facilities that meet the minimum requirement mentioned by GOPP.		
<b>METHOD</b>			
<b>POINTS</b>	1	Not available.	
	2		
	3	Available but not sufficient and do not meet the minimum requirement.	
	4		
	5	Available and meet the minimum requirement.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher.			
<b>LAWS AND REGULATIONS</b>			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>LAND USE</b>			
<b>LU 2-3</b>	<b>NEIGHBORHOOD SERVICES AND FACILITIES</b>	<b>DEGREE OF CLEANLINESS OF AMENITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Rating of perceived cleanliness of amenities.		
<b>METHOD</b>			
<b>POINTS</b>	1	Not clean.	
	2		
	3	Fair.	
	4		
	5	Clean.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Abel Atty, 2007.			
<b>LAWS AND REGULATIONS</b>			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>				
<b>LAND USE</b>				
<b>LU 2-4</b>	<b>NEIGHBORHOOD SERVICES AND FACILITIES</b>	<b>DEGREE OF ATTRACTIVENESS OF AMENITIES</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Appropriate community services and facilities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Rating of perceived attractiveness of amenities.			
<b>METHOD</b>				
<b>POINTS</b>	1	Not attractive.		
	2			
	3	Fair.		
	4			
	5	Attractive.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Abel Atty, 2007.				
<b>LAWS AND REGULATIONS</b>				

<b>PHYSICAL URBAN QUALITY OF LIFE</b>				
<b>LAND USE</b>				
<b>LU 3-1</b>	<b>EFFECTIVE USE OF LAND</b>		<b>LAND REUSE</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Effective and efficient use of land.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	How much of the development site will be previously developed or contaminated land which will be brought back into use by this development?			
<b>METHOD</b>				
<b>POINTS</b>	1	50% + of the development site built on previously developed/ contaminated land/ infill will be brought back into use.		
	2			
	3	70% + of the development site built on previously developed/ contaminated land/ infill will be brought back into use.		
	4			
	5	100% of the development site built on previously developed/ contaminated land/ infill will be brought back into use.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities - The Pearl Community Rating System for Estidama.				
<b>LAWS AND REGULATIONS</b>				



<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>COMPACT NEIGHBORHOOD</b>			
<b>CN 1-1</b>	<b>DENSITY</b>	<b>GROSS RESIDENTIAL DENSITY</b>	
<b>TYOLOGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Protect amenity and to provide liveable environments.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Gross Residential Density = number of persons or families / feddan		
<b>METHOD</b>	<p>- Measure the density of large areas, includes the entire area of land, including all land uses (not just dwellings), streets, and open spaces, it refers to numbers of persons per feddan or number of families per feddan.</p> <p>- The boundary of the measured area will be the center line of the streets surrounding it, provided that the distance between the edge of the building and the center line of the street not exceed 6m.</p> 		
<b>POINTS</b>	1	Not considered.	
	2		
	3	Necessary consideration according to the laws (100 to 150 person per feddan).	
	4		
	5	The laws have been taken into account (100 to 150 person per feddan), as well as further consideration in line with voluntary standards.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
LEED for Neighborhood Developments Rating System - Preliminary Draft, 2005.			
<b>LAWS AND REGULATIONS</b>			
Egyptian Law of Urban Design - Egyptian Code for Housing Design, 2009.			



PHYSICAL URBAN QUALITY OF LIFE			
COMPACT NEIGHBORHOOD			
CN 1-2	DENSITY	FLOOR-AREA RATIO	
TYPOLOGY		QUANTITATIVE	
PROCESS STAGE		EX-ANTE	IN ITINERE
REQUIRMENT		EX-POST	
Protect amenity and to provide liveable environments.			
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		OBJECTIVELY	
ASSESSMENT	Floor-area ratio = total floor areas / total area of the site Residential      Residential      Residential Commercial      Commercial      Commercial Mixed Use      Mixed Use      Mixed Use		
METHOD	<p style="text-align: center;"><b>The calculation of floor-area ratio (El Wakil, 2007)</b></p>		
POINTS	1	Not considered <b>or</b> Floor-area ratio lesser than 0.5.	
	2		
	3	Necessary consideration according to the laws.	
	4		
	5	The laws have been taken into account, as well as further consideration in line with voluntary standards, (Floor-area ratio greater than or equal 0.5).	
EXISTENT METHODOLOGY AND REFERENCES			
Giordano, 2010- LEED for Neighborhood Developments Rating System - Preliminary Draft, 2005.			
LAWS AND REGULATIONS			
Egyptian Code for Housing Design, 2009.			

PHYSICAL URBAN QUALITY OF LIFE				
COMPACT NEIGHBORHOOD				
CN 2-1	DENSITY	GRADED DENSITY		
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Protect amenity and to provide liveable environments.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT				
METHOD	<p>Analysis of plan related to different densities within the neighborhood.</p>			
POINTS	1	Same density within the neighborhood.		
	2			
	3	Various densities within the neighborhood.		
	4			
	5	Various densities within the neighborhood according to land uses (higher density “minimum twice the average density of the full project” closet to the transit station and neighborhood center “till 240m from the center” and lower density at edge of the neighborhood “till 400m from the center or more”)		
EXISTENT METHODOLOGY AND REFERENCES				
LEED for Neighborhood Developments Rating System - Preliminary Draft, 2005 - The researcher				
LAWS AND REGULATIONS				



<b>PHYSICAL URBAN QUALITY OF LIFE</b>				
<b>URBAN LAYOUT</b>				
<b>UL 1-1</b>	<b>STREET AND SQUARE NETWORK</b>	<b>COMPLETE STREETS</b>		
<b>TPOLOGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Complete street network that promote different uses and needs.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Will the development have residential/mixed use streets (excluding primary routes) designed and operated to enable access and travel for all users, including pedestrians, bicyclists, motorists and public transport users of all ages and abilities?			
<b>METHOD</b>				
<b>POINTS</b>	1	Where evidence provided demonstrates that 50% of the residential streets on the development are complete streets.		
	2			
	3	Where evidence provided demonstrates that 65% of the residential streets on the development are complete streets.		
	4			
	5	Where evidence provided demonstrates that 80% of the residential streets on the development are complete streets.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>PHYSICAL URBAN QUALITY OF LIFE</b>				
<b>URBAN LAYOUT</b>				
<b>UL 1-2</b>	<b>STREET AND SQUARE NETWORK</b>	<b>PROVIDING PROPER EVACUATION ROUTES</b>		
<b>TPOLOGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Complete street network that promote different uses and needs.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Access to evacuation routes designed for natural hazard risks and fire prevention according to the Egyptian fire code.			
<b>METHOD</b>				
<b>POINTS</b>	1	1,000m or more		
	2	500m or more Less than 1,000m		
	3	250m or more Less than 500m		
	4			
	5	Less than 250m.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				
Egyptian Fire code.				

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>URBAN LAYOUT</b>			
<b>UL 2-1</b>	<b>BUILDING BLOCK</b>	<b>BUILDING LINE</b>	
<b>TPOLOGY</b>	<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>	Well-defined urban space that promote the sense of enclosure.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Are streets defined by a well-structured building layout (continuous building line)?		
<b>METHOD</b>	Analyze the development plan.		
<b>POINTS</b>	1	Undefined urban spaces.	
	2		
	3		
	4		
	5	All urban spaces are well-defined by building blocks with clear definition of the public and private realm.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Building for Life.			
<b>LAWS AND REGULATIONS</b>			
Egyptian Code for Housing Design, 2009.			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>				
<b>URBAN LAYOUT</b>				
<b>LU 2-2</b>	<b>BUILDING BLOCK</b>	<b>WELL INTEGRATED CAR PARKING</b>		
<b>TYOLOGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Well-defined urban space that promote the sense of enclosure.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Is the car parking well integrated and situated so it supports the street scene?			
<b>METHOD</b>	Calculate surface parking facilities include ground-level garages unless they are under habitable building space. Underground or multistory parking facilities can be used to provide additional capacity, and on-street parking spaces are exempt from this limitation.			
<b>POINTS</b>	1	No - more than 20% of the total development footprint area used for off-street surface parking facilities.		
	2			
	3			
	4			
	5	Yes - less than 20% of the total development footprint area used for off-street surface parking facilities, with no individual surface parking lot larger than 2 acres (feddan).		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Building for Life – LEED for Neighborhood Development Rating System.				
<b>LAWS AND REGULATIONS</b>				
Egyptian Code for Housing Design, 2009.				

PHYSICAL URBAN QUALITY OF LIFE				
URBAN LAYOUT				
LU 2-3	BUILDING BLOCK		BUILDING HEIGHT-TO-WIDTH RATIO	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Well-defined urban space that promote the sense of enclosure.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	Calculate the ratio between building height and the width of the urban space.			
METHOD	Building height is measured to eaves or the top of the roof for a flat-roof structure, and street width is measured façade to façade. For block frontages with multiple heights and/or widths, use average heights or widths weighted by each segment's linear share of the total block distance.			
POINTS	1	If the surrounding building height exceeds the width of the space, more than what was mentioned in the Egyptian law for Urban Planning.		
	2			
	3	A height-to-width ratio of 1:1 is often considered the minimum for comfortable urban streets.		
	4			
	5	A height-to-width ratio of between 1:2 and 1:2.5 provides a good sense of enclosure in a street (no more than what was mentioned in the Egyptian law for Urban Planning).		
EXISTENT METHODOLOGY AND REFERENCES				
Carmona and al., 2003.				
LAWS AND REGULATIONS				
Egyptian law for Urban Planning, 1982.				





<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>HOUSING AND BUILDINGS QUALITY</b>			
<b>HBQ 1-1</b>	<b>BUILDING QUALITY</b>	<b>BUILDING TECHNOLOGY</b>	
<b>TYPOLOGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>	Increase overall efficiency.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Has the scheme made use of advances in construction or technology that enhance its performance, quality, and attractiveness?		
<b>METHOD</b>			
<b>POINTS</b>	1	No	
	2		
	3		
	4		
	5	Yes	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Building for Life.			
<b>LAWS AND REGULATIONS</b>			

PHYSICAL URBAN QUALITY OF LIFE				
HOUSING AND BUILDINGS QUALITY				
HBQ 1-2	BUILDING QUALITY		FULFILLMENT OF BUILDING CODES	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Increase overall efficiency.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	Do buildings or spaces outperform statutory minima, such as building regulations?			
METHOD				
POINTS	1	No		
	2			
	3			
	4			
	5	yes		
EXISTENT METHODOLOGY AND REFERENCES				
Building for Life				
LAWS AND REGULATIONS				
Egyptian Code for Housing Design, 2009.				

PHYSICAL URBAN QUALITY OF LIFE				
HOUSING AND BUILDINGS QUALITY				
HBQ 2-1	HOUSING QUALITY		DURABILITY	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Provide appropriate shelter for fulfilling people's basic needs.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT				
METHOD	<p>A house is considered 'durable' if:</p> <ul style="list-style-type: none"> <li>• It is built on a non-hazardous location.</li> <li>• Has a structure permanent and adequate enough to protect its inhabitants from the extremes of climatic conditions.</li> </ul> <p>The dwelling:</p> <ul style="list-style-type: none"> <li>• Must not be located on a steep slope or in a hazardous location.</li> <li>• It must not be in a dilapidated state or need of repair.</li> <li>• It must comply with local building codes and have permanent building materials for the walls, roof and flooring.</li> <li>• It should not be located in a dangerous right-of way, such as close to rail lines, power lines or highways.</li> </ul>			
POINTS	1	If the house is located in a hazardous location or in a dangerous right-of way <b>OR</b> if it has a non permanent structure and did not comply with local building codes.		
	2			
	3	If the house is built on a non-hazardous location. But, has a bad building condition that could be repaired.		
	4			
	5	If the house is built on a non-hazardous location and has a structure permanent and adequate enough to protect its inhabitants from the extremes of climatic conditions.		
EXISTENT METHODOLOGY AND REFERENCES				
UN-Habitat and The American University in Cairo, 2011.				
LAWS AND REGULATIONS				
Egyptian Building Codes.				

