

**An-Najah National University
Faculty of Graduate Studies**

**Strategic Planning Towards Sustainable
Palestinian Neighbourhoods**

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Strategic Planning Towards Sustainable Palestinian Neighbourhoods

**By
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This Thesis was defended successfully on 14/8/2017, and Approved by

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Dedication

To my lovely Home Palestine

To my beloved father and mother

To my dear husband

To my dear children Obai, Yamen and Salma

To my dear sisters and brothers

To all who support me I dedicate this work

Acknowledgment

First of all, thanks to Allah who granted me the power to complete this work.

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الإقرار

أنا الموقعة أدناه مقدمة الرسالة التي تحمل العنوان:

Strategic Planning Towards Sustainable Palestinian Neighbourhoods

التخطيط الاستراتيجي نحو ضواحي فلسطينية مستدامة

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Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Signature:

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Date:

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List of Abbreviations

CCS	Carbon Capture and Storage
EPA	Environmental Protection Agency
GHG	Green House Gas
JDECO	Jerusalem District Electricity Company
MIST	Masdar Institute for Scientific Technology
MoLG	The Ministry of Local Government
MoPWH	The Ministry of Public Works and Housing
PHC	The Palestinian Housing Council
PHGBC	The Palestinian Higher Green Building Council
PNA	Palestinian National Authority
PWA	Palestinian Water Authority
SDGs	Sustainable Development Goals
SDHW	solar domestic hot water systems
SWOT	Strength, Weaknesses, Opportunities and Threats
UAE	United Arab Emirate
UCI	Union Construction and Investment
UN	United Nations
UNDP	United Nations Development Programme
VMWP	Van Meter Williams Pollack
WWTP	waste water treatment plant

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Strategic Planning Towards Sustainable Palestinian Neighbourhoods**By****Deemah Rida Ahmed Salameh****Supervisors****Prof. Sameer Abu-Eisheh****Dr. Muhannad Haj Hussein****Abstract**

In Palestine, as in other parts of the world, there is a growing trend for preserving the environment, and towards consideration of sustainability in the various sectors. One of these sectors with growing interest in sustainability is that related to the communities, including neighbourhoods. Relevant community aspects in this regard, such as energy, water, land, waste water, solid waste and transportation, are gaining much attention. At the same time, housing and community development efforts must address a complex system for the individual, as well as social, economic, and environmental factors in order to promote the sustainability of buildings and infrastructure systems, neighbourhoods, communities, cities and regions. The neighbourhood level lies at a key and basic level in this development, and this was considered the major factor in this research.

This research aims to understand the sustainable neighbourhood development experience regionally and internationally, in order to formulate the sustainable neighbourhoods strategic development framework in Palestine. The importance of developing a strategic planning framework for sustainable neighbourhoods in Palestine is of a special value, due to the lack of energy resources, shortage of water, neighbourhood limited land, in addition to the transportation challenges and the environmental pollution. The neighbourhood level is the basis for

developing sustainable communities. This had motivated conducting this research.

This study has identified and suggested a framework for sustainable neighbourhoods in Palestine, by studying, analyzing and understanding the sustainable neighbourhood related issues through review of relevant experiences internationally, and through analysis of interviews and focus group meetings conducted for a selected case study in Palestine, Al Reehan neighbourhood.

The formulated framework for strategic planning for sustainable neighbourhoods in Palestine highlights the key issues and the main elements of the strategic plan, which have been conducted based on assessing the positive aspects (strengths and opportunities) and negative aspects (weaknesses and threats) facing the sustainable neighbourhoods, and then defining the vision, mission, goals, strategies, and actions for sustainable Palestinian neighbourhoods.

It is recommended that the policy makers, stakeholders and developers be more aware of the importance of sustainability of the neighbourhoods, and to adopt such framework that would guide the efforts to realize sustainable neighbourhoods in Palestine, and then implement the recommended actions. In addition, the Government and related stakeholders have to determine the relevant planning and design guidelines for in the domains of sustainable neighbourhoods. Moreover, the findings of this research give suggestions for future research in the field of sustainable neighbourhoods.

Chapter One

Introduction

Chapter One

Introduction

1.1 Chapter Overview

This chapter presents the background of the research, and illustrates the problem of this study. In addition, the objectives, questions and expected results are illustrated. Finally, the outline of this research is presented at the end of this chapter.

2.1 Background

The neighbourhood is a basic planning entity in modern residential planning theories. However, the literature demonstrates different approaches that tackle the application of sustainability to neighbourhoods. The UK Office of Deputy Prime Minister (2004) highlights sustainable communities "as those which meet the diverse needs of existing and future residents, their children and other users, contribute to a high quality of life and provide opportunity and choice. This can be achieved in ways that make effective use of natural resources, enhance the environment, promote social cohesion and inclusion, and strengthen economic prosperity".

In recent years, sustainable urban development has been considered as one of the prevalent theories and policies, dominating a major portion of urban planning literature. As a consequence of contemporary changes in urban structures and the replacement of former urban environments with newer urban structures, urban neighbourhoods have found substantial significance (Aziz, 2014).

There can't be generic guidelines on how to make a good neighbourhood; each project is unique and has its special status, therefore there are several well established basic principles that are worth to be taken into account (American Planning Association, 2015). A good neighbourhood is a place with identity, it can be easily distinguished from the surroundings; it has a more or less perceptible physical edge, but also a clear mental image, in addition of having a block structure with a network of through streets. A good neighbourhood has mixed-use, and is diverse, has a variety of dwelling types, so that the young and the old, singles and families, the poor and the wealthy, can all find places to live, with a common neighbourhood public space to unite all community members. A good neighbourhood is pedestrian friendly, child friendly, and incorporates facilities and spaces for children. A good neighbourhood is green.

In response to development and change in environment and as clients become more sophisticated, and require more in terms of cost, time and quality. Today organizations need to challenge conventional strategic planning and look for strategic planning for sustainable development. Aziz (2014) believes that "Sustainable Development is the focus of development on people and establishing justice for present and future generations". He emphasizes that development is not merely related to economic success, but, different aspects such as health care, social life, quality of life and environmental conditions are also affected.

In the recent years, there has been increasing interest in sustainable communities. In its proposed new strategy of sustainable neighbourhood

planning, UN-Habitat (2014) has suggested five principles to be considered to achieve sustainable neighbourhood. These include adequate space for streets and an efficient street network, high density, mixed land-use, social mix, and limited land-use specialization.

Numerous studies have been published addressing sustainable communities, sustainable development, and sustainable neighbourhoods, as will be presented later in this study. These have illustrated the concepts, policies, and applications of sustainability in developed and developing countries. Research has been published illustrating regional experience in this context as well. However, the concept of sustainable communities and its application to the neighbourhoods in Palestine is relatively new.

The Palestinian Higher Green Building Council (PHGBC) was established in 2010. It aims to encourage green and sustainable architecture and building in Palestine by introducing the main green building design strategies through their published guidelines (PHGBC, 2013). These set the general rules for how to get the buildings environmentally friendly, energy and resources saving. After the establishment of PHGBC, many buildings which apply the guidelines of the PHGBC start to be noticed.

The Palestinian environmental law of 1999 could form a basis for sustainable neighbourhoods in Palestine. It aims to promoting sustainable development to protect the rights of future generations, protecting the environment from all types of pollution, protecting public health and social welfare, incorporating environmental resources protection in all social and

economic development plans, conserving ecologically sensitive areas, protecting biodiversity, and rehabilitating environmentally damaged areas, and promoting environmental information collection and publication, public awareness, education and training (Environment Quality Agency, 1999).

1.3 Neighbourhood Development in Palestine

The establishment of the Palestinian National Authority (PNA) on parts of the West Bank and Gaza in 1994 had led to massive developmental efforts by the Palestinians in order to deal with the challenges inherited due to 27 years of Israeli occupation. The Palestine Liberation Organization (1993) has prepared the first Palestinian Developmental Plan for the period 1994-2000. The plan gave priority to correct the distortions caused by the occupation, especially in the infrastructure and the housing sectors. The Ministry of Public Works and Housing (MoPWH), established after the formation of the PNA, has the primary responsibility of the management and implementation of national infrastructure and publicly supported or managed housing.

The Palestinian Housing Council (PHC) was formed in Jerusalem in 1991, slightly before the establishment of the PNA, as a non-profit organization, dedicated to help alleviating the shortage of housing and contribute to the development of the housing sector, by providing long-term loans for housing projects. However, the private sector and individual investors have been leading most of the residential development in

Palestine. Official statistics for PCBS 2009, indicated that about 60% of the households own their housing units, which they obtain mainly through their savings, and secondarily through loans from banks. In addition to an estimated ratio of 63% of the Palestinian community is considered as urban communities (PCBS, 2016). Based on the estimates it is expected that the cumulative deficit at the end of 2019 will reach about 294,000 housing units (Abu Obaid, 2013).

New housing projects have evolved in order to cope with lifting the zoning restrictions put previously for decades by the Israeli occupation authorities, overcome the shortage in dwelling stock, and satisfy the demand for providing residential space for citizens and hundreds of thousands of Palestinian returnees from abroad.

During the last decade, a new trend in housing projects evolved, where neighbourhood-based residential developments start to spread rapidly compared with individual developers building-based developments. In 2009, the first new town in Palestine was established, Rawabi, as an initiative to build a new population centre for Palestinians and as a courageous economic initiative that integrates international best practices for urban master planning, sustainable environmental policy, regionally-suited architecture, and state-of-the-art infrastructure for residents, enterprises, and visitors.

In 2009, Al Etihad neighbourhood near Ramallah was inaugurated as the first integrated neighbourhood in Palestine. After that tens of new

neighbourhoods in the suburbs of major Palestinian cities are observed, especially in central area of the West Bank of Ramallah-Al Bireh-Beitunya, including Al Reehan neighbourhood.

1.4 Problem Statement

Changes and alteration in urban areas is an irresistible fact, and various forces including social, cultural, economic, population, technological and environmental forces affect the process and the intensity of changes.

Due to the negative impact of the daily activities on the environment, there is a trend to more consider sustainability in all related sectors of the communities including neighbourhoods such as energy, water, land, waste, air, people and transportation sectors. At the same time, housing and community development efforts must address a complex system of individual, social, economic, and environmental factors in order to promote more diverse, inclusive communities and improve the sustainability of neighbourhoods, communities, and regions.

Due to the lack of energy resources in Palestine, and to the shortage of water and limited land (about 60% of lands is area C are managed by the Israeli occupation), in addition to the environmental pollution results from transportation and manufacturing, and since the neighbourhood is the basic unit of the cities and communities, this work identifies a proposed strategic framework for sustainable neighbourhoods in Palestine. Such strategic framework is envisaged to be the basis for future sustainable development.

1.5 Objectives of the Study

In the emerging State of Palestine, there are considerable limitations of land that could be used for development, scarcity of energy, water, and material resources, in addition the prevailing environmental pollution, persistent economic challenges, and new lifestyle trends. These factors need to be considered in planning and developing of the sustainable neighbourhoods. It has to be stated that there was recently a study conducted on the process of neighbourhood strategic planning in Palestine, but did not address the sustainability concerns (Fares, 2014).

This study aims to formulate the strategic framework that will guide the efforts that will assist in achieving the goal of having sustainable neighbourhoods in Palestine. The neighbourhood level is highlighted as numerous developments on such level have been observed during the past few years, and where a number of developers have been considering aspects of sustainable neighbourhood. The neighbourhood is the unit where the impacts towards sustainable development can be easily realized, compared with consideration of citywide or individual building sustainable development.

This research aims to achieve the following objectives:

- Analyze and understand the sustainable neighbourhood characteristics, regionally and internationally.

- Identify relevant stakeholders (the users, the government, the planners, the consulting engineers, and the municipalities).
- Formulate the sustainable neighbourhoods strategic development framework in Palestine including the vision, mission, goals, strategies and actions.
- Outline some sustainable neighbourhood recommendations that can be implemented in Palestine.

1.6 Expected Results

The research is expected to respond to the research problem and therefore the expected results are as follows:

- Identification of the elements for planning for sustainable neighbourhoods in Palestine.
- Providing a clear understanding for all stakeholders (public, semi-public, private sector and residents in the community), about what Palestinian sustainable neighbourhood will look like.
- Identification of how the government, the municipalities, the developers and the decision makers can pay more attention for sustainable neighbourhoods.
- Development of a strategic planning framework for sustainable neighbourhoods in Palestine.

1.7 Data Sources

The data collection in this research depends on three main sources:

- Library / internet resources which include books, articles, published thesis and related websites.
- Personal resources from the interviews with experts, developers and decision makers.
- Focus groups with existing and expected residents in the case study.

1.8 Thesis Outline

The thesis is divided into seven chapters as presented in Figure (1.1). The next chapter, Chapter Two, presents literature review on the concepts considered and illustrates some examples on sustainable neighbourhoods. Chapter Three presents the methodology used in this research. Chapter Four, introduces neighbourhood development in Palestine and the analysis of the selected case study, Al Reehan neighbourhood. In Chapter Five, SWOT analysis for the six domains for the sustainable neighbourhood, is illustrated. The Sustainable Neighbourhoods Strategic Development Framework is identified in Chapter Six, where Chapter Seven presents the research conclusions and suggests some related recommendations.



Figure (1.1): Thesis outline

Chapter Two
Literature Review

Chapter Two

Literature Review

2.1 Chapter Overview

This chapter reviews the previous studies regarding the strategic planning of sustainable neighbourhoods. In order to accomplish this, the chapter first illustrates the strategic planning, sustainability and sustainable development definitions, and the related concepts. This is followed by a review of some examples on strategic planning for sustainable neighbourhoods, in order to learn from the previous studies successes and challenges.

2.2 Key Concepts in Strategic Planning and Sustainable Development

There are specific concepts that are considered to plan for sustainable neighbourhoods. These concepts include strategic planning, sustainability, sustainable cities, sustainable neighbourhoods, sustainable development, sustainable buildings, sustainable development goals (SDGs) and new urban agenda. Each of these concepts is presented hereafter.

2.2.1 Strategic Planning

The concept and practice of strategic planning have developed over time. It became generally recognized that most of the planning processes follow the 'rational' model for the cycle of formulation, implementation, monitoring, and evaluation. The concept of strategic planning was exclusively linked to businesses until about three decades ago when San

Francisco Municipality drew up its first strategic plan (Gonzalez and Lazaro, 2013).

Urban strategic planning is defined as creating a state of opinion, motivating institutions and introducing reflections oriented in the long term towards having more developed cities, taking in consideration sustainability as a base for planning (Gonzalez and Lazaro, 2013). It also describes the ways and general directions that the city will take in an effort to achieve established goals.

The concept of strategic planning for sustainable cities have been extended to strategic planning for sustainable neighbourhoods to give the vision on what sustainable neighbourhoods will look like. Neighbourhoods can be initialized in a long term vision, with goals and objectives as well as related strategies to achieve sustainability and livability for their residents.

2.2.2 Sustainability

O'Brien K. (2011) defines sustainability as meeting the current environmental, social and economic needs of the community without compromising the ability of future generations to meet their needs. Sustainability represents a desire to pass on to children and grandchildren a world that is as good as, if not better than, the one found. In a sustainable community, resource consumption is balanced by resources assimilated by the ecosystem.

2.2.3 Sustainable Development

"Sustainable development refers to the use of resources concerning all activities in relation to human development while preserving the environment for present and future generations (Bayulken and Huisingh, 2015).

For sustainable development, water and energy are the two important engines (Yuksel, 2015). For satisfying sustainable development, it is recommended to fulfill goals of a better quality environment, better economic conditions and a society that is more just, participates more and which also considers the rights of future generations. Sustainable development basic human needs are to be satisfied, while achieving reasonable standards of welfare for everybody in the society, with broad public participation in decision-making of stakeholders in the development process (Gonzalez and Delazaro, 2013).

Figure (2.1) shows the three essential pillars of sustainability. The integration between these pillars means that sustainable development entails balancing the economic, social, and environmental objectives of society in decision-making. The development of strategic plans is essential to this principle (Gonzalez et al., 2013).