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>HOUSING AND BUILDINGS QUALITY</b>			
<b>HBQ 2-2</b>	<b>HOUSING QUALITY</b>	<b>ADAPTABILITY</b>	
<b>TPOLOGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>	Provide appropriate shelter for fulfilling people's basic needs.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Do internal spaces and layout allow for adaptation, conversion or extension?		
<b>METHOD</b>	A well-designed home will need to take account of changing demands and lifestyles of the future by providing flexible internal layouts and allowing for cost-effective alterations. Housing should be able to respond to changing social, technological and economic conditions.		
<b>POINTS</b>	1	No	
	2		
	3		
	4		
	5	Yes	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Building for Life.			
<b>LAWS AND REGULATIONS</b>			
Egyptian Code for Housing Design, 2009.			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>HOUSING AND BUILDINGS QUALITY</b>			
<b>HBQ 2-3</b>	<b>HOUSING QUALITY</b>		<b>CONDITION</b>
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		EX-POST	
Provide appropriate shelter for fulfilling people's basic needs.			
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Asking residents about their building condition (structure – finishing – natural ventilation – plumbing- lighting).		
<b>METHOD</b>			
<b>POINTS</b>	1	Bad	
	2		
	3	Fair	
	4		
	5	Good	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher.			
<b>LAWS AND REGULATIONS</b>			
Egyptian Code for Housing Design, 2009.			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>HOUSING AND BUILDINGS QUALITY</b>			
<b>HBQ 2-4</b>	<b>HOUSING QUALITY</b>	<b>OVERCROWDING AVERAGE</b>	
<b>TPOLOGY</b>	<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>	Provide appropriate shelter for fulfilling people's basic needs.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Overcrowding average = number of residents / number of rooms in the dwelling (excluding kitchens, bathrooms and halls)		
<b>METHOD</b>			
<b>POINTS</b>	1	More than 3 people per room.	
	2		
	3	1.5 to 3 people per room.	
	4		
	5	Less than 1.5 people per room.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
UN-Habitat International Criteria.			
<b>LAWS AND REGULATIONS</b>			
Egyptian Code for Housing Design, 2009.			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>HOUSING AND BUILDINGS QUALITY</b>			
<b>HBQ 2-5</b>	<b>HOUSING QUALITY</b>	<b>ACCESS TO KITCHEN AND BATHROOM FACILITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Provide appropriate shelter for fulfilling people's basic needs.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Availability of kitchen and private bathroom in the house.		
<b>METHOD</b>			
<b>POINTS</b>	1	No kitchen in the dwelling and common bathroom for many households.	
	2		
	3		
	4		
	5	Each dwelling has a kitchen and a private bathroom.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
UN-Habitat and The American University in Cairo, 2011.			
<b>LAWS AND REGULATIONS</b>			



PHYSICAL URBAN QUALITY OF LIFE			
HOUSING AND BUILDINGS QUALITY			
HBQ 2-6	HOUSING QUALITY		ACCESS TO INFRASTRUCTURE
TYPOLOGY		QUALITATIVE	
PROCESS STAGE		EX-ANTE	IN ITINERE
REQUIRMENT		EX-POST	
Provide appropriate shelter for fulfilling people's basic needs.			
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		OBJECTIVELY	
ASSESSMENT	Electricity, water, sewage access.		
METHOD	(A) - Access to general electricity network. - Access to sewage network. - Access to running water.		(B) - Receive the power illegally through tapping into main network. - Use trenches. - Buying water.
POINTS	1	(B)	
	2		
	3	(A) <b>but</b> the services are not regular and there are continuous interruptions.	
	4		
	5	(A)	
EXISTENT METHODOLOGY AND REFERENCES			
UN-Habitat and The American University in Cairo, 2011.			
LAWS AND REGULATIONS			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>MANAGEMENT AND MAINTENANCE</b>			
<b>M 1-1</b>	<b>MANAGEMENT AND MAINTENANCE</b>	<b>MAINTENANCE POLICIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Give a sense of ownership of the community facilities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Physical design should take account of projected management, maintenance and repair policies for the three different level of the housing project: 1- The housing unit. 2- The building. 3- The site (streets, gardens, infrastructures .....).		
<b>POINTS</b>	1	No	
	2		
	3		
	4		
	5	Yes	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Marcus and Sakissian, 1986.			
<b>LAWS AND REGULATIONS</b>			
Egyptian Code for Housing Design, 2009.			


<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>MANAGEMENT AND MAINTENANCE</b>			
<b>M 1-2</b>	<b>MANAGEMENT AND MAINTENANCE</b>		<b>MAINTENANCE RESPONSIBILITIES</b>
<b>TYPOLOGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	The availability of resident or full-time caretakers with clear management responsibilities on site as spelled out.		
<b>POINTS</b>	1	No	
	2		
	3		
	4		
	5	Yes	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Marcus and Sakissian, 1986.			
<b>LAWS AND REGULATIONS</b>			

<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>MANAGEMENT AND MAINTENANCE</b>			
<b>M 1-3</b>	<b>MANAGEMENT AND MAINTENANCE</b>	<b>RESIDENT'S MANUAL</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Give a sense of ownership of the community facilities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Designers and management should prepare a resident's manual.		
<b>POINTS</b>	1	No	
	2		
	3		
	4		
	5	Yes	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Marcus and Sakissian, 1986.			
<b>LAWS AND REGULATIONS</b>			


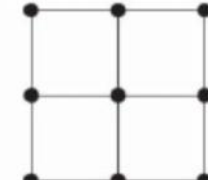
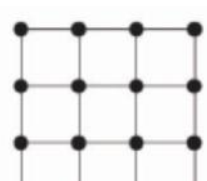
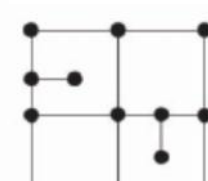
<b>PHYSICAL URBAN QUALITY OF LIFE</b>			
<b>MANAGEMENT AND MAINTENANCE</b>			
<b>M 1-4</b>	<b>MANAGEMENT AND MAINTENANCE</b>	<b>ON-SITE OFFICE</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Give a sense of ownership of the community facilities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Provision of a management office on site with resident or full-time caretakers.		
<b>POINTS</b>	1	No	
	2		
	3		
	4		
	5	Yes	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Marcus and Sakissian, 1986.			
<b>LAWS AND REGULATIONS</b>			

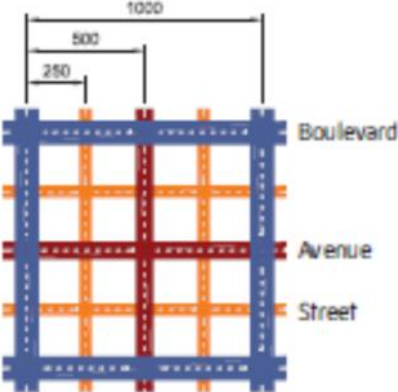
<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>ACCESSIBILITY</b>				
<b>ACC 1-1</b>	<b>PEDESTRIAN CATCHMENT AREA</b>	<b>PEDESTRIAN CATCHMENT AREA FOR PRIMARY FACILITIES</b>		
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		encouraging daily physical activity		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Calculate the average travel distance between the furthest point and <b>Primary Facilities</b> which cover at least 80% of the residents and working populations in the neighborhood.			
<b>METHOD</b>				
<b>POINTS</b>	1	500 m		
	2			
	3	400 m		
	4			
	5	Less than 350 m		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The Pearl Rating System for Estidama Community Rating System-Design & Construction - Burton & Mitchell 2006.				
<b>LAWS AND REGULATIONS</b>				

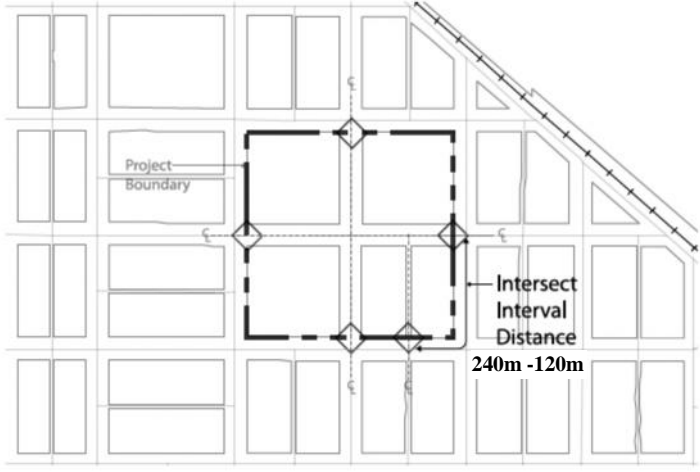
MOBILITY URBAN QUALITY OF LIFE			
ACCESSIBILITY			
ACC 1-2	PEDESTRIAN CATCHMENT AREA	PEDESTRIAN CATCHMENT AREA FOR SECONDARY FACILITIES	
TYPOLOGY		QUANTITATIVE	
PROCESS STAGE		EX-ANTE	IN ITINERE
REQUIRMENT		EX-POST	
encouraging daily physical activity			
ASSESSMENT METHODOLOGY			
THE WAY OF ASSESSMENT		OBJECTIVELY	
ASSESSMENT	Calculate the average travel distance between the furthest point and <b>Secondary Facilities</b> which cover at least 80% of the residents and working populations in the neighborhood.		
METHOD			
POINTS	1	More than 800 m and less than 1500 m	
	2		
	3	600 m	
	4		
	5	500 m	
EXISTENT METHODOLOGY AND REFERENCES			
The Pearl Rating System for Estidama Community Rating System-Design & Construction - Burton & Mitchell 2006, CASBEE for Urban Development.			
LAWS AND REGULATIONS			

MOBILITY URBAN QUALITY OF LIFE				
ACCESSIBILITY				
ACC 2-1	CONNECTIVITY		DIRECT ROUTE INDEX	
TYPOLOGY	QUANTITATIVE			
PROCESS STAGE	EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT	Increasing options for pedestrian activity			
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	<p>Direct Route Index (DRI) = <math display="block">\frac{\text{Length of Actual Path}}{\text{Length of Direct Path}}</math></p>			
METHOD	<p>A random plot (A) was selected as the origin of three different routes: the first leads to an exit point (B); the second route to the transit and commercial hub (C); and the third link to another random plot (D). Solid lines on the map represent the actual route, whereas dashed lines show direct routes. This model may be used for both vehicle and pedestrian routes.</p> 			
POINTS	1	An actual path that is more than 1.5 times its direct path.		
	2			
	3	An actual path that is less than or equal to 1.5 times its direct path.		
	4			
	5	The best possible result is an index of 1.		
EXISTENT METHODOLOGY AND REFERENCES				
The Pearl Rating System for Estidama Community Rating System-Design and Construction, Abu Dhabi Urban Street Design Manual				
LAWS AND REGULATIONS				



MOBILITY URBAN QUALITY OF LIFE				
ACCESSIBILITY				
ACC 2-2	CONNECTIVITY		CONNECTIVITY INDEX	
TYPOLOGY	QUANTITATIVE			
PROCESS STAGE	EX-ANTE		IN ITINERE	EX-POST
REQUIREMENT	Increasing options for pedestrian activity			
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	<p style="text-align: center;">           Connectivity Index = <math>\frac{\text{The Number of Roadway Links}}{\text{The Number of Roadway Nodes}}</math> </p> <p>Indices can be measured separately for motorized and nonmotorized travel.</p>			
METHOD	<p>Links are the segments between intersections, nodes are the intersections themselves. Dead ends count the same as any other link end point. Dead ends reduce the index value. A higher index means that travelers have increased route choices. The more intersections, the greater the degree of connectivity.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>4 links/4 nodes= 1.00 CI</p> </div> <div style="text-align: center;">  <p>12 links/9 nodes= 1.33 CI</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  <p>24 links/16 nodes= 1.50 CI</p> </div> <div style="text-align: center;">  <p>16links/13nodes= 1.23 CI</p> </div> </div>			
POINTS	1	Connectivity Index less than 1.5		
	2			
	3			
	4			
	5	Connectivity Index more than or equal 1.5		
EXISTENT METHODOLOGY AND REFERENCES				
The Pearl Rating System for Estidama Community Rating System-Design and Construction, Abu Dhabi Urban Street Design Manual, LEED for Neighborhood Development Rating System				
LAWS AND REGULATIONS				

MOBILITY URBAN QUALITY OF LIFE				
ACCESSIBILITY				
ACC 2-3	CONNECTIVITY		BLOCKS SIZE	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Increasing options for pedestrian activity		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	Median length of street blocks			
METHOD	<p>All measurements on junction spacing will be centerline to centerline</p> 			
POINTS	1	375 m with the availability of pedestrian route within the block not less than 4m width and the distance between the center line of the pedestrian route and the end of block 150m		
	2			
	3	250 m		
	4			
	5	125 m		
EXISTENT METHODOLOGY AND REFERENCES				
The Pearl Rating System for Estidama Community Rating System-Design and Construction, Abu Dhabi Urban Street Design Manual.				
LAWS AND REGULATIONS				
Egyptian law for Urban Planning, 1982.				