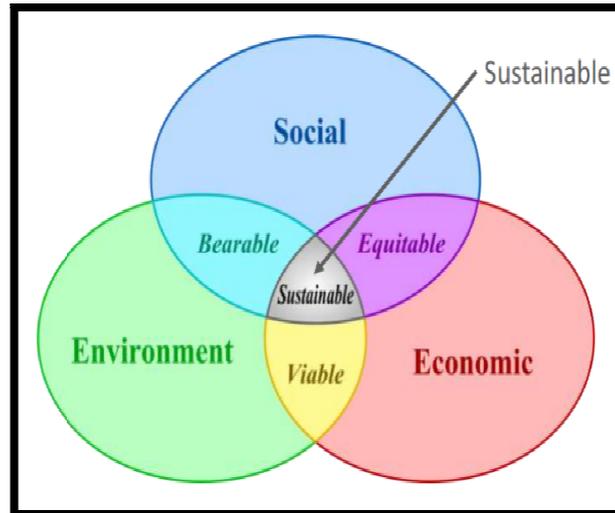


Figure (2.1): Sustainability pillars

2.2.4 Sustainable Cities

Rogers (2000) states that a sustainable city is firstly, a just city that has the basic needs for its residents, with equal opportunities in various domains like justice, food, shelter, education, and health. In addition to that the residents feel that they participate in the governance.

Rogers also presents the characteristics of sustainable city; a beautiful city with a beautiful image that art, architecture and landscapes promote imagination; a creative city where experimentations allow faster reaction to face the change; an ecological city which minimizes the ecological impact, and the use of the resources in a safe and efficient manner; a city that favors contact where public spaces induce community living and the transportation of the residents and where the information is interchanged personally and by different technologies; a compact and polycentric city which protects its surroundings and centers and integrates communities into neighbourhoods and optimizes their relations; and a

diverse city where the level of diversity and intensity of activities encourages and promotes a human, lively and dynamic community.

A sustainable city is the city that is able to reduce the external needed resources (land, energy, water and materials), limitation the production of waste (air and water pollution and solid waste) and, at the same time, can improve living conditions (health, revenue, housing, leisure, accessibility, public spaces and sense of belonging) (Cowell and Owens, 2006).

Richard Rogers, the famous British architect, defines an ecological city as the city that minimizes its ecological impact, where the relationship between built space and landscape is one of balance and where infrastructures are able to use resources in a safe and efficient manner (Rogers, 2000).

2.2.5 Sustainable Neighbourhoods

Sustainable neighbourhood is described as autonomous neighbourhood, which provides an opportunity of public interaction and intimate relationship between residents and brings happy and livable atmosphere, protecting the environment and saving natural resources.

While neighbourhoods are the places where development decisions are made and where increments of change actually take place, sustainable neighbourhoods are the building blocks of sustainable cities. Sustainable urbanism can be implemented in cities, towns, and neighbourhoods through coordinated leadership and communication.

People's characteristics and necessities are always affected by economic, social, cultural and environmental changes during periods, which result in physical changes in the structures of neighbourhoods. The sustainable neighbourhoods goal areas are land, air, water, energy, transportation, and people.

UN-Habitat (2014) had identified key principles for sustainable neighbourhoods that include:

1. Adequate space for streets and an efficient street network.
2. High density, to maximize land efficiency.
3. Mixed land-use, including economic, housing, green areas, and transportation.
4. Social mix, indicating the availability of houses in different price ranges.
5. Limited land-use specialization.

2.2.6 Goals of Sustainable Neighbourhoods

In sustainable neighbourhoods, the target is to achieve the following goals related to the following components (Denver sustainable neighbourhood, 2014):

1. Air: Reduce emissions generated in the neighbourhood and improve both outdoor and indoor air quality.

2. Energy: Promote energy efficiency in the neighbourhood and encourage the use of renewable energy sources.
3. People: Enhance the social vitality of the neighbourhood by encouraging community interaction, partnerships, and outreach programs.
4. Transportation: Enhance using bicycle, public transportation and pedestrian streets.
5. Land: Encourage stewardship and conservation of ecosystems and resources.
6. Water: Conserve water resources and improve water quality.

These components are illustrated as follows:

2.2.6.1 Air

One of the earth's most important natural resources is its atmosphere. The atmosphere contains air that human, plants and animals could not survive without. It contains greenhouse gases which keep the planet naturally warmer than it would be otherwise, maintaining an average global temperature above freezing that allows water to exist in its liquid state, a necessary condition for life. Humanity has to protect and preserve this unique natural resource for future generations as well as other ecosystems, and so, it must address the problem of air pollution which affects the atmosphere from the local to the global scale.

The best way to reduce the threat of air pollution is to reduce the use of fuel and use clean fuel, and to use more sustainable modes of transport like public transport, walking and biking (Sustainable Environment, 2015).

2.2.6.2 Energy

Renewable energy resources are hydroelectric, wind power, solar thermal and biogas. It is important to point out the world wide attributes for restructuring policies that are directing the development of new and renewable energy, and giving special emphasis to socio-economical bodies, laws and legal regulations (Yuksel, 2015).

2.2.6.3 People

Social mix is not an urban planning solution for social problems such as poverty and social segregation, but it can significantly contribute to their solution (UN-Habitat, 2014). Economy, ecology and equity, are at the heart of sustainable community development. Sustainable community development is a process and a capacity to make decisions that consider the long-term economy, ecology and equity of all communities, (Sustainable Environment, 2015).

2.2.6.4 Transportation

Most forms of transport involve the combustion of fossil fuels, which adds to the problem of air pollution. Air pollution problems in a city are most intense where the traffic is most dense. In addition to the pollution issues, traffic contributes to issues such as congestion, noise pollution and

the disruption of ecosystems over the years. As a result of wide transportation use, legislations have been introduced to reduce the amounts of pollutants released. In modern societies vehicles are becoming increasingly environmentally friendly (Sustainable Environment, 2015).

2.2.6.5 Land

Sustainability requires balancing the needs for land for development with the land available. By effective land use planning, activities including work, shopping and leisure are brought closer together and closer to places of residents. This will reduce journey distance to a level where travel on foot and by bicycle becomes more popular. To facilitate this, urban centers need to be more attractive and the quality of urban living improved(Sustainable Environment, 2015).

2.2.6.6 Water

The water potential of countries is usually evaluated based on water potential per capita. According to international criteria, countries with a water potential greater than 10,000 m³ per capita per year are accepted as water-rich; those with a potential of 3,000 to 10,000 m³ per capita per year are accepted as self-sufficient; countries with a potential of 1,000 to 3,000 m³ per capita per year are accepted as having a water-deficit; and, those with a water potential of less than 1000 m³ per capita per year are regarded as water-poor countries (Yuksel, 2015).

Grey water is contaminated or used water that does not contain sewage, but may contain chemicals. It can come from bathtubs, showers, sinks or washing machines.

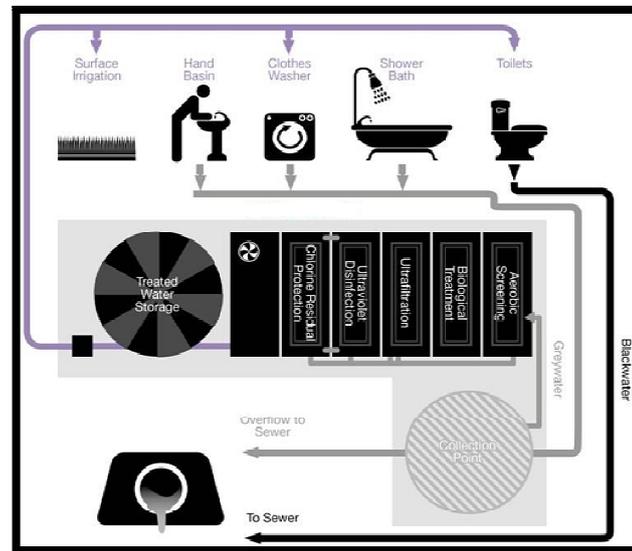


Figure (2.2): Greywater versus Blackwater in a house

Source: Polylok, 2016

Black water contains water from the toilet or kitchen sinks (while some sources classify kitchen water as grey water) (Polylok, 2016). Black water requires treatment by chemical or biological agents and disinfection. Black water is not suitable for use indoors after any treatment except by those sophisticated and expensive systems producing drinking quality water (Polylok, 2016). Figure (2.2) presents grey and black water cycle inside home.

2.2.7 Pillars of Sustainable Neighbourhoods

Choguill (2008) found that there is a collection of contributions to determine the main characteristics that should be available in the

neighbourhood, which have provided a basis for devising the criteria for the planning of sustainable neighbourhoods as follows:

- **Economic Sustainability**

To get an economic sustainability in the neighbourhood the following points must be achieved:

1. The transportation and infrastructure cost must be reduced, by establishing a compact neighbourhood, and reducing the use of cars in general, the ability to walk to different facilities.
2. The size of neighbourhood must be limited but the densities need to be relatively high.
3. The retail stores and economic activities must be located centrally, to give opportunity for social interaction in the neighbourhood community.

- **Social Sustainability**

The neighbourhood must satisfy the requirements to be considered as a sustainable neighbourhood from a social perspective.

1. The population size in the neighbourhood should be small enough to allow free communication among members of the community.
2. The public must participate in making decisions that affect them, like parking and car related problems and other services.

3. Local problems must be solved through face-to-face discussions, negotiations and co-operation, which is a basic concept of social sustainability.
4. Neighbors must know each other, which would strengthen the original meaning of neighbors.
5. As the community gets bigger, the involvement of the neighbors becomes less, therefore a limit should be respected with regulations for the sustainable neighbourhood population and area.
6. Schools, coffee shops, open spaces, parks and garden furniture should exist in sustainable neighbourhoods, which provide meeting places for the residents in the neighbourhoods.

- **Technical Sustainability**

The most important technical points of the sustainable neighbourhood include:

1. The way that the neighbourhood shall fit into the wider community with clear boundaries and roads.
2. For safety, internal traffic is minimized by reducing the number of roads that pass through the neighbourhood.
3. The small community is naturally grouped around a focal point in different sorts.

- **Environmentally sustainability**

The most important basics of the environmentally sustainable neighbourhoods include:

1. The existence of parks and different green spaces.
2. As water is a finite and irreplaceable resource that is fundamental to human well-being, it is only renewable if well managed. Reducing consumption and increasing reuse are the basic ways to conserve water (United Nations, 2015).
3. Reducing energy consumption and the carbon footprint through study of carbon emission and new transportation systems (Boston University, 2016)

2.2.8 Sustainable Buildings

While standard building practices are guided by short-term economic considerations, sustainable construction is based on best practices, which emphasizes long-term affordability, quality and efficiency (Gorbain, 2008). At each stage of the life cycle of the building, sustainable construction increase comfort and quality of life, while decreasing negative environmental impacts and increasing the economic sustainability of the project.

A building designed and constructed in a sustainable way minimizes the use of raw materials, land, water, and energy over the whole life cycle of the building (Gorbain, 2008). On the other hand, Habitat for Humanity

(2014) defined sustainable construction as designing and constructing houses that are efficient and durable, use fewer resources, are healthy to live in and are affordable. The reason of using sustainability is explained in order to take better care of the environment and the home owners. Sustainability goals are to reduce the home's monthly and life cycle costs and increase efficiency and durability while providing healthy environments.

2.2.9 Sustainable Development Goals (SDGs)

In 2015, 189 countries around the world came together to face the future. These countries set, the Sustainable Development Goals (SDGs) aiming to end poverty and hunger by 2030. The world is building a consensus about the future, where everybody has enough food, and can work, with good quality of life. The following are some of the related goals (UNDP, 2015).

- **Goal Six: Clean water and sanitation**

Ensure availability and sustainable management of water and sanitation for all. Everyone on earth should have access to safe and affordable drinking water. This need more international cooperation, protecting wetlands and rivers, and sharing water-treatment technologies.

- **Goal Seven: Affordable and clean energy**

Ensure access to affordable, reliable, sustainable and modern energy for all. Where fossil fuels and greenhouse gas emissions are making drastic

changes in the climate, leading to big problems on every continent, instead, being more energy-efficient and invest in clean energy sources such as solar and wind. That way will meet electricity needs and protect the environment.

- Goal Eight: Decent work and economic growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. An important part of economic growth is that people have jobs that pay enough to support themselves and their families. The way to achieve this, promote policies that encourage entrepreneurship and job creation.

- Goal Eleven: Sustainable cities and communities

Make cities and human settlements inclusive, safe, resilient and sustainable. To make cities sustainable for all, create good and affordable housing, invest in public transport, create green spaces and get a broader range of people involved in urban planning decisions. That way will keep the things everyone love about cities and change the things don't.

2.2.10 The New Urban Agenda

The New Urban Agenda represents a shared vision for a better and more sustainable future – one in which all people have equal rights and access to the benefits and opportunities that cities can offer, and in which the international community reconsiders the urban systems and physical form of our urban spaces to achieve this (UN-habitat, 2016).

The New Urban Agenda incorporates a new recognition of the correlation between good urbanization and development. It underlines the linkages between good urbanization and job creation, livelihood opportunities, and improved quality of life, which should be included in every urban renewal policy and strategy. This further highlights the connection between the New Urban Agenda and the 2030 Agenda for Sustainable Development (SDGs), especially Goal eleven on sustainable cities and communities.

2.3 Previous Studies

In this section, a set of case studies that have concepts related to sustainable cities and neighbourhoods, in different parts in the world are presented, starting with the country scale (Spain and Kenya), through the city level (Masdar City and Riyadh), and ending with the neighbourhood scale (Shahrara and Belmar).

2.3.1 Country Scale

2.3.1.1 Spain

Before illustrating the case of Spain, a brief on the European Union position on sustainable neighbourhoods of the European cities is presented first, as Spain is part of the European Union. As Gonzalez and De Lazaro (2013) indicated, the European Commission, which is the highest administrative level supporting and collaborating with local governments, encompasses ten indicators that aim to follow evolution and compare

progress in the neighbourhoods of the European cities in the sustainable development process which are presented in Table (2.1).

Table (2.1): Main and complementary indicators

No.	Main indicators	No.	Complementary indicators
1.	Citizen satisfaction with the local community (perception).	1.	Children's journey to and from the school.
2.	Local contribution to global limit change (CO ₂ emissions).	2.	Sustainable management of local authority and local business.
3.	Local mobility and passenger transportation (distances and means of transportation).	3.	Noise pollution.
4.	Availability of local open public areas and services.(Proximity and accessibility).	4.	Sustainable land use.
5.	Quality of local ambient air (number of days when limits are exceeded).	5.	Products promoting sustainability

Source: Gonzalez and De Lazaro (2013).

There are some common aspects that have been taken in consideration during strategic planning for sustainable development in Spanish such as open space, infrastructure, technologies, social aspects, integration between different age groups and cultures, and finally the reduction of water use and the improvement of the quality of water.

In a study in Spain, where the strategic planning culture is already valued, it was found that there are challenges that face urban sustainability (Gonzalez and De Lazaro, 2013). The study selected ten cities in Spain, and SWOT analysis was used for these cities to evaluate the strength, weaknesses, opportunities and threats. Next, about 100 social, professional,

academic and business institutions, at different government levels, have been preparing Strategic Plans for the ten cities and put them into action.

Most decisive challenges focus on reducing the environmental impact in cities. Two interconnected aspects with the aim to create a successful scenario for sustainable development have been focused. These are reducing the consumption of energy, natural resources, land, etc. and minimizing the externalities of urban metabolism (pollution, emissions, waste).

Three basic points of the strategic management are used in Spanish cities:

- 1) The formation of the strategy
- 2) Putting it into action
- 3) Strategic control

In order to make a set of integrated policies that include sustainability part of town planning, Gonzalez and De Lazaro (2013) had developed strategic plans that contribute to a qualitative change in local administration, generate greater awareness of environmental problems, and make participation in decision-making easier at the local level.

The characteristics that are repeated in all processes are the involvement of the main economic and social stakeholders of the city, who work together, in addition to the desire to improve the citizens' quality of life.

In summary, this study utilized SWOT analysis as an effective tool to formulate the strategic plans for sustainable cities, and to create a successful scenario for sustainable development for reducing the consumption of energy, natural resources, land, etc.

2.3.1.2 Kenya

Because of the rapid increase in urban population in Kenya, the developers start to consider the sustainability principles in planning towns. Many challenges appear during the analysis phase. The major planning and strategic development challenging fields facing Eldoret and Busia towns sustainable development, as discussed by Cheserek et al. (2012) were the following:

- Water supply system.
- Sewerage and sanitation.
- Solid waste management system.
- Social infrastructure.
- Housing and settlements.
- Networks and travel patterns.
- Non-motorized transport facilities.
- Trends in land use and economic activities.

- Environmentally sensitive areas.
- Lack of land for development.
- Encroachment on public lands by developers.
- Political interference.
- High taxation on investments by local authority and central government.
- High cost of construction materials.

To overcome these challenges and enhance sustainable urban development, an integrated strategic urban planning approach was adopted. Consequently plans and digital mapping were prepared and approved, which were base of sustainable development principles.

It can be concluded that to confront many challenges that may face the planning and strategic development, an integrated strategic urban planning approach based of sustainable development principles can help to overcome these challenges.

2.3.2 City Scale

2.3.2.1 Masdar City - United Arab Emeritus

"When you look at the whole concept of Masdar in the 21st century, it's the same as Nasa in the 20th century"¹.

¹ Fred Moavenzadeh, President of Masdar Institute for Science and Technology (MIST), 2015.



Figure (2.3):Masdar City, Abu Dhabi

Source: Kingsley, 2015

Masdar City in United Arab Emirate (UAE) is considered as the first free carbon city in the world, and the first city free of cars and leftover. Masdar City located near Abu Dhabi, extends over an area of seven square kilometers, which is completely depending on renewable energy, with a capacity of 40,000 residents, and more than 50,000 academics and researchers (Nader, 2009). Work started at the city in January 2008. The initiative of establishing Masdar City aims to creating a center to support and market the technology of sustainable energy (Masdar, 2015).

The city seeks application of the following ten principles of sustainability (Masdar, 2015):

1. A city free of carbon effect.

2. A city free of leftover.
3. Transportation system that is sustainable.
4. Local and sustainable building materials.
5. Local and sustainable food.
6. Sustainable water.
7. Keeping biodiversity and wild life.
8. Preserving the cultural heritage.
9. Accomplishing equality and justice.
10. Realization of health and happiness.

- **Examples of Masdar's approaches to sustainable city**

Masdar City's has variable infrastructure of renewable energy technologies; photovoltaic plants (PV), a concentrating solar thermal power plant (CSP), evacuated thermal tube collectors, and a waste-to-energy plant, which are integrated to be more efficient.

One of Masdar approaches to develop low carbon economy, is developing the largest Carbon Capture and Storage (CCS) project, to get low carbon economy, and reduce the growth in Green House Gas (GHG) emissions, by injection of CO₂ into oil reservoirs, which is so easy in Abu Dhabi due to the short distance between the sources of CO₂ and the reservoirs (Nader, 2009).

- **Strategies of Achieving Sustainability in Masdar City**

As Kingsley (2015) indicated, strategies in this regard include:

- 1- **Design:** The design is derived from the traditional Arab city; the design of the neighbourhood is considering the people, not the vehicles, and aim to reduce the negative ecological effect through the assembly and closeness of buildings. Streets don't exceed three meters wide and seventy meters long. The buildings are not more than five stories high. Tree and water coverage is well studied and planned to improve the quality of roads. Masdar City is directed to the east-south and south-west axis to achieve the maximum possible balance between sunlight and shadow, although it is in a short distance the desert, where the temperature arrives to 35°C, the temperature in Masdar streets is about 20°C, as a result of 45m high wind tower, and wide tree coverage.
- 2- **Electrical Energy:** The neighbourhoods have to reduce consumption of electricity. In Masdar City, 80% of its buildings roofs are used to generate solar energy by solar cells.
- 3- **Water:** Masdar City use water as minimum as possible. It reduces using water by nearly half, compared with traditional cities, by recycling the waste water and using it in irrigating the plantation cover.
- 4- **Leftovers:** To get efficient sustainability in Masdar City, are recycled and reused. Masdar City looks forward to recycling 89% of its leftovers by 2020.

- 5- Transportation: Masdar City is the first city in the world to operate a transportation system that is free of fossil fuel. The city design encourages the individuals to live, move and work without being in need of private vehicles. The use of transportation must be reduced in sustainable neighbourhoods. Compact neighbourhoods, used bikes, walk to near activities and using public transportation are some ways that reduce the side effect of transportation.
- 6- Land: In the neighbourhood, as land is divided so as to achieve efficient rates between functions that ensure sustainable use of the land. In Masdar City the land is divided. Accordingly to the following rates: 30% allocated to shelter and residence, 24% to district of works and research, 13% to marketing purposes and light industries, 19% to services and transport systems, 8% to cultural and civil purposes, and 6% allocated to Masdar Institute for Scientific Technology (MIST).

Consequently, to achieve sustainable city, integrated strategies related to the design of the city, electrical energy, water, leftover, transportation and land have to be formulated and applied.

2.3.2.2 Riyadh Eastern Neighbourhood, Saudi Arabia

Before 1957, Riyadh was a city of low rise, adobe-mud buildings, and limited population of about 50,000. The city exploded in the 1970s with the oil boom, and the city population became about 370,000, and continued to increase rapidly in the following years. Therefore, there was a

difficult task to arrange different facilities and sectors in the city like housing, infrastructure, shopping facilities, education, medical care and employment. The decision was to transform Riyadh from a sleepy Arab small town to modern city in one-step, and preparing an urban plan for this rapid growth. In 1973, Doxiad, a Greek architect and town planner, was invited to prepare the urban plan, which was based on a concept of the superblock with a 2km*2km squares grid, extending around a linear north–south spine (Choguill, 2008). This was an effort to replicate the Arabian village as illustrated in Figure (2.4).

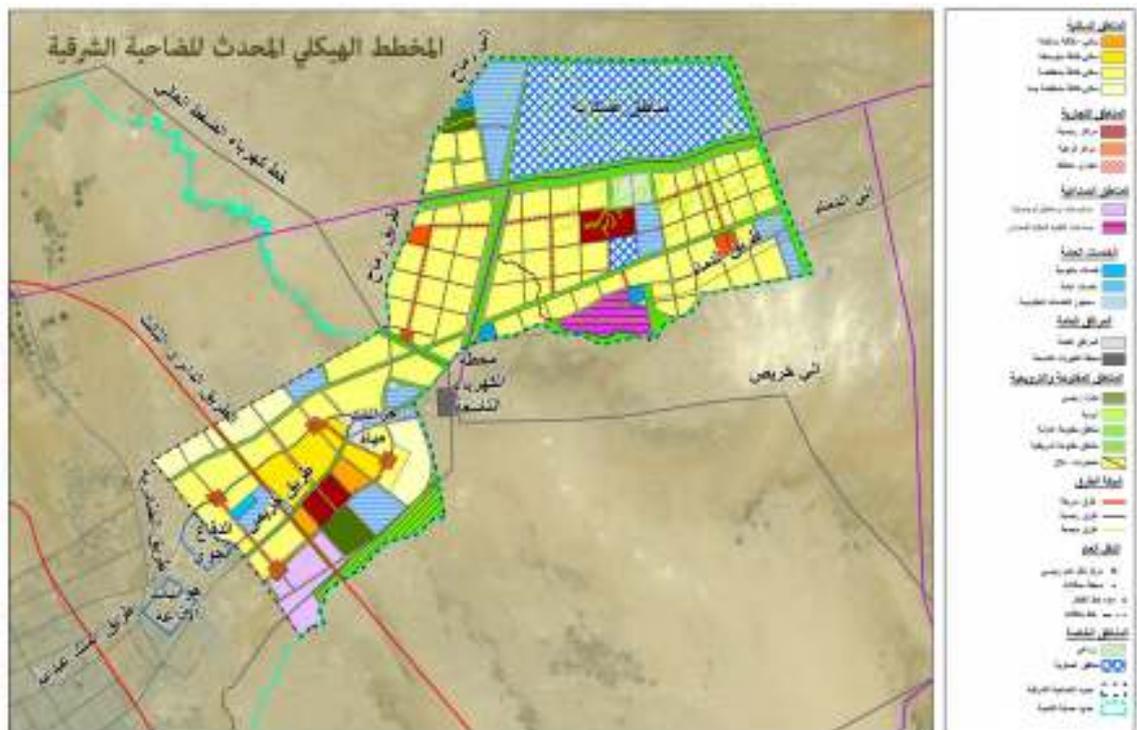


Figure (2.4): The updated master plan for the eastern neighbourhood – Riyadh
Source: The High Commission for the Development of Riyadh, 2015

In the early 2000, the developer designing the neighbourhoods decided to keep sustainability criteria in the design, and to have basic principles of neighbourhood theory, like creating focal points such as

mosques or schools, shopping facilities, open spaces, separated car traffic, and pedestrian streets (Choguill, 2008).

The High Commission for the Development of Riyadh (2015) determined the main goals of the neighbourhood strategic planning in Riyadh neighbourhoods which are:

- Maintain the main objectives and principles of the neighbourhood, mainly, finding independent residential neighbourhoods with economic rules, and major services that achieve self-sufficiency idea.
- Accommodate all the new development and ownership patterns within the unregulated neighbourhoods to be within the urban structure.
- Evaluate of urban management, which would contribute to the success of the implementation of new strategies.
- Identify road network plan, public transportation and public utilities, land use, in line with the strategies of sustainable neighbourhood planning.

The High Commission for the Development of Riyadh, presented the neighbourhood development framework which includes:

- High-density residential areas connected to public transportation network.
- Commercial areas that include main centers and sub-centers.

- Public services like mosque, school, open spaces, green areas, parking.
- Open and entertainment areas that take into account the topography and natural limitations.
- Transportation system that connects centers with high-density areas, and the neighbourhoods with the city.

It can be concluded that it is important to take into consideration the neighbourhood and its strategic goals to achieve proper urban development.

2.3.2 Neighbourhood Scale

2.3.3.1 Belmar Neighbourhood - City of Lakewood, U.S.A

Belmar is one of Lakewood neighbourhoods in Colorado State that joined the Sustainable Neighbourhoods Program in 2012 (Sustainable neighbourhood network, 2015).

The urban design of Belmar is organized as a traditional street grid that emphasizes pedestrian movement with shops oriented closely to the street. The neighbourhood includes 1,048 residential units in 8 prototypes, retail, office buildings, cinema, hotel, community parks and plazas, with mixed land use in the same commercial center (Pollack, 2010). The master plan to the neighbourhood is presented in Figure (2.5).

Belmar neighbourhood mission is identified as "We created this neighbourhood because we believe that the neighbourhood is one of the most important and useful communities in a person's life. We hope that

neighbors everywhere build stronger and safer neighbourhoods around the world" (Nextdoor, 2017). Belmar vision is "Belmar was envisioned as a vibrant, mixed-use downtown with shopping, dining, cultural amenities, offices and a wide variety of rental and for sale housing options" (Van Meter Williams Pollack, 2015)



Figure (2.5): Belmar Master Plan

Source: Van Meter Williams Pollack, 2010

➤ **Belmar Sustainability Goals**

In 2017, Belmar Community Connection determined its sustainability goals which are:

- **Energy:** Goals related to energy include promoting energy efficiency in the neighbourhood and encouraging the use of renewable energy resources.

- Air: Goals related to air include reducing emissions generated in the neighbourhood and improve both outdoor and indoor air quality.
- Water: Goals related to water include conserving water resources and improve water quality.
- Land: Goals related to land include encouraging stewardship and conservation of ecosystems and resources.
- People: Goals related to people within the community include enhancing social vitality of the neighbourhood by encouraging community interaction, partnerships, and outreach programs.

➤ **Belmar Neighbourhood Initiatives**

In 2015, Sustainable Neighbourhood Network determined its initiatives which are:

- Air Quality: Reduce neighbourhood emissions and improve indoor and outdoor air quality.
- Recycling and Compost: Reduce waste in the neighbourhood through green purchasing, composting and recycling efforts.
- Health and Wellness: Promote active living and wellness through community groups, events and classes.
- Community Garden: Promote local foods and urban agriculture through workshops and the Belmar community garden.

- **Communication and Community Building:** Build a community network that encourages communication and collaboration, promotes outreach and education, and invites participation in sustainability initiatives and events.
- **Energy Efficiency:** Promote energy efficiency in the neighbourhood and encourage conservation and use of natural resources. In cityscape, a recently opened 130-unit senior community, incorporates sustainable features including a solar panel array that provide 49% of the buildings energy needs.

Based on the above, clear mission, vision and strategic goals for the main domains of the sustainable neighbourhood, help to establish successful sustainable neighbourhood.

2.3.3.2 Shahrara neighbourhood - Tahran

Shahrara is one of the Tehran's neighbourhoods, with the area of over 151.7 hectares and a population of about 48,607 people (Zarin et al., 2011). Most of residents needs are satisfied within the neighbourhood, Zarin et al, Evaluated the level of sustainability in Shahrara through collecting data using a questionnaire and analyzing the results by common methods of statistical analysis, the sustainability criteria were:

- Safety and security.
- Diversity and livability.

- Identity and eligibility.
- Dynamics and compatibility.
- Sense of belonging, and accessibility.

As a result, safety and security have the highest average with 3.38 point, and average of sustainability in this neighbourhood is 3.02 which indicate moderate level of sustainability of the area, according to 5 choice Likert range from 1 to 5. In addition, Zarin and Tarantash (2011) studied the relation between sustainability criteria with centrality, which has a high correlation, clarifying the increasing significance of neighbourhood core.

Therefore, as there had been different sustainability criteria in this case, it can be concluded that no fixed standard for sustainable neighbourhood exists around the world, where safety, diversity, identity, dynamics and sense of belonging have considered as the main sustainable neighbourhood domains in Shahrara neighbourhood.

2.4 Conclusions

In this chapter, key concepts in strategic planning and sustainable development are illustrated first, including sustainability, sustainable development, and sustainable neighbourhoods. More, some case studies are presented on the country scale (Spain and Kenya), city scale (Masdar and Riyadh), in addition to neighbourhood scale (Shahrara and Bilmar) neighbourhoods.

To develop sustainable neighbourhood, it is important to conduct detailed study about air, water, energy, transportation, land and people in the neighbourhood, which are the main elements of sustainable neighbourhood as international studies indicated.

Based on the studied cases and following the general strategic planning approaches, the next chapter introduces the methodology that has been followed in this research.

Chapter Three
Research Methodology

Chapter Three

Research Methodology

3.1 Chapter Overview

In order to achieve the objectives of the research, a proper research methodology is chosen. This chapter presents the methodological approach followed in this research, which includes that adopted in the information collection and the techniques used in the analysis.

3.2 Research Methodology

The methodology followed in this research considers qualitative approach, in addition to the analytical approach for the collected information. The research benefits from literature review of previous studies, besides the analyses of a selected case study of Palestinian neighbourhoods. This is in addition to the interviews with the experts in the field of sustainability and strategic planning, as well as discussions in the meetings with the focus groups from the residents of Al Reehan neighbourhood. Figure (3.1) illustrates the research methodology plan.