MOBILITY URBAN QUALITY OF LIFE				
ACCESSIBILITY				
ACC 2-4	CONNECTIVITY		EXTERNAL CONNECTIVITY	
TYPOLOGY	QUANTITATIVE			
PROCESS STAGE	EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT	Increasing options for pedestrian activity			
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	Median distance between ingress/egress (access) points to the project with at least one through-street.			
METHOD	 <p>The diagram illustrates a street grid with a central 'Project Boundary' outlined in a dashed rectangle. Four diamond-shaped markers are placed at the intersections of the project boundary with the grid streets. A horizontal line with arrows at both ends is labeled 'Intersect Interval Distance' with the value '240m - 120m' below it. The grid includes a diagonal street on the right side.</p>			
POINTS	1	240 m		
	2			
	3	180 m		
	4			
	5	120 m		
EXISTENT METHODOLOGY AND REFERENCES				
LEED for Neighborhood Development Rating System.				
LAWS AND REGULATIONS				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>WALKABILITY AND CYCLABILITY</b>				
<b>WC1-1</b>	<b>WALKABLE NETWORK</b>		<b>SIDEWALK NETWORK COVERAGE</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Providing continues walkable network		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Percentage of total street frontage with sidewalks, that meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines, on both sides.			
<b>METHOD</b>				
<b>POINTS</b>	1	Less than 90% of streets have continuous sidewalks along both sides		
	2			
	3	The provision of continuous sidewalks along both sides of 90% of streets but they didn't meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines		
	4			
	5	The provision of continuous sidewalks, that meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines, along both sides of 90% of streets		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System, Streets elements guidelines-Housing and Building Research Center (HBRC)				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>WALKABILITY AND CYCLABILITY</b>				
<b>WC1-2</b>	<b>WALKABLE NETWORK</b>		<b>SIDEWALK QUALITY</b>	
<b>TPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Providing continues walkable network		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	Sidewalking quality rating (especially when it rains) Referring to Egyptian Code for Housing Design.			
<b>POINTS</b>	1	Bad Condition		
	2			
	3	Fair Condition but it becomes worth when it rains		
	4			
	5	Excellent Condition especially when it rains		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Knaap G.Song Y., Ewing R, Clifton K., 2004.				
<b>LAWS AND REGULATIONS</b>				
Egyptian Code for Housing Design, 2009.				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>WALKABILITY AND CYCLABILITY</b>				
<b>WC1-3</b>	<b>WALKABLE NETWORK</b>		<b>SAFE PEDESTRIAN CROSSING</b>	
<b>TPOLOGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Providing continues walkable network		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Calculate maximum spaces between pedestrian crossings which meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines.			
<b>METHOD</b>				
<b>POINTS</b>	1	No special consideration given to traffic or the level of consideration is unclear and hazardous or problematic areas exist.		
	2			
	3	No more than 150 m between pedestrian crossings, and crossing design meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines		
	4			
	5	No more than 120 m between pedestrian crossings, and crossing design meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System, Streets elements guidelines-Housing and Building Research Center (HBRC), Abu Dhabi Urban Street Design Manual, CASBEE for Urban development.				
<b>LAWS AND REGULATIONS</b>				
Egyptian Code for Housing Design, 2009.				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>WALKABILITY AND CYCLABILITY</b>				
<b>WC2-1</b>	<b>CYABLE NETWORK &amp; FACILITIES</b>		<b>BICYCLE LANE KM</b>	
<b>TYOLOGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Providing continues cycable network		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Total distance devoted to bicycle facilities (on or off road), where bike routes meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines.			
<b>METHOD</b>				
<b>POINTS</b>	1	No bicycle lane		
	2			
	3	An existing bicycle network of at least 5 continuous miles (8 km) in length is within 1/4-mile (400m) bicycling distance of the project boundary. But bike routes do not meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines.		
	4			
	5	An existing bicycle network of at least 5 continuous miles (8 km) in length is within 1/4-mile (400m) bicycling distance of the project boundary, where bike routes meet the minimum requirements mentioned in Egyptian Streets Elements Guidelines.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System, Streets elements guidelines-Housing and Building Research Center (HBRC), The BREEAM for Communities				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>WALKABILITY AND CYCLABILITY</b>				
<b>WC2-2</b>	<b>CYCABLE NETWORK &amp; FACILITIES</b>	<b>BICYCLE FACILITIES</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Providing continues cycable network		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	Verify the exciting of bicycle parking.			
<b>POINTS</b>	1	No bicycle parking.		
	2			
	3	The provision of bicycle parking but not enough.		
	4			
	5	The provision of enough bicycle parking within the neighborhood.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System				
<b>LAWS AND REGULATIONS</b>				



<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>WALKABILITY AND CYCLABILITY</b>				
<b>WC3-1</b>	<b>TRAFFIC CALMING</b>		<b>SPEED LIMIT</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>		Reducing vehicle speeds.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	Consideration for speed limit.			
<b>POINTS</b>	1	No special consideration given for traffic calming.		
	2			
	3	Design strategies have been developed for major routes to reduce road traffic to a speed deemed suitable for route.		
	4			
	5	Design strategies have been developed for the entire site to reduce road traffic to a speed deemed suitable.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System, Streets elements guidelines-Housing and Building Research Center (HBRC), The BREEAM for communities				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>			
<b>PUBLIC TRANSPORTATION</b>			
<b>PT1-1</b>	<b>USE OF PUBLIC TRANSPORT</b>	<b>USE OF PUBLIC TRANSPORT</b>	
<b>TYPOLGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>	Minimize car dependency.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Residents were asked how often they had used public transport in the previous 12 months, on a given frequency scale.		
<b>METHOD</b>			
<b>POINTS</b>	1	Did not use	
	2	Less than once a month	
	3	At least once a month	
	4	Once a week	
	5	5 or more times a week	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>PUBLIC TRANSPORTATION</b>				
<b>PT2-1</b>	<b>VARIETY OF TRANSPORTATION CHOISES</b>		<b>VARIETY OF TRANSPORTATION CHOISES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Transit service options.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Transit service options in particular area (how many options)			
<b>METHOD</b>	Asking people			
<b>POINTS</b>	1	There are no transit service		
	2			
	3	There is one choice of transportation (private car not counted)		
	4			
	5	There are many choices of transportation (private car not counted)		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Abdel Aty,2007, Knaap G., Song Y., Ewing R, Clifton K., 2004.				
<b>LAWS AND REGULATIONS</b>				

MOBILITY URBAN QUALITY OF LIFE				
PUBLIC TRANSPORTATION				
PT3-1	PUBLIC TRANSPORT RATE		PUBLIC TRANSPORT FREQUENCY	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Frequency rate.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT	Asking people about public transport frequency.			
METHOD				
POINTS	1	Rare		
	2			
	3	Fair		
	4			
	5	Frequent – every 10 to 15 minutes.		
EXISTENT METHODOLOGY AND REFERENCES				
The BREEAM for communities				
LAWS AND REGULATIONS				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>PUBLIC TRANSPORTATION</b>				
<b>PT4-1</b>	<b>APPROPRIATE PUBLIC TRANSPORT</b>	<b>CONVENIENCE OF PUBLIC TRANSPORT</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Provide safe, comfortable and affordable way of transportation.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Asking people about the convenience of public transport.			
<b>METHOD</b>				
<b>POINTS</b>	1	Not Convenient		
	2			
	3	Fair		
	4			
	5	Convenient		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>			
<b>PUBLIC TRANSPORTATION</b>			
<b>PT4-2</b>	<b>APPROPRIATE PUBLIC TRANSPORT</b>	<b>AFFORDABILITY OF PUBLIC TRANSPORT</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
		Provide safe, comfortable and affordable way of transportation.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Residents were asked to rate the affordability of public transport on a five point scale.		
<b>METHOD</b>			
<b>POINTS</b>	1	strongly disagree	
	2	disagree	
	3	Neither	
	4	agree	
	5	strongly agree	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>			
<b>LAWS AND REGULATIONS</b>			

<b>MOBILITY URBAN QUALITY OF LIFE</b>			
<b>PUBLIC TRANSPORTATION</b>			
<b>PT4-3</b>	<b>APPROPRIATE PUBLIC TRANSPORT</b>		<b>SAFETY OF PUBLIC TRANSPORT</b>
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
		Provide safe, comfortable and affordable way of transportation.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Residents were asked to rate the safety perception of public transport on a five point scale.		
<b>METHOD</b>			
<b>POINTS</b>	1	Very Unsafe	
	2	Unsafe	
	3	Neither	
	4	safe	
	5	Very safe	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>			
<b>LAWS AND REGULATIONS</b>			

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>PUBLIC TRANSPORTATION</b>				
<b>PT5-1</b>	<b>TRANSIT FACILITIES</b>		<b>TRANSIT FACILITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Providing safe and comfortable waiting area.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	The provision of a safe transit waiting area			
<b>METHOD</b>	The provision of a safe transit waiting area			
<b>POINTS</b>	1	No transit waiting area		
	2			
	3	There is transit waiting area		
	4			
	5	There is a safe and shaded transit waiting area with seating		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System, The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				



<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>PUBLIC TRANSPORTATION</b>				
<b>PT6-1</b>	<b>EASE OF ACCESS TO PUBLIC TRANSPORT FACILITIES</b>		<b>EASE OF ACCESS TO PUBLIC TRANSPORT FACILITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Accessible public transport.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Residents were asked to rate the ease of access to public transport facilities (such as a bus stop or train station)			
<b>METHOD</b>				
<b>POINTS</b>	1	very difficult		
	2	Difficult		
	3	Neither		
	4	Easy		
	5	very easy		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>TRAFFIC LOAD</b>				
<b>TL 1-1</b>	<b>TRAFFIC VOLUME</b>	<b>TRAFFIC FLOW</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Reduce traffic volume.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Determine the traffic flow (peak/ off peak time)			
<b>METHOD</b>				
<b>POINTS</b>	1	Congested and slow		
	2			
	3	Neither		
	4			
	5	Comfortable and rapid		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Urban Quality of Life in Istanbul, 1998.				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>TRAFFIC LOAD</b>				
<b>TL 1-2</b>	<b>TRAFFIC VOLUME</b>		<b>MOTOR VEHICLE OWNERSHIP</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Reduce traffic volume.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	This measure presents data on the number of motor vehicles per household over the last two census periods. It gives us insight into traffic congestion, fossil fuel consumption and air pollution.			
<b>METHOD</b>				
<b>POINTS</b>	1	Dramatic decrease.		
	2	Decrease		
	3	Neither		
	4	Increase		
	5	Dramatic increase.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>TRAFFIC LOAD</b>				
<b>TL 1-3</b>	<b>TRAFFIC VOLUME</b>	<b>MEANS OF TRAVEL TO WORK</b>		
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Reduce traffic volume.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	This measure presents data on how residents aged 15 years and over and in full-time employment travelled to work.			
<b>METHOD</b>				
<b>POINTS</b>	1	The majority of employed residents used motor vehicle.		
	2			
	3	The majority of employed residents used public transport.		
	4			
	5	The majority of employed residents used bicycles or do not use any type of transportation.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>TRAFFIC LOAD</b>				
<b>TL 1-4</b>	<b>TRAFFIC VOLUME</b>	<b>DISTANCES TRAVELLED BY MODE OF TRANSPORT</b>		
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Reduce traffic volume.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	This measure shows the distance travelled (millions of kilometers) by various transport modes. Which kind of transportation was the dominant?			
<b>METHOD</b>	Households are asked to record all their travel over a tow day period.			
<b>POINTS</b>	1	Motor vehicle was the dominant form of transport.		
	2	Taxi or any private vehicle was the dominant form of transport.		
	3			
	4	Bus or any public transport was the dominant form of transport.		
	5	Walk or bicycle was the dominant form of transport.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>				
<b>LAWS AND REGULATIONS</b>				

<b>MOBILITY URBAN QUALITY OF LIFE</b>					
<b>TRAFFIC LOAD</b>					
<b>TL 1-5</b>	<b>TRAFFIC VOLUME</b>	<b>POPULATION TRAVELLING OUTSIDE THEIR CITY TO WORK</b>			
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>			
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>	
<b>REQUIRMENT</b>		Reduce traffic volume.			
<b>ASSESSMENT METHODOLOGY</b>					
<b>THE WAY OF ASSESSMENT</b>			<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	This measure presents data on residents aged 15 years and over and in full-time employment, who travelled to a workplace either inside or outside their district boundary.				
<b>METHOD</b>					
<b>POINTS</b>	1	The majority of residents aged 15 years and over work outside the district.			
	2				
	3	No big difference.			
	4				
	5	The majority of residents aged 15 years and over work in the district.			
<b>EXISTENT METHODOLOGY AND REFERENCES</b>					
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>					
<b>LAWS AND REGULATIONS</b>					