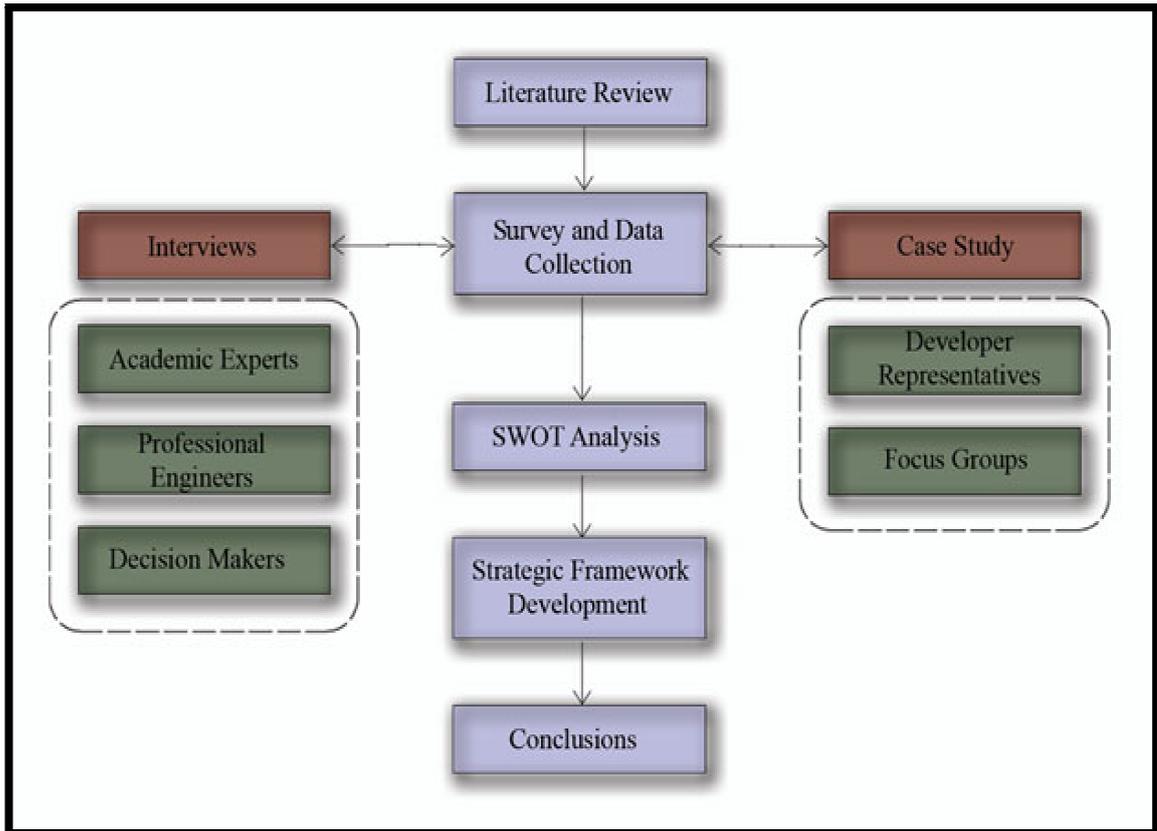


Figure (3.1): Research Methodology Plan

The first step of the research includes literature review and analysis of many related studies in different locations, including international and regional examples, in order to understand the basic concepts and the related strategic planning criteria for sustainable neighbourhoods. This will help to establish a suitable background to analyze current conditions and to develop the framework for the strategic plan for sustainable neighbourhood in Palestine. The literature review conducted through reviewing related books, international journals, and internet resources.

After finishing the literature review, and depending on the concluded feedback, the methodology that is followed in this research is the detailed qualitative approach, depending on the structured interviews (see

Appendixes I and II) with specific experts in sustainability and strategic planning fields. These interviews aim to collect in-depth needed information that support the literature review, and give headlines for the characteristics of the sustainable neighbourhoods in Palestine, in order to assist in the strategic assessment and prepare the sustainable Palestinian neighbourhood framework.

The experts who were interviewed are representatives from:

- Ministry of Local Government (MoLG)
- The Palestine Higher Green Building Council.
- University academics.
- United Nations Human Settlement Program (UN-Habitat).
- Neighbourhood Developers.

In order to analyze the collected information, the following steps are considered (Hoyos and Barnes, 2012):

1. Organizing and preparing data.
2. Conceptualization, classifying, categorizing, identifying themes.
3. Connecting and interrelating data.
4. Interpretation, providing meaning.

Al Reehan neighbourhood near Ramallah City is selected to be analyzed to assess how it satisfies the various aspects of sustainable neighbourhoods, according to its sustainability characteristics.

Two meetings with focus groups (each includes eight persons) are held; one with the existing residents in Al Reehan neighbourhood, and the other with the expected residents (see Appendix III). Such meetings provide the researcher with the current elements that are available in the existing neighbourhood, and the elements expected to be in the neighbourhood. In addition, the meetings assist the ability of the Palestinian community to accept and apply sustainable neighbourhood concepts.

The procedures to be followed for analyzing focus group meetings output include (University of Idaho, 2009):

1. Reading all the answers to a question, and looking for patterns and similarities.
2. Grouping the answers into key points.
3. Keeping a list of the key points.
4. Writing a paragraph for the focus group question, summarizing the overall response to that question, where the summary should include frequency, specificity, and emotions.
5. Selecting a few quotes from the transcript to illustrate and provide insights for summary.

After studying the information about the case study of Al Reehan neighbourhood in Palestine, and its sustainability related aspects, the neighbourhood is analyzed in terms of its adherence to the international planning principles, sustainable environmental practices, infrastructure and ease of access and mobility, regionally-suited architecture.

SWOT analysis is conducted after identifying internal factors (strengths and weaknesses), and external factors (opportunities and threats), for each the elements of sustainable neighbourhood separately (air, energy, people, transportation, land and wet utilities). This analysis approach assists to formulate the vision and mission and to identify the suitable goals, objectives, strategies and actions for the Palestinian sustainable neighbourhood strategic development framework.

The final phase of the research includes identifying the conclusions of the study and recommendations derived from the research outcomes, to achieve having sustainable neighbourhoods in Palestine.

3.3 Research Analysis Methods and Tools

The analysis methods followed in this research adopts the qualitative approach to understand the characteristics of sustainable neighbourhoods in the international experience, in addition to the analytical approach for the collected information of the selected case study of Al Reehan neighbourhood in Ramallah.

The research benefits from literature review of previous studies, internationally and regionally, besides the analyses of a selected case study from the Palestinian neighbourhoods. Interviews with the experts in the field of sustainability and strategic planning, as well as with focus groups from the developers and residents of Palestinian neighbourhoods case study, have been conducted.

SWOT analysis is applied as a tool to analyze the main elements of the sustainable neighbourhood, in order to determine the external and internal factors that affect these elements, and consequently benefit from this in the formulating the strategic planning framework.

3.4 Conclusions

In this chapter the methodology followed in this research is presented. It considers both qualitative and analytical approaches. The approaches to be followed in collection information as well as analyzing these are illustrated. In the next chapter Al Reehan neighbourhood case study is presented and then analyzed in terms of satisfaction of sustainable concepts.

Chapter Four

Neighbourhoods Development in Palestine: General Overview and Case Study

Chapter Four

Neighbourhoods Development in Palestine: General Overview and Case Study

4.1 Chapter Overview

This chapter gives a general overview of the housing development in Palestine, and then focuses on the Al Reehan neighbourhood, which is chosen to be the case study. Al Reehan neighbourhood is analyzed later to assess how does it satisfy the various aspects of sustainable neighbourhoods. Such analysis is be based on the interviews with the developer representatives of the neighbourhood, representatives discussions in the meetings with focus groups representing the resident, and the available data collected from several resources on Al Reehan.

4.2 Housing Development in Palestine

In the middle of 1970s, the establishment of random housing projects started, such as Sabah Al Kheir Housing Project in Jenin, since that time till the late of 1980s, the pace of the housing projects was slow, with limited housing project constructed, especially by The Palestinian Housing Council and the individual housing units' construction continued in faster pace.

In the late of 1980s, housing projects and neighbourhoods for specified categories such as academics, doctors and engineers, were established in almost all the cities in Palestine, without unified regulations.

Planned Housing projects and neighbourhoods spread after the establishment of PNA. Investors such as the Palestinian Investment Fund,

Union Construction and Investment, and Bayti Company started their planned neighbourhoods like al Jinan neighbourhood in Jenin, Al Etihad neighbourhood in Ramallah, Al Reehan neighbourhood in Ramallah and the neighbourhoods of Rawabi town.

Al Reehan neighbourhood case which the first integrated sustainable neighbourhood, is selected to be the case study which is further analyzed hereafter.

4.3 Strategic Development in Palestine

A plan for strategic development was prepared as part of the activities of the Participatory Rural Development and Planning Project, one of the key development projects implemented by UNDP/PAPP in the Palestinian Governorates in partnership with the Ministries of Planning and Local Government and funded by the Government of Ireland/Irish Aid (Jenin governorate, 2008).

The overall objective of the Participatory Rural Development and Planning Project is to promote sustainable community development and strategic regional development planning, leading to community participation in the process of sustainable development, planning and decision-making. Therefore, this plan has been prepared with the active participation of civil society institutions, local councils, the public and private sectors. An-Najah National University, Universal Group, and House of Palestinian Expertise were contracted to provide technical support (Jenin governorate, 2008).

Related experience was the "Neighbourhood strategic planning: directions for future development" a study that prepare an overall framework for neighbourhood strategic planning in Palestine (fares, 2014).

4.4 Al Reehan Neighbourhood

4.4.1 Introduction

Al Reehan Neighbourhood which was established in 2009, is located at just a few minutes from the city of Ramallah. Figure (4.1) shows the location of Al Reehan, which occupies a total area of about 250 donums of land. It includes about 1800 housing units, with a variety of apartment spaces, ranging between 100 and 260m², to fit the requirements and capabilities of the various Palestinian society groups. It is planned to eventually accommodate about 8,000 people.



Figure (4.1): Al Reehan neighbourhood location

Source: Google earth, 2016

In order to be an integrated community, the neighbourhood has been designed so that various services and facilities needed by the population are provided. It includes a commercial center which consists of 55 shops. It accommodates a specialized hospital (The Arab Consultative Hospital), which has many medical specialties and departments, to serve the inhabitants of the neighbourhood and the residents of other areas. The neighbourhood also contains a number of public facilities, including a Mosque, a kindergarten, a park, a playground and a school (Amaar Group, 2016).

Al Reehan neighbourhood is build in three phases; phase one and phase two is almost done with 631 housing units of various types, commercial center, kindergarten, mosque and specialized hospital. Phase three is under construction with 370 housing units and public spaces (fares, 2014).

This section will study and analyze Al Reehan neighbourhood, and examine various sustainable neighbourhood aspects. This analysis will be based on the information gathered from Amaar Group, the developer of the neighbourhood, Al Reehan Company, the manager of the neighbourhood, and discussion with the neighbourhood's residents. The domains of sustainable neighbourhood will be the target of this analysis. The four dimensions of SWOT matrix, as will be presented in Chapter Five, will be based on the outcome of this analysis.

The domains of a sustainable neighbourhood that will be analyzed in Al Reehan neighbourhood from a local Palestinian perspective are the same domains that had been discussed in Chapter Two, which have been considered from the international perspective.

4.4.2 Sustainable Neighbourhood Pillars

According to sustainability pillars, the elements of sustainable neighbourhood are classified as environmental sustainability, economical sustainability, social sustainability and political sustainability. Each is presented hereafter for Al Reehan neighbourhood.

4.4.2.1 Environmental Sustainability

1. Wet utilities

Sustainable water has a leading role in water reclamation and reuse solutions, (sustainable water provider, 2016). The substances of potable water, storm water and waste water are considered in the analysis.

- **Potable water**

The water is provided to the neighbourhood from Jerusalem Water Undertaking. The neighbourhood is connected to the main water pipe crossing Birzeit University. The water network is new and modern and was installed with updated fixtures to prevent wasting water, with pipes diameters 2,3,4,6 and 10 inches, and a total length of 8520m, the water layout is shown in Figure (4.2).



Figure (4.2): Potable water network for Al Reehan neighbourhood
Source: Amaar Group, 2016

- **Storm water**

Storm water is collected from streets and from buildings' roofs in a special network. However, the collected water is not used, as it goes to the nearby valley. The storm water network is a new and modern and was installed with pipe diameters of 300 and 600 mm pipe. Figure (4.3) shows storm water network in Al Reehan neighbourhood.

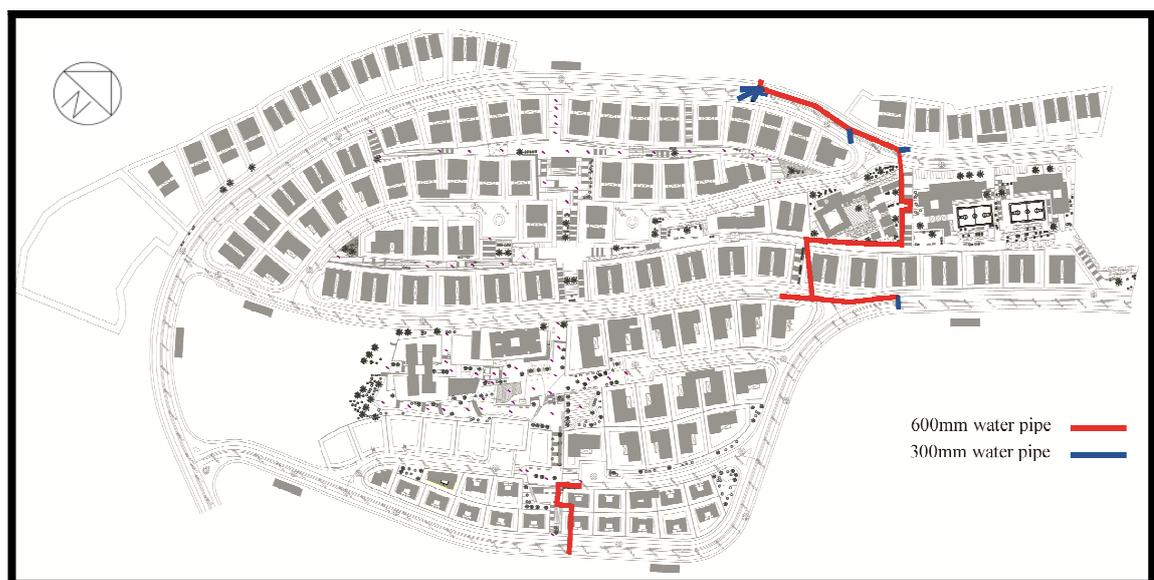


Figure (4.3): Storm water network for Al Reehan neighbourhood
Source: Amaar Group, 2016

- **Waste water**

Waste water network was implemented at Al Reehan as shown in Figure (4.4). The network is connected to a waste water treatment plant (WWTP), which operates with a closed container system (in order to preserve the environment). It has the ability of processing of 500 m³ of wastewater per day. The treatment plant is located in the lowest point of the neighbourhood to eliminate the need for pumping. The treated water isn't used till now, as it goes through the valley, because of the limited amount of treated waste water, as not all the residents have lived in the neighbourhood yet.

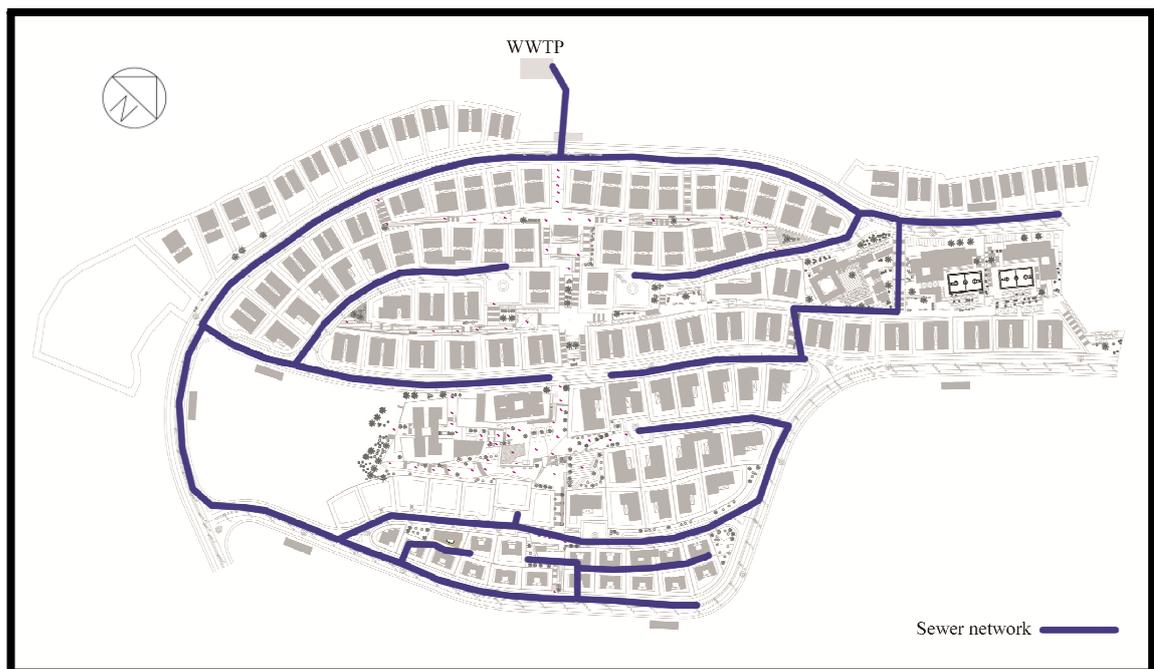


Figure (4.4): Sewer network for Al Reehan neighbourhood

Source: Amaar Group, 2016

The waste water is not isolated into grey water and black water. If grey water is collected, it can be used for garden irrigation, provided it is not stored for more than 24 hours.