<b>MOBILITY URBAN QUALITY OF LIFE</b>				
<b>TRAFFIC LOAD</b>				
<b>TL 2-1</b>	<b>TRANSPORTATION DEMAND MANAGEMENT</b>		<b>MEASURES FOR TRANSPORTATION DEMAND MANAGEMENT</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Provide policy options to reduce traffic and its danger effects		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	Check of the travel strategy or policy existence and analysis of its processing's level.			
<b>POINTS</b>	1	No strategy or policy for the reduction of total traffic volume		
	2			
	3	Develop a travel strategy or policy for the reduction of total traffic volume		
	4			
	5	Implement the travel strategy or policy for the reduction of total traffic volume		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System, The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL EQUITY AND INCLUSION</b>			
<b>SE 1-1</b>	<b>SOCIAL JUSTICE</b>	<b>EQUAL ACCESS TO AFFORDABLE HOUSING</b>	
<b>TYPOLGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>	Equal access to 'equal quality' of urban opportunities.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Is the affordable housing indistinguishable from the rest of the development in terms of aesthetics and distribution?		
<b>METHOD</b>	<ul style="list-style-type: none"> <li>• Site map or project outline that details affordable housing mix throughout the site.</li> <li>• Letter or correspondence from the developer that there is a commitment to include affordable housing throughout the site.</li> <li>• Written confirmation in regards to the affordable housing requirements of the development site from the local Planning Authority.</li> </ul>		
<b>POINTS</b>	1	Affordable housing is integrated evenly throughout the site.	
	2		
	3	Affordable housing is indistinguishable from other dwellings on the site	
	4		
	5	Affordable housing is indistinguishable from other dwellings on the site and integrated evenly throughout the site	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The BREEAM for Communities.			
<b>LAWS AND REGULATIONS</b>			



<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>SOCIAL EQUITY AND INCLUSION</b>				
<b>SE 1-2</b>	<b>SOCIAL JUSTICE</b>		<b>EQUAL ACCESS TO SERVICES AND FACILITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Equal access to 'equal quality' of urban opportunities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Asking people about the quality of services and facilities and are they accessible and affordable for them?			
<b>METHOD</b>	Having equal access to adequate services and facilities such as health care, education, transportation ....etc.			
<b>POINTS</b>	1	Inadequate services and facilities.		
	2	Adequate services and facilities <b>but</b> not accessible or not affordable for all people.		
	3			
	4			
	5	Adequate services and facilities - Accessible and affordable for all people.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The researcher, 2012.				
<b>LAWS AND REGULATIONS</b>				

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>SOCIAL EQUITY AND INCLUSION</b>				
<b>SE 1-3</b>	<b>SOCIAL JUSTICE</b>	<b>ASPIRATIONS OF LOCAL COMMUNITY</b>		
<b>TYPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Equal access to 'equal quality' of urban opportunities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Has a statement been prepared explaining how the development contributes to the housing needs of the area, in terms of type, size, tenure and reflecting the needs of the current and prospective community demographics, and what steps have been taken to make the development affordable for local people?			
<b>METHOD</b>	<ul style="list-style-type: none"> <li>• An investigation report has been completed that shows how demographic trends have shaped or influenced the decision made.</li> <li>• Minutes from the consultation meeting that outline the developers' commitment to address the type, size, tenure and reflecting the needs of the current and prospective community demographics.</li> <li>• Minutes of consultation meetings indicating decisions taken and the reasons for them.</li> <li>• An investigation report has been provided investigating the affordability of proposed homes on the new development.</li> <li>• Documentation that demonstrates the commitment by the developer to incorporate innovative purchase models enabling local people to acquire housing with restrictive occupancy covenants placed as appropriate.</li> </ul>			
<b>POINTS</b>	1	Housing type, size and tenure needs of current and future community demographics have been investigated and addressed.		
	2			
	3	Housing type, size, tenure and the range of different types of affordable homes needs of current and future community demographics have been investigated and addressed.		
	4			
	5	Housing type, size and tenure needs of current and future community demographics have been investigated and addressed. This is in addition to the development incorporates innovative purchase models enabling local people to acquire housing with restrictive occupancy covenants placed as appropriate.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL EQUITY AND INCLUSION</b>			
<b>SE 2-1</b>	<b>INCLUSIVE COMMUNITIES</b>	<b>FAMILIARITY</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	<p>Familiar streets for life are likely to be places:</p> <ul style="list-style-type: none"> <li>• Streets, open spaces and buildings are long established.</li> <li>• Any change is small scale and incremental.</li> <li>• New developments incorporate local forms, styles, colors and materials.</li> <li>• There is a hierarchy of streets types.</li> <li>• Places and buildings are in designs familiar to or easily understood by older people.</li> <li>• Architecture features and streets furniture are in designs familiar to or easily understood by older people.</li> </ul>		
<b>POINTS</b>	1	Not considered.	
	2		
	3		
	4		
	5	Measurements have been considered for making design familiar to older people.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
(Inclusive Urban Design) Burton and Mitchell, 2006.			
<b>LAWS AND REGULATIONS</b>			

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL EQUITY AND INCLUSION</b>			
<b>SE 2-2</b>	<b>INCLUSIVE COMMUNITIES</b>	<b>LEGIBILITY</b>	
<b>TYPOLGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>	To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	<p>Legible streets for life are likely to have:</p> <ul style="list-style-type: none"> <li>• A hierarchy of street types.</li> <li>• Blocks laid out on an irregular grid based on an adapted perimeter block pattern.</li> <li>• Small street blocks of varying lengths from around 60-100m</li> <li>• Well connected streets</li> <li>• Gently winding streets with open ended bends and corners greater than 90°.</li> <li>• Short, fairly narrow streets.</li> <li>• Forked, staggered and T-junctions rather than cross-roads.</li> <li>• Places and buildings with clearly visible, obvious and unambiguous functions and entrances.</li> <li>• Low walls, fences and hedges and open fencing separating private and public space.</li> <li>• Minimal signs giving simple, essential and unambiguous information at decision points.</li> <li>• Directional signs on single pointers.</li> <li>• Locational signs for primary services positioned perpendicular to the wall.</li> <li>• Signs with large, realistic graphics and symbols in clear color contrast to the background, generally with dark lettering on a light background.</li> <li>• Signs with non-glare lighting and non-reflective coverings.</li> <li>• Street furniture and other latent cues positioned at decision points and where visual access ends.</li> </ul>		
<b>POINTS</b>	1	Not considered.	
	2		
	3		
	4		
	5	Measurements have been considered for making design legible for older people.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
(Inclusive Urban Design) Burton and Mitchell, 2006.			
<b>LAWS AND REGULATIONS</b>			

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL EQUITY AND INCLUSION</b>			
<b>SE 2-3</b>	<b>INCLUSIVE COMMUNITIES</b>	<b>DISTINCTIVENESS</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		EX-POST	
		To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Distinctive streets for life are likely to have: <ul style="list-style-type: none"> <li>• Local character.</li> <li>• Varied urban and building form.</li> <li>• Small, informal, welcoming and understandable local open spaces with varied activities and features.</li> <li>• A variety of open spaces, such as public squares, ‘village greens’, allotments and parks.</li> <li>• Streets, places, buildings and architectural features in a variety of local styles, colors and materials.</li> <li>• A variety of historic, civic and distinctive buildings and structures.</li> <li>• A variety of places of interest and activity.</li> <li>• A variety of aesthetic and practical features, such as trees and street furniture.</li> </ul>		
<b>POINTS</b>	1	Not considered.	
	2		
	3		
	4		
	5	Measurements have been considered for making design distinctive for older people.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
(Inclusive Urban Design) Burton and Mitchell, 2006.			
<b>LAWS AND REGULATIONS</b>			

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL EQUITY AND INCLUSION</b>			
<b>SE 2-4</b>	<b>INCLUSIVE COMMUNITIES</b>	<b>ACCESSIBILITY WITH DISABILITIES</b>	
<b>TYPOLGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>	To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Realization of barrier free outside spaces for the infirm or handicapped.		
<b>METHOD</b>	<p>Accessible streets for life are likely to have:</p> <ul style="list-style-type: none"> <li>• Obvious and easy to recognize entrances to places and buildings.</li> <li>• Entrances at ground level whenever possible with flush thresholds.</li> <li>• Public seating every 100m to 125m.</li> <li>• Well connected streets with clear views along them and simple junctions.</li> <li>• 2m wide, flat footways.</li> <li>• Gentle slopes rather than one or two small steps where slight level changes are unavoidable.</li> <li>• A choice of steps and a ramp with a maximum gradient of 1 in 20 where greater level changes are unavoidable.</li> <li>• Level changes (where unavoidable) that are clearly marked and well lit with guards, handrails and non-slip, non-glare surfaces.</li> <li>• Pedestrian crossings and public toilets at ground level.</li> <li>• Telephone boxes with level thresholds.</li> <li>• Gates/doors with no more than 2Kg pressure to open and levers rather than knobs.</li> </ul>		
<b>POINTS</b>	1	The standard for easing building use, according to the Code, is not satisfied.	
	2		
	3	The standard for easing building use, according to the Code, is satisfied.	
	4	The standard for easing and guiding building use, according to the Code, is satisfied.	
	5	In addition to satisfying the standard for easing and guiding building use, according to the Code, further thorough consideration has been given to access.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
CASBEE for Urban Development- Ewing, 1996 - (Inclusive Urban Design) Burton and Mitchell, 2006.			
<b>LAWS AND REGULATIONS</b>			
Egyptian Code for Designing Outdoor Spaces and Buildings Usable for Disabilities.			

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL EQUITY AND INCLUSION</b>			
<b>SE 2-5</b>	<b>INCLUSIVE COMMUNITIES</b>	<b>COMFORT</b>	
<b>TYPOLGY</b>	<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>	EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>	To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.		
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	<p>Comfortable streets for life are likely to have:</p> <ul style="list-style-type: none"> <li>• Calm, welcoming feel.</li> <li>• Familiar buildings and features in designs older people recognize.</li> <li>• Small, quiet well-defined open spaces, free from motorized traffic and with seating, lighting, toilets and shelter.</li> <li>• Quiet side roads as alternative routes away from crowds and traffic.</li> <li>• Some pedestrianised area to offer protection from traffic.</li> <li>• Acoustic barriers, such as planting and fencing, to reduce background noise.</li> <li>• Relatively short, gently winding and well-connected streets.</li> <li>• Enclosed bus shelters with seating and transparent walls or large clear windows.</li> <li>• Enclosed telephone boxes.</li> <li>• Sturdy public seating every 100m to 125m with arm and back rests and in materials that do not conduct heat or cold.</li> <li>• Ground level conventional public toilets in view of buildings and pedestrians.</li> </ul>		
<b>POINTS</b>	1	Not considered.	
	2		
	3		
	4		
	5	Measurements have been considered for making design comfortable for older people.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
(Inclusive Urban Design) Burton and Mitchell, 2006.			
<b>LAWS AND REGULATIONS</b>			

SOCIAL URBAN QUALITY OF LIFE					
SOCIAL EQUITY AND INCLUSION					
SE 2-6	INCLUSIVE COMMUNITIES		PERSONAL SAFETY		
TYPOLOGY		QUALITATIVE			
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST	
REQUIRMENT		To enable the widest spectrum of people, regardless of age or ability, to more easily participate in community life by increasing the proportion of areas usable by people of diverse abilities.			
ASSESSMENT METHODOLOGY					
THE WAY OF ASSESSMENT			SUBJECTIVELY		
ASSESSMENT	Rating of perceived safety from (natural hazards, accidents, crimes).				
	<p>Safe streets for life are likely to have:</p> <ul style="list-style-type: none"> <li>• A mix of uses and high density.</li> <li>• Buildings frontages, doors, and windows facing street.</li> <li>• Clearly marked bicycle lanes separate from footways.</li> <li>• Pedestrians separated from traffic by trees, on-road parking or bicycle lanes.</li> <li>• Signal-controlled pedestrian crossings with visual signals on both sides of the crossing and audible cues at a pitch and timing suitable for frail older people.</li> <li>• Traffic calming measures in clear color and textural contrast to footways and pedestrian crossings.</li> <li>• Wide, well-maintained, clean footways.</li> <li>• Plain, non-reflective paving in clear color and textural contrast to walls, bicycle lanes and traffic calming measures.</li> <li>• Flat, smooth, non-slip paving.</li> <li>• Gates and drains flush with paving with openings smaller than walking stick or shoe heel size.</li> <li>• Trees with narrow leaves that do not stick to paving when wet.</li> <li>• Spaces and buildings designed and oriented to avoid areas of dark shadow or bright light.</li> <li>• Street lighting adequate for people with visual impairments.</li> <li>• Some enclosed telephone boxes.</li> <li>• Low rise building</li> <li>• Safety from natural disaster.</li> <li>• Camera for surveillance</li> </ul>				
POINTS	1	Unsafe <b>and</b> not considered.			
	2				
	3	Fair.			
	4				
	5	Safe <b>and</b> Measurements have been considered for making design safer for people.			
EXISTENT METHODOLOGY AND REFERENCES					
(Inclusive Urban Design) Burton and Mitchell, 2006.					
LAWS AND REGULATIONS					





SOCIAL URBAN QUALITY OF LIFE				
SOCIAL CONNECTEDNESS				
SC 1-1	SOCIAL INTEGRATION		GOVERNMENT HOUSING PROVISION	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Mixed various social derivations.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	Comparing local government housing and private dwellings.			
METHOD	<p>The index of dissimilarity is one of the most commonly used measures of segregation.</p> $D = \frac{1}{2} \sum_{i=1}^N \left( \frac{g_i}{G} - \frac{p_i}{P} \right)$ <p>where (comparing local government housing and private dwellings):  <math>g_i</math> = the local government housing of the <math>i^{\text{th}}</math> area  <math>G</math> = the total local government housing of the large geographic entity for which the index of dissimilarity is being calculated.  <math>p_i</math> = the private dwellings of the <math>i^{\text{th}}</math> area  <math>P</math> = the total private dwellings of the large geographic entity for which the index of dissimilarity is being calculated.</p>			
POINTS	1	High value, dissimilarity index > 70 (most segregated area).		
	2			
	3			
	4			
	5	Low value, dissimilarity index < 70 (Local government provides housing sharing with private sector).		
EXISTENT METHODOLOGY AND REFERENCES				
Macionis and Parrillo, 2007 - Quality of Life 2007.				
LAWS AND REGULATIONS				

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>SOCIAL CONNECTEDNESS</b>				
<b>SC 1-2</b>	<b>SOCIAL INTEGRATION</b>		<b>HOUSING DIVERSITY INDEX</b>	
<b>TYPOLOGY</b>		QUANTITATIVE		
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE	EX-POST
<b>REQUIREMENT</b>		Mixed various social derivations.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		OBJECTIVELY		
<b>ASSESSMENT</b>	Measuring housing diversity.			
<b>METHOD</b>	<p>The formula for the Housing Diversity Indicator is based on the Simpson Diversity Index and is as follows:</p> $1 - \frac{(n/N)^2}{N}$ <p>Where:  n = the total number of dwelling units in a single category.  N = the total number of dwelling units in all categories.</p>			
<b>POINTS</b>	1	Housing Diversity Index of > 0.5 to < 0.6		
	2			
	3	Housing Diversity Index of 0.6 < 0.7		
	4			
	5	Housing Diversity Index of 0.7		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The Pearl Community Rating System for Estidama - LEED for Neighborhood Development Rating System				
<b>LAWS AND REGULATIONS</b>				

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL CONNECTEDNESS</b>			
<b>SC 1-3</b>	<b>SOCIAL INTEGRATION</b>	<b>MIXED TYPE OF TENURE</b>	
<b>TYPOLOGY</b>		QUANTITATIVE	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		EX-POST	
Mixed various social derivations.			
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		OBJECTIVELY	
<b>ASSESSMENT</b>	Measuring tenure mix. <ul style="list-style-type: none"> <li>- Owner occupation.</li> <li>- Social renting.</li> <li>- Private renting.</li> </ul>		
<b>METHOD</b>	The equitability index. $E_H = \frac{-\sum_{i=1}^S P_i \ln p_i}{\ln S}$ Where, i is the tenure category S is the total number of tenure categories P <sub>i</sub> is the proportion of the tenure category i relative to the total number of tenure categories  The higher the value of E <sub>H</sub> the more similar are the proportions of each tenure type.  In addition to the equitability index, use is made of measures of the actual percentage of each housing tenure within each neighborhood. In this way, the relative importance of the prevalence of any one tenure can be assessed against the degree to which there is equal mixing of tenures (or 'balanced communities')		
<b>POINTS</b>	1	Zero (where only one housing tenure is presented in the neighborhood)	
	2		
	3		
	4		
	5	1 (where all three tenures are equally presented)	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Kearns and Mason, 2007.			
<b>LAWS AND REGULATIONS</b>			

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>SOCIAL CONNECTEDNESS</b>				
<b>SC2-1</b>	<b>SOCIAL NETWORK</b>		<b>PROVISION OF OPEN SPACE NETWORK</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Support a variety of human activities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Provision of open spaces as centers for community activity and excitement.			
<b>METHOD</b>				
<b>POINTS</b>	1	No open spaces.		
	2	Open spaces have been provided.		
	3	Open spaces have been provided, serve a minimum of 1 function in addition to recreation (such as: habitat provision, stormwater treatment, microclimate enhancement and amelioration, market place provision, social and/or cultural function).		
	4	Open spaces have been provided, easy to access (within walking distance).		
	5	Open spaces have been provided, easy to access (within walking distance) and serve a minimum of 1 function in addition to recreation (such as: habitat provision, stormwater treatment, microclimate enhancement and amelioration, market place provision, social and/or cultural function).		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The Pearl Community Rating System for Estidama - CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL CONNECTEDNESS</b>			
<b>SC2-2</b>	<b>SOCIAL NETWORK</b>	<b>PROVISION OF CULTURAL FACILITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Support a variety of human activities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Provision of cultural facilities.		
<b>METHOD</b>			
<b>POINTS</b>	1	No culture facilities.	
	2		
	3	Provision of culture facilities but insufficient.	
	4		
	5	Provision of cultural facilities according to local guidelines.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher			
<b>LAWS AND REGULATIONS</b>			
General Organization of Physical Planning (GOPP).			

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>SOCIAL CONNECTEDNESS</b>				
<b>SC2-3</b>	<b>SOCIAL NETWORK</b>		<b>PROVISION OF SOCIAL FACILITIES</b>	
<b>TYPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Support a variety of human activities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Provision of social facilities.			
<b>METHOD</b>				
<b>POINTS</b>	1	No social facilities.		
	2			
	3	Provision of social facilities but insufficient.		
	4			
	5	Provision of social facilities according to local guidelines.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The researcher.				
<b>LAWS AND REGULATIONS</b>				
General Organization of Physical Planning (GOPP).				

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL CONNECTEDNESS</b>			
<b>SC2-4</b>	<b>SOCIAL NETWORK</b>	<b>PROVISION OF RELIGIOUS FACILITIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Support a variety of human activities.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Provision of religious facilities.		
<b>METHOD</b>			
<b>POINTS</b>	1	No religious facilities.	
	2		
	3	Provision of religious facilities but insufficient.	
	4		
	5	Provision of religious facilities according to local guidelines.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher.			
<b>LAWS AND REGULATIONS</b>			
General Organization of Physical Planning (GOPP).			



<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL CONNECTEDNESS</b>			
<b>SC2-5</b>	<b>SOCIAL NETWORK</b>	<b>PROVISION OF TELECOMMUNICATION SERVICES</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
Support a variety of human activities.			
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	This indicator looks at the level of access to telecommunications based on Census data.		
<b>METHOD</b>	Percentage of households with access to telecommunications.		
<b>POINTS</b>	1	No access.	
	2		
	3	90% or more have the access to telephone/mobile phone.	
	4		
	5	90% or more have the access to telephone/mobile phone and 65 % or more have the access to internet.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>SOCIAL URBAN QUALITY OF LIFE</b>			
<b>SOCIAL CONNECTEDNESS</b>			
<b>SC3-1</b>	<b>SOCIAL PARTICIPATION</b>	<b>LEGISLATIONS FOR SUPPORTING AND ORGANIZING COMMUNITY PARTICIPATION</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Involving the community in project design and planning and in decisions	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Are their planning legislations that support and organize community participation in planning process.		
<b>METHOD</b>			
<b>POINTS</b>	1	Not available	
	2		
	3	Available but not activated	
	4		
	5	Available	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Agenda 21			
<b>LAWS AND REGULATIONS</b>			

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>SOCIAL CONNECTEDNESS</b>				
<b>SC3-2</b>	<b>SOCIAL PARTICIPATION</b>	<b>PARTICIPATION IN PLANNING PROCESSES</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Involving the community in project design and planning and in decisions		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Participation by residents of the designated area in planning processes.			
<b>METHOD</b>	Qualitatively evaluate whether there are systems for the residents to participate in planning processes. Evaluate whether there is a program that enables deliberations with resident participation, particularly from the beginning stages of urban development.			
<b>POINTS</b>	1	There is no way for residents to participate in planning processes even if land owners are participating in the process.		
	2			
	3	There are systems for residents to participate in some aspects of planning processes.		
	4			
	5	Residents can participate in the whole range of planning processes.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>SOCIAL CONNECTEDNESS</b>				
<b>SC3-3</b>	<b>SOCIAL PARTICIPATION</b>	<b>PARTICIPATION IN MAINTENANCE AND MANAGEMENT</b>		
<b>TYPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Involving the community in project design and planning and in decisions		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Participation by residents and building users in maintenance, management and urban development beyond completion of the project.			
<b>METHOD</b>	<ul style="list-style-type: none"> <li>- Qualitatively evaluate whether there are systems enabling residents and building users to participate in maintenance management and urban development after the buildings and infrastructure are complete.</li> <li>- This assessment covers systems for carrying out activities which can be performed by residents, such as local cleaning and waste processing, management of green spaces, and the like.</li> <li>- In general urban development, it is common for there to be no means for residents to participate after construction is complete. Therefore, award three points if there is even one participatory system, and award five points if there are more such systems.</li> </ul>			
<b>POINTS</b>	1	There are no systems enabling residents and building users to participate after completion.		
	2			
	3	There are systems open for participation.		
	4			
	5	Participation is positively encouraged and many systems are open to participation.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				

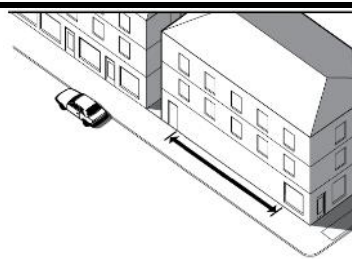



SOCIAL URBAN QUALITY OF LIFE				
BEHAVIORAL PERFORMANCE				
BP1-1	PUBLIC AWARENESS	URBAN QUALITY OF LIFE AWARENESS		
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		The awareness of general public on their urban quality of life.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT	Demonstrate that an Urban Quality of Life Awareness Strategy was developed by the design team and updated at the end of construction.			
METHOD	<p>This Strategy must address the education of site users on the following topics as a minimum:</p> <ul style="list-style-type: none"> <li>- Energy and water efficiency measures in buildings and onsite and how residents and other site users' behavior affects performance;</li> <li>- Waste and recycling policies and information such as location, sorting requirements (if any) and the use of green waste (if applicable);</li> <li>- Location of nearby amenities and community facilities; and</li> <li>- Alternative transportation offered to site users including locations of nearby public transport, shuttle service and on-site bicycle facilities.</li> </ul> <p>Demonstrate use of the following communication mechanisms:</p> <ul style="list-style-type: none"> <li>- Static Communication – educational kiosks, interpretative signs, displays and information packs;</li> <li>- Ongoing Communication – continually updated information through digital display, internet and/or newsletter with information on performance measures such as ongoing energy and water consumption or generation of energy from renewable sources.</li> </ul>			
POINTS	1	Not available		
	2			
	3	Provide an outline Urban Quality of Life Awareness Strategy <b>but</b> not activated.		
	4			
	5	Provide an outline Urban Quality of Life Awareness Strategy indicating the communication mechanisms to be used.		
EXISTENT METHODOLOGY AND REFERENCES				
Agenda 21- The Pearl Community Rating System for Estidama.				
LAWS AND REGULATIONS				

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>BEHAVIORAL PERFORMANCE</b>				
<b>BP2-1</b>	<b>NEIGHBORHOOD STABILITY</b>	<b>SECURE TENURE</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Sense of stability.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Measuring people's perception of security of their dwellings tenure.			
<b>METHOD</b>				
<b>POINTS</b>	1	Insecure tenure (Hand claims on the land, Own buildings on government land, Having proper land ownership documentation but without building license)		
	2			
	3	Could be legalized.		
	4			
	5	Secure tenure (Having proper land ownership documentation and Built with a license to do so)		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
UN-Habitat and American University in Cairo, 2011.				
<b>LAWS AND REGULATIONS</b>				

<b>SOCIAL URBAN QUALITY OF LIFE</b>				
<b>BEHAVIORAL PERFORMANCE</b>				
<b>BP2-2</b>	<b>NEIGHBORHOOD STABILITY</b>	<b>PERCENT OF TEMPORARY PRIVATE DWELLINGS</b>		
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Sense of stability.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	This measure illustrates the percent of private temporary dwellings.			
<b>METHOD</b>	Temporary dwellings include tents, caravans, yachts and barges, mobile homes and rented campervans.			
<b>POINTS</b>	1	Very high proportion of temporary dwellings.		
	2			
	3	Low proportion of temporary dwellings (people may have adopted a mobile lifestyle by choice and therefore are not necessarily impoverished).		
	4			
	5	No temporary dwellings.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>				
<b>LAWS AND REGULATIONS</b>				