2. Energy

- **Fuel energy**

All the housing units in Al Reehan neighbourhood depend for their energy needs on nonrenewable energy. Necessary fixtures for radiator heating system are installed in the housing units in the neighbourhood, but the system is not operated in all the housing units till now.

The electricity used in the neighbourhood is from Jerusalem District Electricity Company (JDECO). It covers all the needs of the residents. The modern power network consists of a main transformer of 32KVA capacity in addition to 7 dispersed substations in different places in the neighbourhoods. All the substations are connected through underground network cables.

- **Renewable energy**

The neighbourhood developer used solar panels at the roof of the commercial center to produce electricity for the commercial center as shown in Figure (4.5). They produce about 30% of the center needs. Hanwha SF260-36-1P290L modules are used in the design of the system, where 128 modules are used, with 290 W per module, which gives 37,120 W total DC power. Seasonal adjustable angle aluminum mounting frames were used in the design.

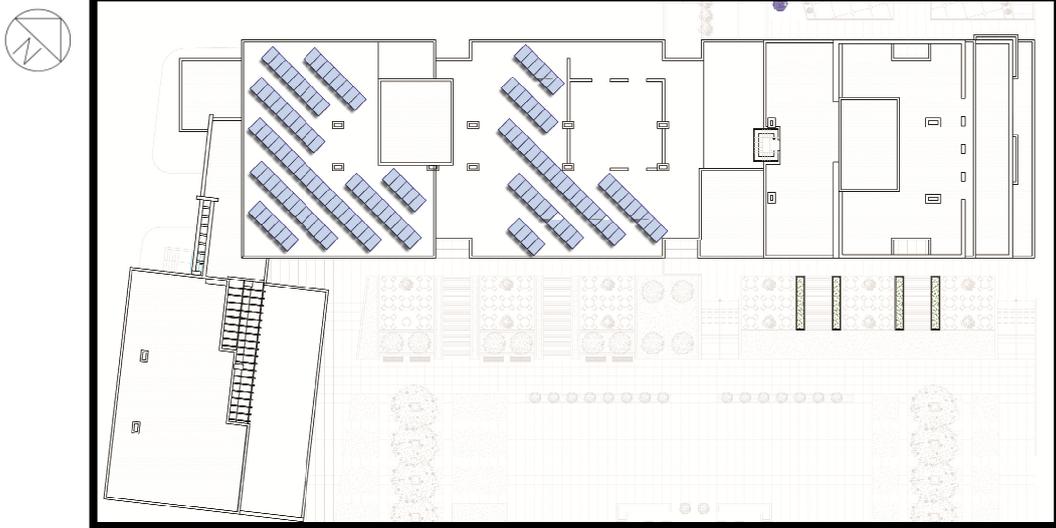


Figure (4.5): Solar panels plan at the roof of the commercial center

Source: Amaar Group, 2016

- **Lighting**

Electricity is used for street lighting, as there is a lighting grid that covers all the streets and open spaces, however there is no uses of photovoltaic panels for streets lighting.

3. Air Pollution

Air pollution in the neighbourhood comes as a result of building construction through the dust, heating, exhaust from cars, bad odor from solid waste and fuel burning for residents' daily use during the winter season.

The air in the neighbourhood is clean especially in the afternoon, where there is no construction process, and where there is less number of cars. In addition, the large green area of about 30% of the neighbourhood total area, with no close industrial zones, contributes to clean air.

CO₂ emission results from transportation. There is limited use for alternative active transport to driving when possible, like walking or riding bikes. On the other hand, using new fuel efficient cars, or using public transportation, can reduce carbon emissions.

4. Transportation

- **Roads network**

The road network in Al Reehan neighbourhood consists of 3 main types of roads as illustrated in Figure (4.6), with 14m, 16m, and 20m right of way widths. These include two sidewalks with 2m width each, as shown in Figures (4.7, 4.8, and 4.9). Both sidewalks are cultivated with trees. The slope of roads ranges between 2% and 17%.

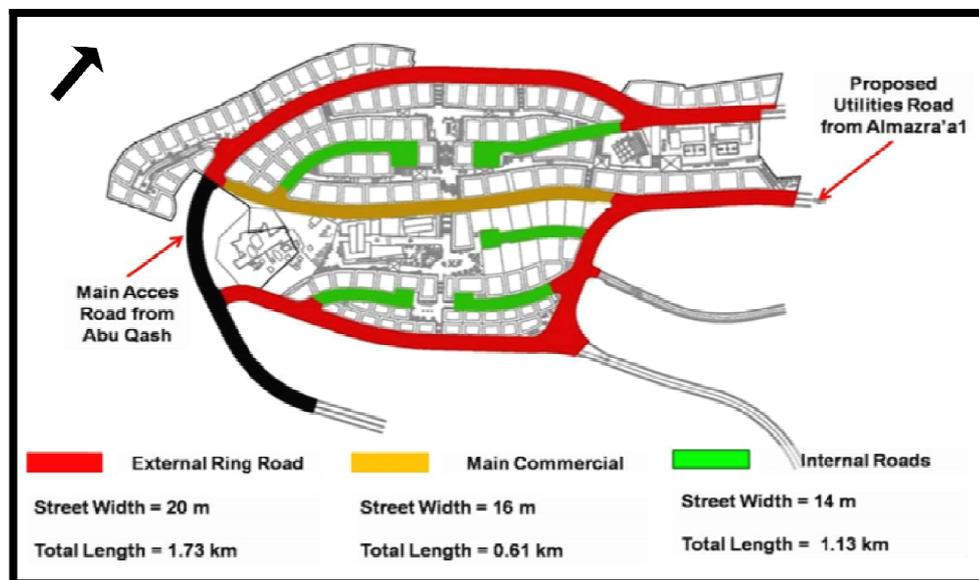


Figure (4.6): Roads network in Al Reehan neighbourhood

Source: Fares, 2014



Figure (4.7): External ring road in Al Reehan neighbourhood



Figure (4.8): Main commercial road in Al Reehan neighbourhood



Figure (4.9): Internal road in Al Reehan neighbourhood

Some internal roads are cul-de-sac roads to reduce noise for residents, with walkable streets at the end of cul-de-sac roads as shown in Finger (4.10).



Figure (4.10): Cul-de-sac road in walkable streets in Al Reehan neighbourhood

In the design and implementation of the roads network, there are no bike routes.

- **Public transportation**

At Al Reehan neighbourhood, there is a public bus route that transports the residents between the neighbourhood and Ramallah City, which is operated by Birzeit Bus Company. Within and out of the neighbourhood "there will be bus stations for travelers to wait for the public transportation".¹

5. Land

In Al Reehan neighbourhood project, "the percentage of public spaces is about 40%, with its wide concept of functions"¹.

- **Mixed land use**

In Al Reehan neighbourhood, the functions are distributed all around the neighbourhood, where single villas are next to multi-storey residential buildings, and where the commercial center, mosque, school, and public spaces are also available at short distances, as shown in Figures (4.11 and 4.12)

¹This information is based on the interview with Eng. Muneef Traish, previous manager in Amaar Group in 2016.



Figure (4.11): Land use plan in Al Reehan neighbourhood



Figure (4.12): Mixed land use in Al Reehan neighbourhood

- **Materials**

Most of the stones and rocks that have been extracted from the site were reused in the construction of the units of the neighbourhood. This in addition to using the resulting crushed gravel in the construction of streets.

- **Site selection**

The establishment of the neighbourhood protects the land from confiscation by Israeli occupation, as every overlooking site of Palestine is a target for the settlements by the occupation.

- **Green Areas**

The percentage of the green area in Al Reehan neighbourhood is about 40% of the total area. It is distributed in different areas like the historical park, in the public area, the green areas around the buildings whether commercial, residential or public, small pieces of land planted with grass and trees, and at both sides of streets, as appears in Figure (4.13).



Figure (4.13): Al Reehan neighbourhood General view

Source: Amaar Group, 2016

Green areas are implemented according to Jerusalem weather conditions, with various kinds of plants, including for example, *Acacia cyanophylla*, *Hydrangea hortensis*, *Bauhinia variegata*, *Jacaranda acutifolia*, *Citrus limon*, *Populus nigra italica*, *Buxus*, Centipied grass, and *Cedrus Pinaceae*. Some of these kinds appear in Figure (4.14) in the public area. Most of the plants are rain fed plants to reduce the amount of needed water for irrigation. Some of the plants are evergreen to provide shadow and others are deciduous trees.



Figure (4.14): Plants in Al Reehan neighbourhood

Source: Amaar Group, 2016

- **Solid waste and leftover**

Despite these are various sources of solid waste in Al Reehan neighbourhood; the main source is residential. Types of solid waste from residential areas in the neighbourhood are: food waste, paper, cardboard, plastics, textiles, leather, yard wastes, wood, glass, tin cans, aluminum, other metals, ashes and street leaves. Commercial waste comes from stores, restaurants, markets, and offices. Types of commercial waste are paper, cardboard, plastics, wood, food waste, glass and metals.

"An integrated plan to separate and transfer solid waste, whether wet or dry was prepared according to a detailed study for the waste of the neighbourhood, to be implemented by the Municipality of Ramallah"¹.

"In the residential area, the estimated volume percentage of the wet waste is 25%, 4Liter/Capita/day, where the volume percentage of the dry waste is 75%,i.e., 124Liter/Capita/day, with different needs for the volume of containers for villas compared with residential multi-storey buildings. For the villas, one container of 80 Liter for wet waste, with frequency of evacuation of three times a week, and one container with 240 Liter for dry waste, with frequency of evacuation of once a week are provided, where one container with 1100 Liter for wet waste, with frequency of evacuation of three times a week and three containers with 1100 Liter for dry waste, with frequency of evacuation of three times a week are needed for the residential multi-storey buildings"¹.

4.4.2.2 Economic Sustainability

1. Water

Collecting storm water in wells for each building and using water for irrigation reduces the cost of irrigation. Similarly, using recycled water in irrigation for green areas will reduce the cost of water for the residents of the neighbourhood, but this isn't used in the neighbourhood. On the other hand, there is potential to collect and reuse this water. Figure (4.15) shows part of the irrigation system in the public area. In addition, the WWTP is

¹ This information is based on the interview with Eng. Badawi Al Qawasmi, Project Manager, Palestine Investment Fund. Interviewed on 04/09/2016.

located in a lowest point in the neighbourhood, thus eliminating the need for pumping for the waste water.

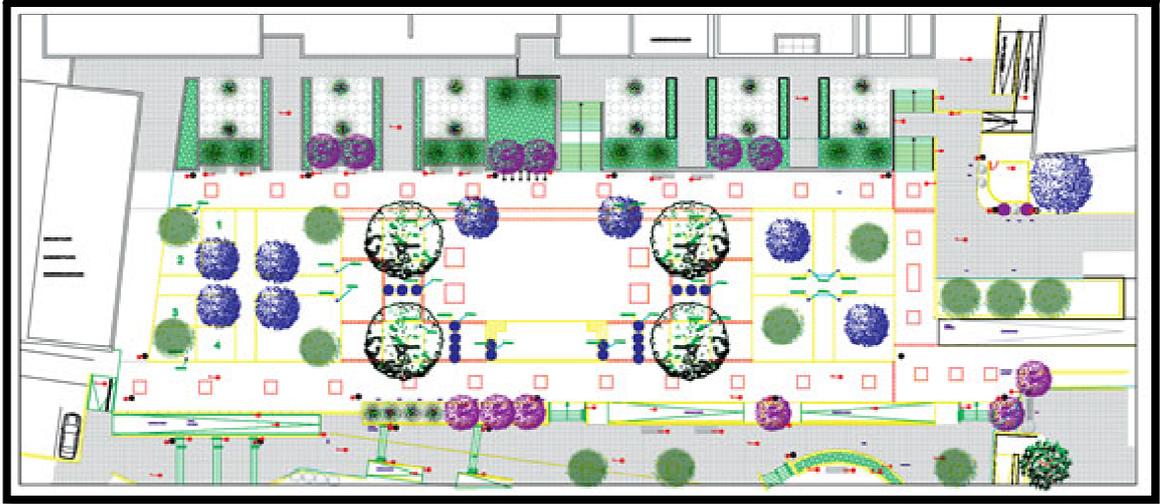


Figure (4.15): Irrigation system for public area in Al Reehan neighbourhood

Source: Amaar Group,2016

2. Energy

Using renewable energy as in the commercial center provides about 30% of the commercial center needs of electricity. On the other hand, the solar units for producing electricity are not installed at the roofs of the residential buildings, as these are occupied with solar domestic hot water systems (SDHW), which in turn, reduce using energy for heating water. At the building level, thermal insulation, double glass windows were used in order to help in reducing heating and cooling operation cost in the housing units.

3. Transportation

The implementation of ORIO project to develop the public transportation sector in Palestine with support from the Netherlands

Government, will reduce the transportation cost for the residents. In addition to modernizing the public transport fleet, the project will implement a new pricing and ticketing system, which will take into consideration the economic status of the users, like students, handicapped, and the elderly, with specific schedules for integrated service (Palestine Economy Portal, 2016).

4.4.2.3 Social Sustainability

- **Age categories**

Amaar Group, who made a survey of 163 of 220 families who purchased housing units in Al Reehan in 2013, found that about 20% of the heads of families are in the age range of (25-30), 41% in the range of (31-40), 20% in the range (41-50), and about 19% of more than 50 years old (Fares, 2014).

- **Social fabric**

'The residents of the neighbourhood are from different social levels. This is indicated by the areas of the apartments which vary between 100 and 260m²¹, which represent, in general, income level and family size. The social relationships in the neighbourhood are very strong, which might be attractive to the small number of residents and the loyalty to the neighbourhood.

¹ This information is based on the interview with Eng. Muneef Traish, previous manager in Amaar Group, 2016.

- **Public participation**

"The people are the aim of any project, so their opinions are important"¹. In Al Reehan neighbourhood, the residents are involved in most decision related to the neighbourhood. This gives the neighbourhood a positive impact, as the participation in the decision makes every one part of it with high loyalty, but the implementation of the decisions will take relatively longer time as a result of this participation.

- **Culture**

The culture of the Palestinian community was taken into consideration in the neighbourhood through its planning and design. The cultural aspects were reflected in the implemented characteristics, starting with areas distribution, then through the buildings functions and green areas, and ending with the reflections on the strong public relations among the neighbourhood residents. These integrated characteristics give the neighbourhood residents the general feeling that they are in a Palestinian community.

- **Public areas**

A large area of Al Reehan neighbourhood land was allocated for public use, such as the public area at the center of the neighbourhood, the playground, the private yards for each residential building, and the sitting areas. In addition, there are ramps for persons with special needs that

¹ This information is based on the interview with Eng. Muneef Traish, previous manager in Amaar Group,2016.

enable them to move smoothly and freely all around the neighbourhood. Moreover there are public stair cases that provide vertical access that connects well the neighbourhood.