SOCIAL URBAN QUALITY OF LIFE				
BEHAVIORAL PERFORMANCE				
BP3-1	NEIGHBORHOOD VITALITY		ACTIVE FRONTAGE	
TYPOLOGY		QUANTITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Vital public realm.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		OBJECTIVELY		
ASSESSMENT	<p><b>Grade “A”</b></p> <ul style="list-style-type: none"> <li>– More than fifteen premises every 100m.</li> <li>– A large range of functions/land uses.</li> <li>– More than twenty-five doors and windows every 100m.</li> <li>– No blind/blank façades and few passive ones.</li> <li>– Much depth and relief in the building surface.</li> <li>– High quality materials and refined details.</li> </ul> <p><b>Grade “B”</b></p> <ul style="list-style-type: none"> <li>– Ten to fifteen premises every 100m.</li> <li>– More than fifteen doors and windows every 100m.</li> <li>– A moderate range of functions/land uses.</li> <li>– A blind/blank or few passive façades.</li> <li>– Some depth and modeling in the building surface.</li> <li>– Good quality materials and refined details.</li> </ul>	<p><b>Grade “C”</b></p> <ul style="list-style-type: none"> <li>– Six to ten premises every 100m.</li> <li>– Some range of functions/land uses.</li> <li>– Less than half blind/blank or passive façades (no more than 40% of its length or 15m, whichever is less, is blank).</li> <li>– Very little depth and modeling in the building surface.</li> <li>– Standard materials and few details.</li> </ul> <p><b>Grade “D”</b></p> <ul style="list-style-type: none"> <li>– Three to five premises every 100m.</li> <li>– Little or no range of functions/land uses.</li> <li>– Predominantly blind/blank or passive façades.</li> <li>– Flat building surfaces.</li> <li>– Few or no details.</li> </ul> <p><b>Grade “E”</b></p> <ul style="list-style-type: none"> <li>– One or two premises every 100m.</li> <li>– No range of functions/land uses.</li> <li>– Predominantly blind/blank or passive façades.</li> <li>– Flat building surfaces.</li> <li>– No details nothing to look at</li> </ul>		
	METHOD	 <p>Limits on length of blank walls along sidewalks</p>	 <p>Ground-level retail and service uses (at least 60% clean glass of their façades between 0.9m and 2.4m above grade.</p>	
POINTS	1	Grade “E”		
	2	Grade “D”		
	3	Grade “C”		
	4	Grade “B”		
	5	Grade “A”		
EXISTENT METHODOLOGY AND REFERENCES				
Carmona and al., 2004. A scale to judge the performance of designs according to the intensity of active frontage, Llewelyn-Davies, 2000- LEED for Neighborhood Development Rating System.				
LAWS AND REGULATIONS				

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>			
<b>COMMUNITY IDENTITY</b>			
<b>CI 1-1</b>	<b>URBAN IMAGE</b>	<b>IDENTIFIED PATHS</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Define neighborhood.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Asking residents to identify major paths within their neighborhood.		
<b>METHOD</b>	Major paths which have its identity and were not confused with each other.		
<b>POINTS</b>	1	Not considered.	
	2		
	3	It is difficult for residents to recognize major paths in their neighborhood.	
	4		
	5	Residents could recognize major paths in their neighborhood.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Carmona and al., 2004 – The researcher.			
<b>LAWS AND REGULATIONS</b>			

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>				
<b>COMMUNITY IDENTITY</b>				
<b>CI 1-2</b>	<b>URBAN IMAGE</b>	<b>IDENTIFIED BOUNDARIES</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Define neighborhood.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Asking residents to identify neighborhood boundaries.			
<b>METHOD</b>	Clear boundaries defining a neighborhood territory which enhance the development of sense of identity.			
<b>POINTS</b>	1	Not considered.		
	2			
	3	It is difficult for residents to recognize neighborhood boundaries.		
	4			
	5	Residents could recognize neighborhood boundaries.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Carmona and al., 2004 – The researcher.				
<b>LAWS AND REGULATIONS</b>				

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>				
<b>COMMUNITY IDENTITY</b>				
<b>CI 1-3</b>	<b>URBAN IMAGE</b>	<b>IDENTIFIED FOCAL POINT</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Define neighborhood.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Asking residents to identify the focal point in their neighborhood.			
<b>METHOD</b>	Dominant focal points which tend to be both 'concentrations' and 'junctions', with both functional and physical significance.			
<b>POINTS</b>	1	Not considered.		
	2			
	3	It is difficult for residents to recognize a focal point within their neighborhood.		
	4			
	5	Residents could recognize a focal point within their neighborhood.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Carmona and al., 2004 – The researcher.				
<b>LAWS AND REGULATIONS</b>				

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>				
<b>COMMUNITY IDENTITY</b>				
<b>CI 1-4</b>	<b>URBAN IMAGE</b>	<b>IDENTIFIED LANDMARKS</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Define neighborhood.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Asking residents to identify a landmark in their neighborhood.			
<b>METHOD</b>	Landmarks with a clear form contrasting with their background, prominent spatial location, are more easily identifiable and likely to be significant to the observer.			
<b>POINTS</b>	1	Not considered.		
	2			
	3	It is difficult for residents to recognize a landmark within their neighborhood.		
	4			
	5	Residents could recognize a landmark within their neighborhood.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Carmona and al., 2004 – The researcher				
<b>LAWS AND REGULATIONS</b>				

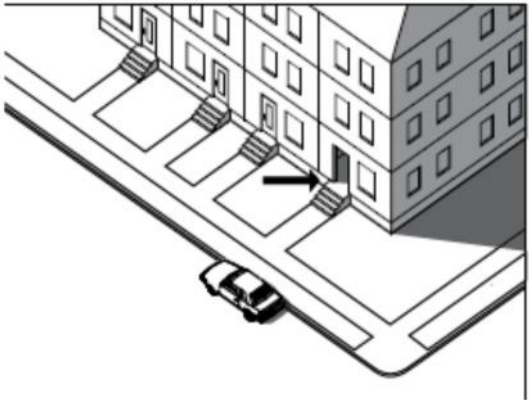
<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>				
<b>COMMUNITY IDENTITY</b>				
<b>CI 2-1</b>	<b>RESPONSIVE DESIGN</b>	<b>LOCAL VERNACULAR</b>		
<b>TPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		The development responds to local character whilst reinforcing its own identity.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	<p>Will the appearance of the development be visually appropriate, taking into consideration local character studies, and will it complement local character whilst creating a strong identity for the new neighborhood?</p> <p>A: Building materials and color complementing local character.            B: Building style and form enhancing local character.            C: Roofscapes visually respecting the development’s location within a local context.            D: Continuity of local building details such as windows and doors.</p>			
<b>METHOD</b>				
<b>POINTS</b>	1	A design strategy addressing all above issues.		
	2			
	3	A design strategy addressing all above issues based on consultation with the local planning authority.		
	4			
	5	A design strategy addressing all above issues, which includes a study of the character of the local area and bases design solutions on the local vernacular, is developed and based on consultation with the local planning authority.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>			
<b>COMMUNITY IDENTITY</b>			
<b>CI 3-1</b>	<b>PRESERVE HERITAGE SITES AND HISTORICAL REMAINS</b>	<b>PRESERVE HERITAGE SITES AND HISTORICAL REMAINS</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Preservation heritage and historical Site Features.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Conservation or restoration of historic remains or buildings, or natural objects which characterize the region.		
<b>METHOD</b>			
<b>POINTS</b>	1	There is no conservation.	
	2		
	3	Partially conserved.	
	4		
	5	Fully conserved or lost assets are restored.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
CASBEE for Urban Development.			
<b>LAWS AND REGULATIONS</b>			

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>			
<b>COMMUNITY IDENTITY</b>			
<b>CI 4-1</b>	<b>SPACE PERSONALIZATION</b>	<b>PERSONAL TERRITORY</b>	
<b>TPOLOGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Creation of environments that users can modify and adapt.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Provide opportunities for residents to experience or express a sense of territory around their dwellings.		
<b>POINTS</b>	1	Not considered	
	2		
	3	Residents have the opportunities to experience or express a sense of territory around their dwellings.	
	4		
	5	Residents have the opportunities to experience or express a sense of territory around their dwellings <b>and</b> there is an office in the site responsible for controlling this issue.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Marcus and Sarkissian, 1986.			
<b>LAWS AND REGULATIONS</b>			



<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>				
<b>COMMUNITY IDENTITY</b>				
<b>CI 4-2</b>	<b>SPACE PERSONALIZATION</b>	<b>PERSONAL ADDITIONS</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Creation of environments that users can modify and adapt.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	<ul style="list-style-type: none"> <li>- Use permeable cladding to facilitate the addition of personal touches to house exteriors.</li> <li>- The more articulated the façade, the more likely are residents to add their own touches to the design.</li> <li>- Residents must have the opportunity to make later modification in landscape.</li> <li>- Provide planting spaces where individual households can add to the general landscaping of the development.</li> </ul>			
<b>POINTS</b>	1	Not considered		
	2			
	3	Design gives the opportunities to personal additions based on local regulations.		
	4			
	5	Design gives the opportunities to personal additions based on local regulations <b>and</b> there is an office in the site responsible to make these modifications.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Marcus and Sarkissian, 1986.				
<b>LAWS AND REGULATIONS</b>				

PSYCHOLOGICAL URBAN QUALITY OF LIFE				
COMMUNITY IDENTITY				
CI 4-3	SPACE PERSONALIZATION	ADDED PRIVACY		
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Creation of environments that users can modify and adapt.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT				
METHOD	<ul style="list-style-type: none"> <li>- Consideration such as physical distances, barriers or filters has been taken with respect of cultures and societies.</li> <li>- Give residents the option to increasing the sense of privacy around their homes.</li> <li>- Use planting to enhance the privacy of ground-level dwellings.</li> <li>- Raise the ground-floor dwellings units for at least 60cm the sidewalk grade to enhance privacy.</li> </ul> 			
POINTS	1	Not considered.		
	2			
	3	Design gives the option to increasing the sense of privacy around dwellings.		
	4			
	5	Design gives the option to increasing the sense of privacy around dwellings <b>and</b> there is an office in the site responsible for controlling this issue.		
EXISTENT METHODOLOGY AND REFERENCES				
Marcus and Sarkissian, 1986 - LEED for Neighborhood Development Rating System.				
LAWS AND REGULATIONS				
Egyptian Code for Housing Design, 2009.				

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>			
<b>COMMUNITY IDENTITY</b>			
<b>CI 4-4</b>	<b>SPACE PERSONALIZATION</b>	<b>ENTRY PERSONALIZATION</b>	
<b>TPOLOGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Creation of environments that users can modify and adapt.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Allow for personalization of the front entry of the dwelling unit.		
<b>POINTS</b>	1	Not considered.	
	2		
	3	Design gives the option to personalize the front entry of the dwelling unit.	
	4		
	5	Design gives the option to personalize the front entry of the dwelling unit <b>and</b> there is an office in the site responsible for controlling this issue.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Marcus and Sarkissian, 1986.			
<b>LAWS AND REGULATIONS</b>			

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>				
<b>PLEASING MILIEU</b>				
<b>PM 1-1</b>	<b>ARCHITECTURAL QUALITY</b>	<b>ARCHITECTURAL QUALITY</b>		
<b>TYPOLGY</b>	<b>QUALITATIVE</b>			
<b>PROCESS STAGE</b>	<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>	
<b>REQUIRMENT</b>	Good architecture.			
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>	Do buildings exhibit architectural quality?			
<b>METHOD</b>	- Considerations for façade proportion, materials, color, details, openings and rhythm harmonization.			
<b>POINTS</b>	1	Not considered.		
	2	Partial consideration (some façades in the designated area have been considered).		
	3	There are loose guidelines for façades.		
	4			
	5	There are specific rules for harmonization of façades (such as specification of limited materials or a Munsell color system selection range), based on guidelines etc., and means for implementing the rules have been established.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Building for Life - CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				

<b>PSYCHOLOGICAL URBAN QUALITY OF LIFE</b>				
<b>PLEASING MILIEU</b>				
<b>PM 2-1</b>	<b>LANDSCAPE QUALITY</b>		<b>LANDSCAPE QUALITY</b>	
<b>TPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Attractive outdoor scenery.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	<ul style="list-style-type: none"> <li>- Consideration of the constituents and color harmonization of paving materials.</li> <li>- Consideration of the types and positioning of planted trees.</li> <li>- Consideration of illumination, furniture and sign plans.</li> </ul>			
<b>POINTS</b>	1	Not considered.		
	2	Partial consideration (some spaces in the designated area have been considered).		
	3	There are loose guidelines for landscape.		
	4			
	5	Concrete rules have been decided in accordance with guidelines etc., and means for implementing the rules have been established.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
CASBEE for Urban Development.				
<b>LAWS AND REGULATIONS</b>				