4.5 Conclusions

In this chapter, the sustainability issues are assessed for the case study Al Reehan neighbourhood. Table (4.1) shows a summary for the sustainability issues in Al Reehan neighbourhood and its general description as was assessed in this chapter.

Table (4.1): Sustainability issues and their elements in Al Reehan neighbourhood

Sustainability issues	Sustainable elements	Category	Description
Environmental sustainability	Wet utilities	Potable water	Potable: new network of 8520m length, updated fixture, no wasting water.
		Storm water	Storm water: special network, collection from street and buildings' roof, collected water not used yet.
		Waste water	Installed a waste water treatment plant, closed container system based, capacity of 500m ³ /day, located in the lowest point of the project, minimum pumping system required, treated water is not used till now in the project due to it limited amount.
	Energy	Renewable energy	PV system is installed for commercial center, covering 30% of center needs, possibility to be adjust its angle seasonally.
		Lighting	Full dependency on sunlight during day in residential and commercial buildings.
	Air	Clean air	Wide green area that refine polluted air, and limited number of strange cars.
	Transportation	Roads network	Different roads' width; 14m, 16m & 20m, internal roads of cul-de-sac type to reduce noise for residents, 2m pedestrians' sidewalks cultivated with trees yet, ability to add bike lanes.
		Public transportation	Shuttle bus service exists between the neighbourhood and Ramallah city. No bus stations exist yet.
	Land	Land use	40% public spaces, 30% residential area (villas & multi-storey buildings); 30% green area.
		Materials	Use of the extracted rocks from the site as gravels for roads and stones for building the residential units.
		Site selection	Protecting the Palestinian land from confiscation by Israeli occupation.

Sustainability issues	Sustainable elements	Category	Description
	Solid waste	Recycling waste	Ready plan for separating (dry and wet) and collect waste for recycling.
Economical sustainability	Water	Storm water	Use of storm water and recycled water for irrigating the green areas.
	Energy	Renewable energy	Using PV system (Partially), SDHW, thermal insulation.
	Transportation	Public transportation	The potential benefit of the implementation of ORIO project to develop the public transportation sector.
Social sustainability	People	Social fabric	Different family size, different social levels, different residential units (100-260m ²) and types (villas& apartments), strong relationship between residents.
		Public participation	Participation in all decisions related to the neighbourhood, strong loyalty to the neighbourhood.
	Culture	Protect heritage	Bringing back feelings of nostalgia for a village life and one's own hometown.

Considering the above illustrated characteristics, and in order to prepare sustainable neighbourhood strategic development in Palestine framework, SWOT analysis will be conducted on the neighbourhood sustainability elements, as will be presented in the next chapter.

Chapter Five
Strategic Assessment

Chapter Five

Strategic Assessment

5.1 Chapter Overview

In this chapter, Al Reehan neighbourhood is the target of assessment, depending on the data collected from various sources. In addition, this chapter presents analysis of the interviews with selected academics, decision makers and developers, and the outcome of focus groups comprising current residents of Al Reehan neighbourhood, as well as potential residents. SWOT analysis is conducted to guide the identification of the positives and negatives, internally and externally, formulation of the strategic framework defining the vision, mission and goals, and then determination of the strategies for sustainable neighbourhoods in Palestine.

The existing elements in the neighbourhood, as the residents had indicated, were considered as strengths or opportunities if these were positive aspects, and weaknesses or threats if these were negative ones.

Other sustainable neighbourhood elements, that have been identified through academics and decision makers interviews, and not mentioned by the focus groups of Al Reehan neighbourhood residents, were considered in the analysis as well.

SWOT analysis was also conducted for the effective laws and regulations in the housing sector in Palestine.

5.2 SWOT Analysis

Good performance is the result of correct interaction of planning and management with internal and external environment. The recognition of internal strengths and weaknesses, as well as external opportunities and threats, takes place on the basis of SWOT analysis (Houben et al., 1999).

Strengths are defined as the main positive factors, which constitute the most powerful elements and provide support for the mission to be accomplished. Weaknesses constitute the main negative internal factors, which, if not overcome, will prevent the mission from being accomplished. Threats are environmental factors that cannot be affected, prevented or provoked, but if this happens, it can affect the functioning of the system and make mission accomplishment difficult or impossible. Opportunities are the elements that can appear in the environment without any possibility of affecting their appearance or not, but it is possible to make use of them if action is taken in this direction, making mission accomplishment possible or favoring it (David, 2011).

5.3 SWOT Analysis for Laws and Regulations

After studying the prevailing relevant laws and regulation that organize the building process in Palestine, SWOT analysis is applied to these laws as shown in Table (5.1). An illustration of each point is presented below.

Table (5.1): SWOT analysis for laws and regulations

Strengths	Weaknesses
<ul style="list-style-type: none"> • The existence of regulations that organize investment in housing projects, in building system and regulation of the lands outside the boundaries of the local bodies. 	<ul style="list-style-type: none"> • There is no attention for the neighbourhoods regulations in the effective constructing laws and regulations.
Opportunities	Threats
<ul style="list-style-type: none"> • The existence of the Green Buildings Guidelines. • Building System and Regulation of the lands outside the boundaries of the Local Bodies, determine that housing projects of more than 30 domun of land have to be approved from the Higher Planning Council. • Building and Organizing for the Cities and Villages for the Year 2015 Draft Regulations. • The existence of the Strategic Development Planning Guidelines. • The draft copy of National Housing Policy in Palestine 	<ul style="list-style-type: none"> • The long time needed to formulate the laws and implement them. • The interest of decision makers and community of laws and regulations related to sustainable neighbourhood.

➤ **Strengths**

The existence of regulations that organize investment in housing projects, as in the Regulation of Constructing and the Organizing for Lands Beyond the Boundaries of the Master Plans No (1) 2016. These regulations allow to construct housing projects taking in consideration some sustainability concepts as follows:

- The area for streets, public spaces and green areas must be more than 33% of the total area of the project.
- The width of vehicles streets need to be more than 12m, and pedestrian streets must be more than 6m.

➤ **Weaknesses**

There is no attention for the neighbourhoods regulations in the effective constructing laws and regulations, which includes:

- ✓ Building and Organizing for Local Bodies Regulation, 2011.
- ✓ Law Regulating the Cities, Villages and the Buildings, No. (79) for the year 1966.
- ✓ Law No. 1 for the year 1997 for the Palestinian Local Authorities.

➤ **Opportunities**

- The existence of the Green Buildings Guidelines prepared by PHGBC that can be developed to include sustainable neighbourhoods.
- Building System and organizing of The Lands Outside The Boundaries of The Local Authorities, No (1) 2016, determines that housing projects of more than 30 domun of land have to approved from the Higher Planning Council, which reflect the importance of such projects, and the availability to implement more restricted regulations to achieve sustainable communities.
- Building and Organizing for The Cities and Villages for the Year 2015 Draft Regulations, includes special item for the neighbourhoods and imply some sustainable neighbourhood concepts such as:
 - ✓ Save the architectural heritage.

- ✓ Provide a hierarchy for the road network that achieves balanced distribution for the movement.
- ✓ No highway inside or beside the neighbourhood.
- ✓ Provide green area of not less than 25% of the total area of the project.
- ✓ Provide public areas, parks, playgrounds and public services.

It also Provide criteria for sustainable buildings related to:

- ✓ The efficiency of the site and the design of the building.
- ✓ The efficiency of energy and water usage.
- ✓ The efficiency of used materials.
- ✓ The quality of internal environment.

In addition to giving specific facilities for the sustainable buildings as follows:

- ✓ Increase the construction percentage of 5%.
- ✓ Additional storey is allowed.
- ✓ 50% exemption from construction license fees.
- The existence of the Strategic Development Planning Guidelines, that help the local bodies to develop their cities, towns and villages economically, socially, culturally, and environmentally.

- The draft copy of National Housing Policy in Palestine, which seeks to have sustainable communities with decent housing for all Palestinian families, and aims to:
 - ✓ Assisting Palestinians in obtaining adequate, affordable and quality housing;
 - ✓ Achieving sustainable development, including more inclusive urban growth and more judicious management of land, water and other natural resources.

➤ **Weaknesses**

- The long time needed to formulate the laws and implement them.
- The limited interest from the decision makers and community for formulating and implementing laws and regulations related to sustainable neighbourhoods.

5.4 SWOT Analysis for Sustainable Neighbourhoods Domains

SWOT analysis is conducted for the six domains of the sustainable neighbourhood separately, as presented below.

5.4.1 Air

In the field of air, negative and positive aspects are identified and are distributed in the four quadrants in the SWOT analysis as shown in Table (5.2). More on each point is illustrated below.

Table (5.2): SWOT Analysis for Air

Strengths	Weaknesses
<ul style="list-style-type: none"> • Clean environment and clean air, with no nearby source of pollution. • Good ventilation inside rooms. • Green areas and planting trees. • The existence of public transportation. • Licensed from Environmental Quality Authority. 	<ul style="list-style-type: none"> • Under construction buildings inside the neighbourhood with no control on dust. • Lack of closed and secure containers for trash.
Opportunities	Threats
<ul style="list-style-type: none"> • Location away from the city center and industrial areas. 	<ul style="list-style-type: none"> • Dust from the construction of potential projects around the neighbourhood. • Air pollution from the neighboring Sky Land Park visitors.

➤ **Strengths**

- Clean environment, clean air with little pollution, as the neighbourhood is new, with no nearby sources of air pollution.
- Good ventilation inside the rooms, as the orientation of the apartments takes in consideration the wind movement at the site. Most apartments are opened from three elevations at least, thus providing good air circulation inside the rooms. This in addition to the large windows in the staircases, and wide and large vertical shafts to get maximum natural ventilation.
- Green area and planting trees, where the green area is about 30% of the neighbourhood land, and trees are evergreen trees, which give nice atmosphere and beautiful views. The existence of trees can reduce the temperature in the streets and reduce air pollution.

- The existence of public transportation reduces depending on private cars, and so reduces the flow of vehicles in the neighbourhood, and consequently CO2 emissions.
- The neighbourhood is licensed from Environmental Quality Authority, “we study the effects of the project on the environment and we have a license from environmental quality authority”¹.

➤ **Weaknesses**

- The existence of under construction buildings inside the neighbourhood causes air pollution like dust and smoke, as Al Reehan neighbourhood is established on phases, where some phases were finished, others are under construction, while there are phases which have not started yet.
- The lack of closed and secure containers to prevent leakage of bad odors to the air, as most of the containers used in the neighbourhood are open containers.

➤ **Opportunities**

- Al Reehan neighbourhood is located away from the city center and industrial areas, at about 7 km from Ramallah City, which is a good distance that needs to have clean atmosphere with low density of development in the nearby area.

¹ This information is based on the interview with Eng. Muneef Traish, previous manager in Amaar Group, 2016.

➤ **Threats**

- The construction of new projects around the neighbourhood, as the establishment of the neighbourhood could encourage new projects to start around the neighbourhood, this will result in dust and noise.
- The expected increasing use of the roads of Al Reehan neighbourhood would cause air pollution related to dust and CO2 emission from transportation
- Air pollution from Sky Land Park visitors, as this new park development is expected to cause air pollution for the neighbourhood due to the large number of visitors and the resulting traffic that would visit it.

5.4.2 Energy

SWOT analysis is applied for the energy field to identify positive and negative aspects, as summarized in Table (5.3). More on each point is presented below.

Table (5.3): SWOT Analysis for Energy

Strengths	Weaknesses
<ul style="list-style-type: none"> • Use of solar systems for hot water. • Use of solar panels on the roof of the commercial center. • The low location of WWTP that eliminates extra energy needs for pumping. • The buildings are insulated. • Use of central gas tanks. 	<ul style="list-style-type: none"> • No use for solar energy in streets lighting. • No utilization of the roofs to install solar units to benefit of renewable energy. • No awareness among the population to use energy saving electrical devices. • Lack of use of new technologies and materials that save energy in buildings.
Opportunities	Threats
<ul style="list-style-type: none"> • The potential of using solar panels on the building's roofs. 	<ul style="list-style-type: none"> • High initial cost for insulation and using new technologies during construction. • Shortage of power sources. • No external fund and support from energy authority to benefit from renewable energy.

➤ **Strengths**

- Use of solar systems (evacuated tubes) that provide hot water for apartments in most days of the year, especially in summer, spring and autumn days and other sunny days during winter.
- Use of solar panels on the roof of the commercial center which provide the commercial center with about 30% of its need of electricity.
- The location of the waste water treatment plant is in the lowest point of the neighbourhood which eliminates need for using energy for pumping waste water.

- Application of building insulation systems in construction, which reduce consumption of fuels for heating and cooling systems.
- Using central gas tanks, which prevent wasting gas and reduce cost.

➤ **Weaknesses**

- No use of solar energy in streets lighting, the solar units can be fixed on the electricity columns to produce energy that lights the streets at night instead of obtaining electricity from the grid.
- No utilization of the residential buildings' roofs for solar panels to produce some of required energy renewably.
- No awareness among the population to use energy saving electrical devices and no rationalization of energy consumption.
- Lack of using new technologies in construction and thermal insulation, in addition to the materials and equipments that save energy in buildings.

➤ **Opportunities**

- The potential of using solar panels on the building's roofs, in order to produce part of the needed electricity for the buildings from solar energy, as used in the commercial center, where about 30% of the needed electricity can be produced from solar energy.

➤ Threats

- High initial cost for installing thermal insulation materials as well as renewable energy systems in sustainable buildings, which could hinder their use.
- Shortage of power resources and production, where the energy resources is under the Israeli control.
- Lack of external funding to support the supply and the install of the renewable energy equipment. In addition, there is lack of support from Energy Authority, especially for buying and installing of solar panels to produce electricity.

5.4.3 People

"People satisfaction is the aim of any project, so their opinions are the most important."¹. SWOT analysis was applied for people aspects as illustrated in Table (5.4). More on each point is illustrated below.

¹This information is based on the interview with Eng. Muneef Traish, previous manager in Amaar Group, 2016.

Table (5.4): SWOT Analysis for People

Strengths	Weaknesses
<ul style="list-style-type: none"> • The existence of public facilities. • Limited population enhances people relationships. • The existence of facilities that reduce entertainment cost such as playgrounds and parks. • Integrated community with various social levels. • The existence of ramps for those with special needs. • Provision of jobs for the neighbourhood residents. • The availability of public transportation and pedestrian streets. • The neighbourhoods are secured and safe with high privacy for the residents. • Residents from various original homelands and cultures. • Diversity in apartments' areas and prices. • Calmness, no disturbance. • Elegant with well studied details. • Close to the village atmosphere. 	<ul style="list-style-type: none"> • Lack of seminars and educational courses that enhance social works. • Lack of voluntary works to clean parks and streets. • Lack of periodic meetings for residents committee to discuss neighbourhood problems and obstacles. • Lack of cultural fairs and heritage exhibitions. • Limited attention for affordable housing.
Opportunities	Threats
<ul style="list-style-type: none"> • People like to live in new places. • The location of the neighbourhood at the top of the hill. 	<ul style="list-style-type: none"> • The shortage of the public awareness on green and sustainable neighbourhood. • The long distance from the city center where some families like to live close to. • Noise from Sky Land Park visitors.

➤ **Strengths**

- The existence of public facilities, where at Al Reehan, there is good public space such as gardens and pedestrian pathways, which ensure

kids and mothers outdoors safety. In addition, building a commercial center with a supermarket and grocery provides basic daily needs for the Palestinian family. In addition, the existence of a mosque, a kindergarten, and other facilities allow people to meet, talk and spend time. The public spaces form about 40% of the total area of the neighbourhood.

- Limited population enhances people relationships, as the neighbourhood is new, and the number of residents is still limited. The presence of public spaces enhances also the relations between the residences.
- The availability of entertainment facilities, like playgrounds, parks and public facilities, where the residents can enjoy instead of travelling to near cities or entertainment centers.
- Integrated community with various social levels, as indicated by the variety of sizes and housing types, which give a wide range of price for different levels of the community.
- The existence of special facilities, like ramps that enable people with special needs to move all around the neighbourhood.
- Provision of jobs for the residents within the neighbourhood, such as the school, the commercial center, the hospital and the kindergarten, enables the residents to find different jobs in the neighbourhood.