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>				
<b>ECONOMIC DEVELOPMENT</b>				
<b>ED 1-1</b>	<b>EMPLOYMENT</b>	<b>EMPLOYMENT</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Employment opportunities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	What is the potential for the development to create additional permanent jobs either through new business or for maintenance of the development?			
<b>METHOD</b>	<p>An economic study has been carried out, and has examined and addressed the following:</p> <ul style="list-style-type: none"> <li>- Business in Existing Area.</li> <li>- Employment Rates (Unemployment Rates)</li> <li>- Location of Business Types (Existing and proposed)</li> <li>- Provision of Facilities (Services and infrastructure).</li> <li>- Evidence that demonstrate that the development will have a positive net gain on employment opportunities through the region and local area.</li> <li>- Documentation that demonstrates an alliance with a local training provider-could include 'Universities, Higher educational institutions'.</li> </ul>			
<b>POINTS</b>	1	There will be no decrease in the number of permanent jobs within the local area as a direct result of the project.		
	2			
	3	There will be a net % increase in the number of jobs in the local area.		
	4			
	5	A net increase in jobs that draw upon the local skills base or where training opportunities will be provided to help local workers to up skill.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>				
<b>ECONOMIC DEVELOPMENT</b>				
<b>ED 1-2</b>	<b>EMPLOYMENT</b>	<b>LABOR AND SKILLS</b>		
<b>TPOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Employment opportunities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Will the developers and/or contractors engage local labor?			
<b>METHOD</b>	<ul style="list-style-type: none"> <li>- Provide evidence that local labor and / or local contractors (including sub-contractors) will be used during the construction phase of the development.</li> <li>- Provide evidence that local labor and / or local contractors (including sub-contractors) will be used during the ongoing maintenance and operation of the development (post construction).</li> <li>- Provide evidence that the developer has engaged with local training providers such as, Learning Skills Centers and Higher Education providers to build local skills base and capacity within the local area.</li> </ul>			
<b>POINTS</b>	1	Where evidence is provided that the developer has engaged local labor and/ or subcontractors on a temporary basis.		
	2			
	3	Where evidence is provided that the developer has engaged local labor and/ or subcontractors on a permanent basis.		
	4			
	5	Where evidence is provided that the developer has worked with local training providers to build local skills base and capacity within the local area.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>				
<b>ECONOMIC DEVELOPMENT</b>				
<b>ED 1-3</b>	<b>EMPLOYMENT</b>		<b>JOBS-HOUSING BALANCE</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Employment opportunities.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Jobs divided by housing units.			
<b>METHOD</b>				
<b>POINTS</b>	1	New or pre-developed jobs are lesser than 50% of the number of dwelling units.		
	2			
	3	New or pre-developed jobs equal to or greater than 50% of the number of dwelling units (but the distance between jobs and dwelling units exceed 800m).		
	4			
	5	New or pre-developed jobs equal to or greater than 50% of the number of dwelling units (where the distance between jobs and dwelling units must not exceed 800m).		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
LEED for Neighborhood Development Rating System.				
<b>LAWS AND REGULATIONS</b>				



<b>ECONOMICAL URBAN QUALITY OF LIFE</b>				
<b>ECONOMIC DEVELOPMENT</b>				
<b>ED 2-1</b>	<b>LOCAL BUSINESS</b>	<b>LOCALLY OWNED BUSINESSES</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Promote local business.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	Provide for residents the opportunity to make their own business in their dwelling unit.			
<b>POINTS</b>	1	Not considered		
	2			
	3	Provide an extension in the dwelling unit where residents could make their own business, these activities must comply with the Egyptian law.		
	4			
	5	Provide an extension in the dwelling unit where residents could make their own business, these activities must comply with the Egyptian law. There is an office to control this issue and support this locally owned business.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
Douglas Farr, 2008 – the researcher.				
<b>LAWS AND REGULATIONS</b>				
Egyptian law for industrial and commercial shops, 1954.				

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>				
<b>ECONOMIC DEVELOPMENT</b>				
<b>ED 2-2</b>	<b>EMPLOYMENT</b>	<b>BUSINESS PRIORITY SECTORS</b>		
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Promote local business.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Will the development be designed to suit the needs of prioritized business sectors as identified by a Local Enterprise Partnership?			
<b>METHOD</b>	<ul style="list-style-type: none"> <li>- Reference and consultation needs to be made with the Local Planning Authority for classification of the 'priority business sectors'.</li> <li>- a feasibility study has been carried out and as a minimum has examined and addressed the following: <ul style="list-style-type: none"> <li>o Local Enterprise Partnership priorities (Regional Economic Strategy or equivalent).</li> <li>o Business occupancy of the development.</li> <li>o Services and facilities required.</li> <li>o Location of business occupants.</li> <li>o Local zoning planning requirements.</li> </ul> </li> <li>- Master plan where the location and areas set aside for likely tenants and business types / sectors are highlighted.</li> <li>- Number of priority business sector introduced through the proposed development.</li> </ul>			
<b>POINTS</b>	1	<ul style="list-style-type: none"> <li>- Where evidence provided demonstrates that: an assessment of likely tenants and business types / sectors that will occupy non-residential units has been completed.</li> <li>- An assessment of the services required by the likely tenants and business types / sectors has been completed.</li> </ul>		
	2			
	3	<ul style="list-style-type: none"> <li>- Where evidence provided demonstrates that: there will be at least one priority business sector introduced through the proposed development.</li> <li>- An assessment of likely tenants and business types / sectors that will occupy non-residential units has been completed.</li> <li>- An assessment of the services required by the likely tenants and business types / sectors has been completed.</li> </ul>		
	4			
	5	<ul style="list-style-type: none"> <li>- Where evidence provided demonstrates that: there will be more than one priority business sector introduced through the proposed development.</li> <li>- An assessment of likely tenants and business types / sectors that will occupy non-residential units has been completed.</li> <li>- An assessment of the services required by the likely tenants and business types / sectors has been completed.</li> </ul>		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>				
<b>ECONOMIC DEVELOPMENT</b>				
<b>ED 2-3</b>	<b>EMPLOYMENT</b>		<b>NEW BUSINESS</b>	
<b>TYOLOGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE	EX-POST
<b>REQUIRMENT</b>		Promote local business.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>		
<b>ASSESSMENT</b>	Will new business space increase / maintain the viability of existing businesses?			
<b>METHOD</b>	<ul style="list-style-type: none"> <li>- An assessment report of the existing businesses and surrounding economy has been carried out and has examined and addressed the following: <ul style="list-style-type: none"> <li>o Business in existing area.</li> <li>o Employment rates (unemployment rates).</li> <li>o Location of business types (existing and proposed).</li> <li>o Provision of facilities (services and infrastructure).</li> </ul> </li> <li>- provide a copy of a local map of the area surrounding the development highlighting the types of existing business units.</li> <li>- Additional information demonstrates that 'core' anchor tenant has made a commitment to the development. Documentation needs to be in writing along the lines of a contract or a letter of commitment (or equivalent) that demonstrates the commitment of an 'anchor tenant'.</li> <li>- Additional work in the form of an Economic Study (or equivalent) that demonstrates that the facilities within the proposed development will meet the needs (complement) of existing business in the area.</li> </ul>			
<b>POINTS</b>	1	An assessment is carried out to identify what the current businesses are and what would complement their activities.		
	2			
	3	Committed anchor tenant with complementary business to those existing in the area is identified.		
	4			
	5	Economic study shows that facilities will meet the needs of existing businesses in the area <b>and</b> that various facilities for a range of businesses sizes have been provided with the ability for businesses to growth and develops.		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The BREEAM for Communities.				
<b>LAWS AND REGULATIONS</b>				

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>			
<b>ECONOMIC STANDARD OF LIVING</b>			
<b>ESL 1-1</b>	<b>COST OF LIVING</b>		<b>HOUSING PRICE INDEX</b>
<b>TPOLOGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Individual's ability to purchase adequate housing and accommodations.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Percentage of net household income spent to housing costs - include all rent and mortgage expenses, rates and other mandatory expenses, but exclude other costs of ownership (e.g. insurance, utilities and maintenance).		
<b>METHOD</b>	Per month.		
<b>POINTS</b>	1	Very high – 80%	
	2	High – 60%	
	3	Fair – 40%	
	4	Low – 20%	
	5	Very low – 10%	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher - LEED for Neighborhood Development Rating System.			
<b>LAWS AND REGULATIONS</b>			

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>			
<b>ECONOMIC STANDARD OF LIVING</b>			
<b>ESL 1-2</b>	<b>COST OF LIVING</b>		<b>COST OF SERVICES AND FACILITIES</b>
<b>TPOLOGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
		Individual's ability to purchase adequate housing and accommodations.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Percentage of services and facilities expenditure to households' income.		
<b>METHOD</b>	Per month.		
<b>POINTS</b>	1	Very high	
	2	High	
	3	Fair	
	4	Low	
	5	Very low	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher.			
<b>LAWS AND REGULATIONS</b>			

<b>ECONOMICAL URBAN QUALITY OF LIFE</b>			
<b>ECONOMIC STANDARD OF LIVING</b>			
<b>ESL 1-3</b>	<b>COST OF LIVING</b>	<b>MIXED WAY OF HOUSING FINANCE</b>	
<b>TYPOLGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Individual's ability to purchase adequate housing and accommodations.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Measuring mixed way of housing finance.		
<b>METHOD</b>	<p>The equitability index.</p> $EH = \frac{-\sum_{i=1}^S P_i \ln p_i}{\ln S}$ <p>Where, i is the way of financing category  S is the total number of ways of financing categories  P<sub>i</sub> is the proportion of the way of financing category i relative to the total number of ways of financing categories</p>		
<b>POINTS</b>	1	Zero (where only one way of housing finance is presented in the neighborhood)	
	2		
	3	1 (where more than one way of housing finance is presented in the neighborhood )	
	4		
	5	1 (where more than one way of housing finance is presented in the neighborhood) <b>and</b> there is an innovative way of housing finance.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher			
<b>LAWS AND REGULATIONS</b>			



<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>URBAN POLICIES AND STRATEGIES</b>			
<b>UPS 1-1</b>	<b>URBAN QUALITY OF LIFE POLICIES</b>	<b>URBAN QUALITY OF LIFE POLICIES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Develop clear national policies to support urban quality of life.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	An assessment of the extensiveness of policies to improve urban quality of life.		
<b>METHOD</b>			
<b>POINTS</b>	1	Not considered	
	2		
	3	Partially considered	
	4		
	5	Fully considered	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher			
<b>LAWS AND REGULATIONS</b>			



<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>URBAN POLICIES AND STRATEGIES</b>			
<b>UPS 2-1</b>	<b>URBAN QUALITY OF LIFE STRATEGIES</b>	<b>EFFICIENT LAW ENFORCEMENT</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
		Improve urban quality of life in the neighborhood with urban design codes and legislations.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Efficient law enforcement.		
<b>POINTS</b>	1	Not efficient	
	2		
	3	Neither	
	4		
	5	Efficient	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher			
<b>LAWS AND REGULATIONS</b>			

<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>URBAN POLICIES AND STRATEGIES</b>			
<b>UPS 2-2</b>	<b>URBAN QUALITY OF LIFE STRATEGIES</b>	<b>CODES AND GUIDELINES</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
		Improve urban quality of life in the neighborhood with urban design codes and legislations.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>			
<b>METHOD</b>	Urban design codes and guidelines that serve to control evolution.		
<b>POINTS</b>	1	Not considered	
	2	Partially unconsidered	
	3	Neither	
	4	Partially considered	
	5	Fully considered	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
The researcher			
<b>LAWS AND REGULATIONS</b>			

<b>POLITICAL URBAN QUALITY OF LIFE</b>				
<b>URBAN POLICIES AND STRATEGIES</b>				
<b>UPS 3-1</b>	<b>URBAN GOVERNANCE AND MANAGEMENT</b>		<b>GOOD GOVERNANCE AND GOOD URBAN MANAGEMENT</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>		
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>	<b>EX-POST</b>
<b>REQUIRMENT</b>		Provide the framework and general conditions for the realization of urban quality of life the neighborhood.		
<b>ASSESSMENT METHODOLOGY</b>				
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>		
<b>ASSESSMENT</b>				
<b>METHOD</b>	<ul style="list-style-type: none"> <li>- Provide capacity-building for: <ul style="list-style-type: none"> <li>o Decision-makers in cities and towns.</li> <li>o Technical support to improve the operational management of local governments.</li> <li>o Training and technical support to enable the public, private and community sectors to work in partnership.</li> <li>o Supporting the introduction or improvement of planning and resource allocation systems, procedures and practices.</li> <li>o Providing appropriate data bases.</li> </ul> </li> </ul>			
<b>POINTS</b>	1	Not considered		
	2			
	3	Partially considered.		
	4			
	5	Considered		
<b>EXISTENT METHODOLOGY AND REFERENCES</b>				
The researcher.				
<b>LAWS AND REGULATIONS</b>				

POLITICAL URBAN QUALITY OF LIFE				
URBAN POLICIES AND STRATEGIES				
UPS 3-2	URBAN GOVERNANCE AND MANAGEMENT		INTEGRATED URBAN GOVERNANCE	
TYPOLOGY		QUALITATIVE		
PROCESS STAGE		EX-ANTE	IN ITINERE	EX-POST
REQUIRMENT		Provide the framework and general conditions for the realization of urban quality of life the neighborhood.		
ASSESSMENT METHODOLOGY				
THE WAY OF ASSESSMENT		SUBJECTIVELY		
ASSESSMENT				
METHOD	<p>Demonstrate that the design and development team and development process are organized and programmed to gain full benefit from an integrated development approach, from project inception through to final delivery.</p> <p>The different dimensions to be considered for the integration of plan-making and plan-delivery mechanisms include:</p> <ul style="list-style-type: none"> <li>– <b>Horizontal integration</b>: between different policy and programme areas including economy, social affairs, environment, culture...;</li> <li>– <b>Vertical integration</b> between levels of governance from local to global;</li> <li>– <b>Spatial connection</b> of towns, cities, rural hinterland and regions;</li> <li>– <b>Temporal linkage</b> of the impacts of current developments in relation to the potentials for future development;</li> <li>– <b>Balancing</b> individual and group interests with societal needs.</li> </ul>			
POINTS	1	Not considered		
	2			
	3	Partially considered		
	4			
	5	Considered		
EXISTENT METHODOLOGY AND REFERENCES				
European Environment Agency, 2009 - The Pearl Community Rating System for Estidama.				
LAWS AND REGULATIONS				



<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>CIVIL AND POLITICAL RIGHTS</b>			
<b>CPR 1-1</b>	<b>COMMUNITY INVOLVEMENT IN COUNCIL DECISION MAKING</b>	<b>UNDERSTANDING HOW COUNCILS MAKE DECISIONS</b>	
<b>TYPOLGY</b>		<b>QUALITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		Participation of residents in representative governance and decision making processes at local and national levels.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>SUBJECTIVELY</b>	
<b>ASSESSMENT</b>	Residents were asked about their local city or district council decision making. Are they understood how their council makes decisions.		
<b>METHOD</b>	Residents' understanding how their council makes decisions		
<b>POINTS</b>	1	Strongly disagree.	
	2	Disagree.	
	3	Neither.	
	4	Agree.	
	5	Strongly agree.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a>			
<b>LAWS AND REGULATIONS</b>			

<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>CIVIL AND POLITICAL RIGHTS</b>			
<b>CPR 1-2</b>	<b>COMMUNITY INVOLVEMENT IN COUNCIL DECISION MAKING</b>	<b>HAVING A SAY IN WHAT THE COUNCIL DOES</b>	
<b>TYPOLGY</b>		QUALITATIVE	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		EX-POST	
		Participation of residents in representative governance and decision making processes at local and national levels.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		SUBJECTIVELY	
<b>ASSESSMENT</b>	Residents were asked if they wanted more say in what their council does.		
<b>METHOD</b>	Residents' seeking more of a say in what their council does.		
<b>POINTS</b>	1	Strongly agree.	
	2	Agree.	
	3	Neither.	
	4	Disagree.	
	5	Strongly disagree.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>CIVIL AND POLITICAL RIGHTS</b>			
<b>CPR 1-3</b>	<b>COMMUNITY INVOLVEMENT IN COUNCIL DECISION MAKING</b>	<b>CONFIDENCE THAT COUNCIL DECISIONS ARE IN THE BEST INTERESTS OF THE CITY</b>	
<b>TYPOLGY</b>		QUALITATIVE	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		Participation of residents in representative governance and decision making processes at local and national levels.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		SUBJECTIVELY	
<b>ASSESSMENT</b>	Residents were asked if they had confidence that their council makes decisions in the best interests of the city.		
<b>METHOD</b>	Residents' confidence in council decision making.		
<b>POINTS</b>	1	Strongly disagree.	
	2	Disagree.	
	3	Neither.	
	4	Agree.	
	5	Strongly agree.	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			



<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>CIVIL AND POLITICAL RIGHTS</b>			
<b>CPR 1-4</b>	<b>COMMUNITY INVOLVEMENT IN COUNCIL DECISION MAKING</b>	<b>PUBLIC INFLUENCE ON COUNCIL DECISION MAKING</b>	
<b>TYOPOLOGY</b>		QUALITATIVE	
<b>PROCESS STAGE</b>		EX-ANTE	IN ITINERE
<b>REQUIRMENT</b>		EX-POST	
		Participation of residents in representative governance and decision making processes at local and national levels.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		SUBJECTIVELY	
<b>ASSESSMENT</b>	The influence that the public has on the decisions that their local council makes.		
<b>METHOD</b>	Residents' rating of public influence on council decisions.		
<b>POINTS</b>	1	No influence	
	2	Small influence	
	3		
	4	Some influence	
	5	Large influence	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

<b>POLITICAL URBAN QUALITY OF LIFE</b>			
<b>CIVIL AND POLITICAL RIGHTS</b>			
<b>CPR 1-5</b>	<b>COMMUNITY INVOLVEMENT IN COUNCIL DECISION MAKING</b>	<b>REPRESENTATION BY WOMEN ON LOCAL COUNCILS</b>	
<b>TYOPOLOGY</b>		<b>QUANTITATIVE</b>	
<b>PROCESS STAGE</b>		<b>EX-ANTE</b>	<b>IN ITINERE</b>
<b>REQUIRMENT</b>		<b>EX-POST</b>	
		Participation of residents in representative governance and decision making processes at local and national levels.	
<b>ASSESSMENT METHODOLOGY</b>			
<b>THE WAY OF ASSESSMENT</b>		<b>OBJECTIVELY</b>	
<b>ASSESSMENT</b>	Percentage of elected women councilors on local councils.		
<b>METHOD</b>	This measure illustrates the differences in gender representation on the councils.		
<b>POINTS</b>	1	Low (Women are underrepresented)	
	2		
	3	Fair	
	4		
	5	High (female councilors represent over half of the councilors on the council)	
<b>EXISTENT METHODOLOGY AND REFERENCES</b>			
Quality of Life, <a href="http://www.qualityoflifeproject.govt.nz">www.qualityoflifeproject.govt.nz</a> .			
<b>LAWS AND REGULATIONS</b>			

## ملخص البحث

يعتبر مفهوم جودة الحياه من المفاهيم التي شهدت اهتماما كبيرا في الآونة الأخيرة كنتيجة للمشاكل التي تواجه المدن الجديدة في العالم ولاسيما في مصر. فقد وجد أنه من المهم البحث عن كيفية أن يكون للتخطيط العمراني تأثير ايجابي على جودة الحياه الفردية داخل المجاورة السكنية ومن هذا المنطلق قامت الدراسة باستحداث مفهوم جديد أطلق عليه "جودة الحياه العمرانية" حيث يمكن تعريف هذا المصطلح على أنه التخطيط العمراني الذي يعمل على تحقيق جودة الحياة لمجموعة من الناس. ومن أجل الوصول إلى تعريف محدد لمصطلح "جودة الحياه العمرانية" قامت الدراسة بتناول التعريفات الخاصة بجودة الحياه والتخطيط العمراني والتنمية المستدامة.

من الملاحظ أنه ظهرت في الآونة الأخيرة عدة محاولات لتصميم وتطوير أدوات كثيرة لتقييم الأثر البيئي سواء لمبنى واحد أو مجموعة من المباني، ومن ناحية أخرى لا يوجد أدوات قياس خاصة بالأثر على جودة الحياة الفردية للتخطيط العمراني. وبناء عليه فكان هدف هذه الدراسة هو تصميم نموذج تقييم خص بجودة الحياه العمرانية على مستوى المجاورة السكنية. وتعتبر هذه الأداة مفيدة للمخططين والمصممين العمرانيين تساعدهم في تصميم المجتمعات الجديدة أو في دراسة نقاط الضعف والقوة في المناطق القائمة وطرق التدخل وكيفية معالجة مشاكلها. تتضمن المنهجية المتبعة في هذه الدراسة على عدة نقاط: بداية تحليل لنظريات التخطيط العمراني المعاصره والتي ظهرت في القرن العشرين وسيتم هذا من خلال الدراسة النظرية. ما تم تناول بعض أدوات تقييم الأثر البيئي على مستوى العمران مثل البريطاني والياباني والأمريكاني والامراتي. حيث تم مقارنتهم واستنباط طرق القياس المختلفة التي يمكن الاستفادة منها في الدراسة. وتتمثل نتيجة هذه المرحلة في الوصول إلى قائمة من المؤشرات الخاصة بجودة الحياه العمرانية في المجاورة السكنية والتي سيتم الاستعانة بها في أداء التقييم التي سيتم تصميمها.

وسيتم استخدام عملية التحليل الشبكي Analytic Network Process في نموذج التقييم المصمم حيث تعتبر هذه العملية مناسبة لدعم إتخاذ القرار في هذا المجال. ويتكون نموذج التقييم من مجموعات وكل مجموعة تحتوي على عدة عناصر حيث سيتم ايجاد العلاقة بين هذه العناصر ثم ايجاد الوزن النسبي لكل عنصر بإستخدام عملية التحليل الشبكي. وحيث أن جودة الحياه الفردية تختلف باختلاف الفئات الاجتماعية والمادية والثقافية وبالتالي يختلف الوزن النسبي لعناصر التقييم فسيتم الاكتفاء بالتصميم النظري لنموذج التقييم وعدم تطبيقه عمليا.

وتمثل النتيجة النهائية للبحث في الوصول إلى أداة لإتخاذ القرار ودعم واضعي السياسات في تصميم المجتمعات الجديدة أو تطوير المجتمعات القائمة.

سارة عبد المنعم أمين أحمد العريان

مهندسة:

١٠ / ١٢ / ١٩٧٩

تاريخ الميلاد:

مصرية

الجنسية:

١٢ / ٥ / ٢٠٠٩

تاريخ التسجيل:

/ /

تاريخ المنح:

الهندسة المعمارية

التخصص:

دكتوراه

المرحلة:

المشرفون: أ.د. همام عز الدين سراج الدين

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د. هند السيد فروح - باحثة - المركز القومي لبحوث الإسكان والبناء

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أ.م.د. أحمد محمد شلبي

عنوان الرسالة:

جودة الحياة العمرانية في المجاورة السكنية - دليل إرشادي للتخطيط العمراني وتصميم أداة  
للتقييم

الكلمات الدالة: -

جودة الحياة - جودة الحياة الحضرية - التنمية المستدامة - أدوات التقييم - نظريات التصميمي العمراني  
المعاصرة

ملخص البحث:

من الواضح أن مصطلح جودة الحياة مصطلح جديد تم مناقشته مؤخرا في مختلف الدراسات كرد فعل لعدد من  
المشاكل التي تواجه المدن الجديدة في جميع أنحاء العالم وكذلك في مصر. إن الغرض من هذه الدراسة هو  
الإجابة على التساؤل الخاص بكيفية أن يسهم التخطيط العمراني في تحسين نوعية الحياة الفردية داخل الحي.  
وعلى هذا الأساس قامت هذه الدراسة باستحداث مصطلح جديد أطلق عليه "جودة الحياة الحضرية" الذي يشير  
إلى ملامح التخطيط العمراني التي يمكن أن الارتقاء نوعية الحياة. علاوة على ذلك، قامت الدراسة بتصميم  
نموذج تقييم لجودة الحياة الحضرية داخل الحي السكني، والتي يمكن أن تكون مفيدة للمخططين والمصممين في  
تناول تنمية المجتمعات الجديدة وتحديد نقاط الضعف المحتملة للمناطق القائمة.

# جودة الحياة العمرانية في المجاورة السكنية

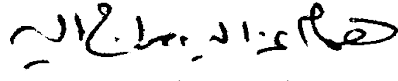
دليل إرشادي للتخطيط العمراني و تصميم أداة للتقييم

إعداد

سارة عبد المنعم العريان

رسالة مقدمة إلى كلية الهندسة, جامعة القاهرة  
كجزء من متطلبات الحصول على درجة الدكتوراه  
في الهندسة المعمارية


يعتمد من لجنة الممتحنين:

  
المشرف الرئيسي

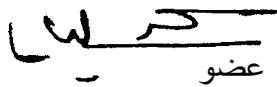
الأستاذ الدكتور: همام عز الدين سراج الدين  
الأستاذ بقسم الهندسة المعمارية كلية الهندسة – جامعة القاهرة

  
المشرف الثاني

الأستاذ المساعد الدكتور: أحمد محمد شلبي  
الأستاذ المساعد بقسم الهندسة المعمارية كلية الهندسة – جامعة القاهرة

  
عضو

الأستاذ الدكتورة: رويدة محمد كامل  
الأستاذ بقسم الهندسة المعمارية كلية الهندسة – جامعة القاهرة

  
عضو

الأستاذ المساعد الدكتورة: سحر عبد الله سليمان  
الأستاذ المساعد بمركز بحوث الإسكان والبناء – القاهرة

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٢٠١٢

# جودة الحياة العمرانية في المجاورة السكنية

دليل إرشادي للتخطيط العمراني و تصميم أداة للتقييم

إعداد

سارة عبد المنعم العريان

رسالة مقدمة إلى كلية الهندسة, جامعة القاهرة  
كجزء من متطلبات الحصول على درجة الدكتوراه  
في الهندسة المعمارية

تحت إشراف

أ.د. همام سراج الدين  
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٢٠١٢

# جودة الحياة العمرانية في المجاورة السكنية

دليل إرشادي للتخطيط العمراني و تصميم أداة للتقييم

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في الهندسة المعمارية

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