- The availability of public transportation and pedestrian pathways enhance relationships between residents, where they can daily meet and talk.
- The neighbourhood is secured and safe, with high privacy for the residents, as the neighbourhood has dead end streets, good relation among residents, in addition to the existence of police patrols.
- The residents come from various original homelands and cultures, where the residents of the neighbourhood come from all Palestinian cities to live in the neighbourhood.
- Diversity in the areas of the housing units and housing types to meet the diversity of housing needs of the community. In addition to back to back villas, there are different areas for the apartments (10-12 models), each between 100 to 212m². This variation of residence areas gives an impression about the presence of residents with various social levels and integrated social fabric.
- Calmness, as the neighbourhood is calm with no annoying resources, like heavy traffic, industrial and crafts areas, and crowded commercial areas.
- Elegant place, where the interest in every detail of the neighbourhood gives the neighbourhood a special character, and where all the networks are underground including electricity and telecommunications.

- Close to the village atmosphere, where the limited houses in the neighbourhood, the existence of planted streets, the calmness, the clean air, and the low level of noise make the residents feel that they are in a village, which is very interesting for numerous people.

➤ **Weaknesses**

- Lack of seminars and educational courses that enhance social works, in order to keep the neighbourhood environmentally friendly.
- Lack of voluntary works to clean parks and streets for the development of a sense of belonging and promote the concept of cleanliness of public places.
- Lack of periodic meetings for residents committee to discuss the neighbourhood problems and obstacles.
- Lack of cultural and books fairs and heritage exhibitions that enhance relations between the residents and spread awareness.
- No enough attention for building affordable housing to help low-income people to live in the neighbourhood.

➤ **Opportunities**

- The new places are always attractive to live in, and encourage people to try, and therefore, as Al Reehan neighbourhood is a new place, it is considered as an attractive place to live in, and special attention to potential residents to live in it is important.

- The location of the neighbourhood at the top of the hill of about 800 m above sea level gives the neighbourhood a nice atmosphere and full panoramic view.

➤ **Threats**

- There is no background on sustainable neighbourhood concept among residents and there is shortage of public awareness on the green neighbourhood, which could result in less care of green concepts in the neighbourhood.
- For some people who like to live close the city center, the neighbourhood is considered as a far place to live in, and such neighbourhoods are considered as pushing potential residents away.
- Noise from Sky Land Park visitors, as this new entertainment causes noise for the neighbourhood according to the large number of visitors and the relevant traffic.

5.4.4 Transportation

Transportation is considered as a vital sector in any community. Vehicles emissions remain the most significant source of most common air pollutants. SWOT analysis is applied to the transportation domain as shown in Table (5.5). This is followed by illustration of each point as presented below.

Table (5.5): SWOT Analysis for Transportation.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Relative closeness to Ramallah City. • Wide streets with 14, 16, and 20m row widths. • Acceptable streets slope for using bikes. • The existence of pedestrian pathways. • The existence of cul-de-sac roads. • The existence of public transportation. • New roads network that result in less car maintenance. • The existence of residents daily needs in short distances. • The neighbourhood is functionally integrated. • Sufficient parking spaces are provided. 	<ul style="list-style-type: none"> • No bicycle lanes. • No time schedules for public transportation.
Opportunities	Threats
<ul style="list-style-type: none"> • The implementation of ORIO project to develop transportation sector supported by the Netherlands. 	<ul style="list-style-type: none"> • No clear support from the Ministry of Transportation or the Ministry of Local Government for the public transportation sector in the neighbourhood.

➤ **Strengths**

- Relative closeness of Al Reehan neighbourhood to Ramallah City, as the neighbourhood is located at about 7-10 minutes of Ramallah City, where many residents work, which is considered as a very attractive element.
- Provision of wide streets with 14, 16, and 20m right of way widths to accommodate relevant street cross section elements and to avoid the morning and afternoon peak hour congestion.

- Acceptable streets slope for using bikes in most of the neighbourhood internal streets, with an exception of a maximum slope 16% for a small external section.
- Provision of pedestrian pathways all around the neighbourhood.
- Most of the internal roads ends are Cul-de-sac roads, which gives privacy for residents of the neighbourhood, where no strange people enter the dead end roads.
- Provision of public transportation, which reduces dependency on private cars and so reduces the number of vehicles movements in the neighbourhood, and CO2 emissions.
- As the new roads network is associated with less pollution and less car maintenance, people are encouraged to live in the neighbourhood, and therefore Al Reehan neighbourhood is considered as an attractive one.
- The neighbourhood is functionally integrated and contains most facilities and needs for daily use for the residents at short distances. This discourages people from going to the city, as there exist within the neighbourhood a commercial center, health services, financial services, a kindergarten, schools, a mosque, a library and other public facilities.
- Sufficient parking spaces are provided for all residents of the neighbourhood.

➤ **Weaknesses**

- In the implementation of the neighbourhood, there are no special bicycle lanes, as the streets cross section don't have such elements that enable people to use bicycles easily and safely to move for the short distances instead of using cars.
- As the number of the residents are limited, there is no incentive for the bus company to provide regular time schedules to arrive or leave, which results in discouraging people to use public transportation instead of private cars.

➤ **Opportunities**

- ORIO project, with about 32.5 million Euro supported by the Netherlands Government (Palestine Economy Portal, 2016) forms an opportunity, as its implementation will assist developing the public transportation sector, through upgrading the bus fleet and providing a scheduled and improved bus service for the various community constituents.

➤ **Threats**

- No clear support from the Ministry of Transportation or the Ministry of Local Government for the public transportation sector.

5.4.5 Land

In land domain of sustainability, negative and positive aspects are distributed in the four quadrants of the SWOT analysis as shown in Table (5.6). An illustration of each point is presented below.

Table (5.6): SWOT Analysis for Land

Strengths	Weaknesses
<ul style="list-style-type: none"> • The existence of green areas and public gardens. • The mixed functions and mixed land use. • New modern infrastructure. • Unique location at the top of the hill. • Using the extracted rocks in road construction. • Adequate space for streets and an efficient street network. • High density with about 25 person/donum. • Variety of lot sizes and housing types. 	<ul style="list-style-type: none"> • Inadequate land distribution
Opportunities	Threats
<ul style="list-style-type: none"> • The acceptance of new concepts in the Palestinian community as sustainability concepts. • The existence of the neighbourhood prevents Israeli settlements to expand on such lands. • Gained enhanced use of land as compromised with the Ministry of Local Government and get facilities. 	<ul style="list-style-type: none"> • Improper plan of zoning for the neighbourhoods' surrounding.

➤ Strength

- The master plan of the neighbourhood shows that about 30% of the lands are green and open areas. This is considered as an attractive element for the people in the neighbourhood.

- Mixed functions and mixed land use, where various daily needs and functions are available and well distributed in the neighbourhood.
- New and modern infrastructure, with well planned and implemented underground utilities as electricity, gas, water and waste water, as well as telecommunication networks.
- The location of the neighbourhood on the top of the overlooking hill and the open horizon to the west gives the neighbourhood specificity, which encourages people to live in.
- Using the extracted rocks (after crushing), in the construction of the layers of the streets.
- Adequate space for streets and an efficient street network, which includes three types of road, main external ring road, a collector road and internal roads.
- High density, where the area of the neighbourhood equals 250 domun, and the total number of apartments is 1200 in the present phase, with 5.2 person/ family average size in the Palestinian community, then the resident's density is about 25 person/donum, which could be considered high density land use.
- Variety of lot sizes and housing types to cater for the diverse housing needs of the community. The apartments' areas in the neighbourhood gives a wide range of price for different levels of the community.

➤ **Weaknesses**

- Inadequate land distribution, lack of regional planning and the real special planning for the surrounding area. This causes random uses for the nearby land with unsuitable distribution of functions.

➤ **Opportunities**

- The acceptance of new concepts in the Palestinian community, like sustainability concepts, would make the implementation of such concepts successful.
- The existence of Palestinian neighbourhood outside the cities building areas prevents the Israeli settlements to expand on such lands, and prevent the land and its surroundings from confiscation.
- Gained enhanced use of land, as during the planning phase of the neighbourhood, a special compromise with the Ministry of Local Government was achieved, with regard to the number of floor, spaces between buildings and streets width.

➤ **Threats**

- Improper zoning for the neighbourhoods' surrounding gives the possibility to establish facilities that may affect the sustainable neighbourhood.

5.4.6 Wet Utilities

With considerate of the lack of water resources in Palestine, SWOT analysis is applied to the water utilities domain as shown in Table (5.7). An illustration of each point is presented below.

Table (5.7): SWOT Analysis for Wet Utilities

Strengths	Weaknesses
<ul style="list-style-type: none"> • Storm water is collected in a special network. • The existence of water wells under a number of buildings. • The existence of irrigation network in the public areas. • The presence of waste water collection system and treatment plant. 	<ul style="list-style-type: none"> • The water is not available on daily bases. • No recycled water is reused. • Lack of awareness to enhance water conservation. • No use for smart technology in irrigation. • No separation between grey water and black water.
Opportunities	Threats
<ul style="list-style-type: none"> • The Strategic plan for The Palestinian Water Authority 2016-2018. 	<ul style="list-style-type: none"> • Occupation control of water resources. • Lack of enough external financial support.

➤ Strengths

- Storm water is collected from streets and from buildings' roofs in a special network to be used in irrigation.
- As the areas of surfaces and yards in the neighbourhood are large and carry out large amounts of rain water in winter, the existence of water wells in a number of the buildings, which collect rain water and store it for summer time, is a positive aspect. Due to water shortage and as water is supplied not on daily bases, these wells can also be used for water storage to be used for irrigation of the plants and street trees.

- An irrigation network exists in the neighbourhood, which prevents wasting water and increases irrigation efficiency.
- The presence of waste water collecting system and a Waste Water Treatment Plant.

➤ **Weaknesses**

- Water supply is not available on daily bases, and as a result of water shortage, The Palestinian Water Authority distributes water between neighbourhoods during the week.
- No use for recycled grey water, which can be reused in irrigation and flushing toilets.
- Lack of awareness to enhance water conservation and to rationalize the consumption of water.
- No use for smart technology in irrigation to manage irrigation process and reduce wasting water.
- Grey water not separated from black water, as all the wastewater is collected together and transmitted to the WWTP.

➤ **Opportunities**

- The Strategic Plan for the Palestinian Water Authority 2016-2018, which concentrates and supports the rationalization of water consumption and collecting rain water.

➤ **Threats**

- All water resources in Palestine are constrained and limited with high agreements with the Israeli occupation.
- The lack of enough external financial support for water sector especially reuse of water.

5.5 Conclusions

At the end of this chapter, the information of Al Reehan neighbourhood was analyzed, and SWOT analysis was applied to the laws and regulations that organize the building process in Palestine, as well as the six domains of the sustainable neighbourhoods. In the next chapter, such information will be used to highlight and identify the key issues in formulating the strategic development framework, and identifying the vision and mission, then the goals. Strategies and actions are summarized as well.

Chapter Six

**Sustainable Neighbourhoods
Strategic Development
Framework**

Chapter Six

Sustainable Neighbourhoods Strategic Development Framework

6.1 Chapter Overview

The strategic management process consists of three stages: strategy formulation, strategy implementation, and strategy evaluation. This research considers the first stage; strategy formulation, which includes developing the vision and mission considering the external opportunities and threats, as well as the internal strengths and weaknesses, establishing long-term objectives, generating strategies, and choosing particular actions to pursue.

Based on the outcome of the strategic diagnosis of the related domains for sustainable neighbourhoods in Palestine, the sustainable neighbourhood strategic development framework is formulated. This framework defines the strategic goals and objectives as well as the strategies and actions that need to be adopted, which are set and presented. These include the strategies and actions related, among others, to identify policies, regulations, planning guidelines, and design standards.

The indicated strategic framework illustrates that specific strategies and actions that have to be considered and implemented in order to achieve the aim of having sustainable neighbourhoods. The research has laid the basis for an action plan, towards achieving the goals and objectives stated in the strategic framework. It has to be stated that this forms the basic step

among the phases of the strategic management of development planning, as adopted by MoLG as illustrated in Figure (6.1).

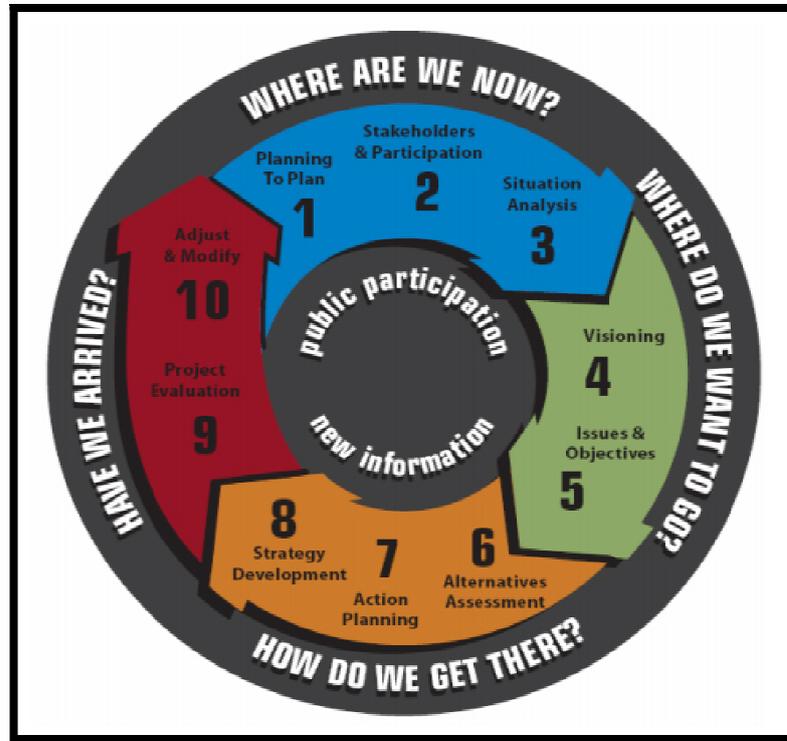


Figure (6.1): Phases of Strategic Management Development Planning

Source: (Ministry of Local Government, 2011)

6.2 Sustainable Neighbourhoods Vision Statement

Developing a vision statement is often considered the first step in strategic planning. A vision statement answers the question “What do we want to become?” (David, 2011). Vision is also used to describe the high-level goals for the future. Based on the previous SWOT analysis presented in Chapter Five of this research, the proposed vision statement for sustainable neighbourhoods is formulated to be:

“Sustainable Palestinian neighbourhoods developed with integrated community, efficient land-use, less pollution, and sustainable water, energy and transport systems.”

6.3 Sustainable Neighbourhoods Mission Statement

A mission statement is the foundation for priorities, strategies and plans, as it is answer the question “What is our business?” (David, 2011). Mission is used to describe the founding purpose and major commitments that normally remains unchanged over time. Depending on the previous analysis, and based on mission statement for Palestinian neighbourhoods formulated by Fares(2013), the proposed mission statement that takes in consideration sustainability of neighbourhoods is:

"Sustainable neighbourhoods in Palestine lead to a strong, cohesive, various, and viable society, promote activities and projects that enhance environment, economic and social opportunities for the community, preserve and improve the quality of life for its residents, as well as the environment, and save natural resources for future generations".

6.4 Sustainable Neighbourhood Goals

Based on the previous suggested vision and mission statements for sustainable neighbourhoods in Palestine, and considering the key issues identified in the SWOT analysis, the strategic goals could be inspired from the guidance of the mission statement in order to turn the vision into real achievements. The following are the sustainable neighbourhoods long-run strategic goals:

1. Clean air and healthy environment.

2. Efficient energy use.
3. Integrated and cohesion community.
4. Sustainable transport system.
5. Effective land-use.
6. Sustainable wet utilities.
7. Proper regulations for sustainable neighbourhood.

6.5 Sustainable Neighbourhood Objectives, Strategies and Actions

Goal 1: Efficient regulations for sustainable neighbourhood

Effective regulations need to be devised and then well understood by those who will implement them. There is need also that such regulations are to be reasonably enforceable, and to be respected. To get effective regulations that ensure for sustainable neighbourhoods, the following objectives are to be achieved:

- ✓ Formulated regulations for sustainable neighbourhoods.
- ✓ Raised interest among stakeholders in implementing sustainable neighbourhoods.
- ✓ Well planned sustainable neighbourhood.
- ✓ Integrated sustainable neighbourhood infrastructure.
- ✓ Achieved sustainable buildings.

To achieve those objectives, the following strategies are proposed:

Strategy 1: Develop sustainable neighbourhood regulations

Develop appropriate regulations that guide and regulate the planning and implementation of sustainable neighbourhoods as the first step. The following actions help to apply the strategy of developing the related regulations:

- The preparation of special regulations to promote sustainable neighbourhoods.
- Adapt the green buildings guidelines and develop them to include sustainable neighbourhood concepts and practices.

Strategy 2: Implement and monitor the implementation of sustainable neighbourhood regulations

Implement the regulations during the design and execution of constructing sustainable neighbourhoods. The following actions help to apply the strategy of implementing the related regulations:

- Integration between related organizations to implement the regulations associated with sustainable neighbourhoods.
- Identify mechanisms to monitor the implementation of the related regulations.
- Evaluate the achievement of the goals by the residents annually.

Strategy 3: Develop planning guidelines and design standards for sustainable neighbourhood

Develop appropriate planning guidelines and design standards for sustainable neighbourhood, regarding planning and design of infrastructure and buildings. The following actions help to apply this strategy:

- Determine the fields of the guidelines and design standards for the planning and design and infrastructure and buildings domains.
- Form a Task Force from relevant bodies to develop the planning guidelines and design standards.
- Develop the needed criteria, planning guidelines and design standards for various domains of the sustainable neighbourhoods, such as the following:

❖ Planning guidelines

✓ In the air domain

- Determine air pollution sources, thresholds for pollution, and pollution prevention methods.
- Identify solid waste containers specifications.

✓ In the energy domain

- The ratio of renewable energy needed from the total amount of energy.
- Determine baseline energy consumption according to building usage.

✓ **In the wet utilities domain**

- Develop planning guidelines to ensure collection of storm water and proper reuse systems.
- Develop planning guidelines to ensure proper design of waste water system collection system and proper technology for treatment.

✓ **In the people domain**

- Develop ranges for population density in the neighbourhoods based on zoning.
- Insure Social mix among neighbourhood communities.

✓ **In the transportation domain**

- Identify the transportation network planning guidelines, which includes; the streets widths, the sidewalks width, the bike lanes widths, and the ratio of green and shading area in streets.
- Develop planning guidelines to ensure proper hierarchy of road classification within the network, including Cul-se-sac roads..
- Develop planning guidelines for to ensure provision of public transportation and the adaptability of related vehicles and to having public transportation stations in the neighbourhoods.

✓ **In the land domain**

- Determine site selection needs and requirements.

- Determine the ratio of the green area in the neighbourhood.
- Identify the public spaces needs.
- Identify the required functions in a walkable distance.
- Determine the requirements for mixed land-use and distribution.

❖ **Infrastructure design standards**

✓ **In the land domain**

- Identified specifications and location of WWTP.
- Determine the limitations of using proper site materials.

✓ **In the wet utilities domain**

- Identify the ratio and specifications as well as methods of recycled water to be used.
- Determine the specifications of the storm water collecting system.
- Identify grey water and black water specifications.

✓ **In the transportation domain**

- Identify the roads network design standards, including the streets width the sidewalks widths, the bike lanes width, as well as the ratio of green and shading area in streets.

- Identify public transportation route and station design standards. Develop design standards to accommodate active transportation (sidewalk, crosswalk, and bikeway standards and specifications),

❖ **Building design standards**

- The orientation of the buildings.
- The materials for insulation.
- The openings dimensions and ratio.
- The standards for natural ventilation.
- Internal environment quality.
- Smart buildings standards.

Goal 2: Clean air and healthy environment

Any substance that people introduce into the air that has damaging effects on living things and the environment is considered air pollution. Carbon dioxide is widely considered as a pollutant when associated with cars, planes, power plants, and other human activities that involve the burning of fossil fuels such as gasoline and natural gas (National Geographic Partners, 2017). To get clean air and healthy environment, two main objectives are considered to be achieved:

- ✓ Reduced emissions to least possible values.
- ✓ Improved quality of internal environment.

In order to implement the previous objectives, the following strategies and the related actions are proposed as follows:

Strategy 1: Reduction of pollution sources

There are many actions can be done to reduce the impact on the environment, and goods and services more carefully, which can reduce harmful emissions to the air, land and water (Australian Government, 2014). In sustainable neighbourhoods to reduce pollution sources, the following actions are proposed:

- Develop the guidelines of the PHGBC for construction of buildings into regulations.
- Encourage active transportation (walkable and bike-enabling streets) and public transportation, while “most pollution comes from transportation”¹.
- Provide closed and separated containers for trash to prevent spread of unwanted odors.

Strategy 2: Encouraging green concepts

For those who spend significant time in spaces with live plants, whether on the rooftop or within walls, green areas afford many important advantages, and plants provide a natural solution to cleaner indoor and

¹This information is based on the interview with Dr. Mutasim Ba’ba’, The Palestinian Higher Green Building Council. 2016.

outdoor air (Green Plants for Green Buildings Organization, 2017). The following actions are proposed, which aim to encourage green concepts:

- Provide green open and plantable areas that purify the air.
- Plant rain fed trees and fast growing trees which depend on rain water and don't consume water for irrigation.
- Increase public awareness on greening and its relations with peace of mind as well as environmental issues.
- Use new and efficient irrigation technology, which is an effective feasible method, to reduce the consumptive use of water for irrigation, where increasing irrigation efficiency will lead to water conservation in practice.

Strategy 3: Achievement of better internal environment

Indoor air quality refers to the air quality within and around buildings, especially as it relates to the health and comfort of building occupants. Preparing the buildings for better internal environment can help reduce the risk of indoor health concerns (Environmental Protection Agency, 2017). The following are suggested actions for implementing this strategy:

- Design efficient windows in terms of size, material and solar protection.

- Adopt and enhance natural ventilation inside buildings to decrease using artificial cooling in summer.
- Implement thermal insulation systems in buildings to reduce the dependency on mechanical heating and cooling, which then would reduce impact of such systems on air quality (Salameh, 2012).

Goal 3: Efficient energy use

Efficient energy use is the goal to reduce the amount of energy required during daily activities practices. “Today there are buildings with 20 stories, with one roof, so there must be a specific strategy to produce 30%-40% from local energy, and this is an efficient system”¹. To achieve such goal, two main objectives are defined as follows:

- ✓ Reduced dependency on fossil energy.
- ✓ Improved efficiency use of energy.

To achieve these objectives, the proposed associated strategies and actions are presented hereafter.

Strategy 1: Increase the share of generated renewable energy

Fossil fuels are non-renewable, that is, they draw on finite resources that will eventually run out, becoming too expensive or too environmentally damaging to retrieve. In contrast, renewable

¹This information is based on the interview with Dr. Mutasim Ba’ba’, The Palestinian Higher Green Building Council, 2016.

energy resources such as wind and solar energy are constantly replenished and will never run out (National Renewable Energy Laboratory, 2016). In order to support this strategy, the following actions are proposed:

- Solicit government and external support of renewable energy projects, and the purchase of surplus produced energy with preferential prices.
- Use of solar panels to produce energy to cover a specific percentage of the daily need of electricity for the buildings.
- Use of solar panels in street lighting in order to save electricity.
- Maximize utilization of efficient solar system in producing hot water.
- Support using smart energy-saving systems that reduce the amount of consumed electricity.
- Increase people awareness on the importance of using renewable energy.

Strategy 2: Reduce energy consumption

Energy consumption in identical homes, even those designed to be low-energy dwellings, can easily differ by a factor depending on the behavior of the inhabitants (Darby, 2006). In order to reduce energy consumption, recommended actions include:

- Sensitize the population about the efficiency of sustainable techniques in the long run and its effect of saving environment and reducing costs.

- Conduct public awareness on the efficient and sustainable energy and use of energy saving electrical devices and bulbs.
- Encourage the use of new efficient insulating techniques and materials in buildings.

Goal 4: Integrated and cohesion community

Community integration means opportunities for participation in schools, careers, homes, relationships, leisure, and a variety of interests and lifestyles. "The social harmony and the social relations are very important issues related to sustainability"¹. The objectives to achieve this goal are:

- ✓ Strengthened social relations among residents.
- ✓ Easily reached vital needs.

The suggested strategies and actions to support the previous objectives include:

Strategy 1: Encourage mixed social levels

Social mix aims to include a mix of incomes in the same neighbourhood, to have high-income and middle-income households share the same residential space as well as low-income households (Walks, 2015). Social mix can be achieved through implementing the following proposed actions:

¹This information is based on the interview with Dr. Ali Abd Al Hameed, An Najah National University, 2016.

- Provide various apartment sizes that satisfy the needs of different families.
- Develop and support affordable housing to enable low income people to live in the neighbourhood.
- Provide residents with special needs, the elderly, and the kids with proper facilities.
- Promote meetings for residents to discuss neighbourhood problems and obstacles.
- Holding meetings, workshops and open exhibitions that enhance social work, protect the culture and support sustainability aspects.

Strategy 2: Encourage vital needs satisfaction for social infrastructure

Social infrastructure is a subset of the infrastructure sector and typically includes assets that accommodate social services, in the sectors of health, education, housing, civic and utilities and transportation (New Zealand Social Infrastructure Fund, 2009). In order to have a satisfactory social infrastructure, the following actions are proposed:

- Provide the neighbourhood with public facilities and social infrastructure, such as meeting spaces, playgrounds, parks, sport facilities, mosques etc.
- Provide on-site jobs for the neighbourhood residents that can help them improve job skills, and become economically independent.

- Formulate and activate residents committees and associations that promote social cohesion and inclusion, study and solve the problems in the neighbourhoods, and develop the neighbourhood.
- Establish police station to enhance security in the neighbourhood.

Goal 5: Sustainable transportation system

The sustainable transport system must provide mobility and accessibility to all urban residents in a safe and environment friendly mode of transport (Mohan and Tiwari, 1999). To achieve this goal, the following objectives are proposed:

- ✓ Improved active transport.
- ✓ Reduced car dependency.

Strategy 1: Achieve walkable and bike streets in neighbourhoods

Walkable places are comfortable, convenient, healthy and sustainable, but they can be very difficult to achieve especially in neighbourhoods that were designed for driving (San Francisco Bay Area Planning and Urban Research Association, 2017). To overcome this difficulty and have comfortable walkable paths, the following actions are proposed:

- Give priority access to pedestrians and cyclists over vehicles across the neighbourhood.

- Provide daily needs in walkable distances to facilitate obtaining these without using cars.
- Providing the neighbourhood with public facilities to prevent moving to the near communities to obtain the services.
- Provide safe pedestrian paths, without causing exposure to potential traffic accidents.
- Design the internal streets with appropriate slope for bikes and provide suitable bike lanes.

Strategy 2: Encourage of public transportation

While public transportation maybe not as enjoyable as commuting in the personal vehicle, but it eases congestion, reduces emissions, and gives the traveler plenty of time to watch people, as well as get to know neighbors. In addition, public transportation gives time to relax, during the commute instead of fighting and stressing and feeling the road rage (Treehugger team, 2014). To encourage public transportation the following actions are proposed:

- Provide scheduled bus service to encourage residents to use public bus, as arriving and departing times are known in advance.
- Subsidize public transport, which reflects improved service, encourages the transport company to develop their fleets, and consequently encourage residents to use public transport instead of private cars.

- Provide proper bus stops along the routes, and small stations in the neighbourhood.

Goal 6: Effective land-use

There is an increasing international awareness of the importance of improving the efficiency of urban land-use (Bertaud et al., 1988). The main objectives for this goal are:

- ✓ Achieved mixed land-use.
- ✓ Optimized land-use density.

This can be achieved considering the proposed strategies and actions presented hereafter.

Strategy 1: Encourage mixed land-use

Mixed land-use concept aims to develop a range of compatible activities and land-uses close together in appropriate locations and flexible enough to adapt over time to the changing market. The purpose of mixed land-use is to create local jobs and promote the local economy, reduce car dependency, encourage pedestrian and cyclist traffic, reduce landscape fragmentation, provide closer public services, and support mixed communities (UN-Habitat, 2014). To have a mixed land-use the following actions are recommended:

- Provide different functions in the same area.

- Introduce rules and laws encouraging and controlling optimized land-use.
- Provide adequate space for streets, public areas, and public facilities.
- Provide efficient neighbourhood master plans with adequate land distribution in an integrated manner.

Strategy 2: Promote high-density neighbourhoods

Density is generally defined as the amount of residential development permitted on a given parcel of land. Density helps to create walkable neighbourhoods, expand transportation choices, improve security, and protect the environment (Local Government Commission, 2003). To have high density neighbourhood, the following actions are recommended:

- Encourage multi-storey buildings in a reasonable way to get the maximum use of the land and increase the density of the residents in the building.
- Encourage the provision of various apartment sizes to meet the needs of different family sizes in the neighbourhood.
- Encourage multipurpose buildings, that provide live and work functions in the same building.

Goal 7: Sustainable wet utilities

The way to deal with water has a significant impact on its sustainability, “as much the amount of waste is reduced, sustainability is

increased”¹. The approach to deal with water, wastewater and storm water has had a significant impact on the environment and health. A deteriorating infrastructure and lack of adequate water and sanitation in developing countries are symptoms of a system that is broken (NOVUS Environmental Company, 2017). To get sustainable wet utilities, the following objectives are to be achieved:

- ✓ Efficient water use achieved.
- ✓ Reduced dependency on network water.

Strategy 1: Increase water harvesting

Rain water is a natural and free source of fresh water. Harvesting rainwater in tanks or wells gives the house field a supply of water to be used during water restrictions and can help to reduce water bills. The following actions help to implement this strategy:

- Encourage building wells for rain water harvesting.
- Establish rainwater collection network to collect water from building roofs' surfaces and yards to be transferred to water wells.

Strategy 2: Activate re-use practices

From the ways that can conserve resource is to recycle some of the water that have already used in homes by setting up a greywater system (Australian Government, 2017). “Using purification plant: instead of

¹ This information is based on the interview with Dr. Mutasim Ba'ba', The Palestinian Higher Green Building Council, 2016.

having 100% wastewater, it will be 30% wastewater, expand green areas, save water, while less use of fresh water for irrigation, clear air as more trees planted and irrigated, in addition to rain fed plants that can be planted”¹.

The following actions associated with this strategy are proposed to be implemented:

- Implement systems that separate grey from black water, as a prelude to recycle and then reuse it.
- Encourage use of treated grey water in irrigation and flushing toilets.
- Hold meetings and workshops that enhance public awareness about the importance of recycled and reused water.

Strategy 3:Reduce water consumption

"As much you reduce water consumption and increase recycling, as much you reduce waste"¹. Proposed actions to reduce water consumption include the following:

- Conduct public awareness campaigns on water conservation to reduce the amount of consumed water.
- Support using smart water irrigation systems to provide a water delivering schedule as needed, and to reduce the amount of water wasted during irrigation process (Chen et al, 2014).

¹This information is based on the interview with Dr. Mutasim Ba’ba’, The Palestinian Higher Green Building Council, 2016.

- Using circulating pump for hot water to prevent wasting water while waiting for hot water.

6.6 Framework Implementation

In Palestine, there is an absence of regulations that organize planning of neighbourhoods. In order to promote the concept of sustainable neighbourhoods, integrated efforts involving the Ministry of Local Government, the Ministry of Public Works and Housing, the municipalities, the Engineering Association, and Palestinian Higher Green Building Council, are needed to develop regulations that organize planning and construction of the sustainable neighbourhoods considering the suggested framework.

Specialized conferences, workshops, as well as booklets and brochures, can increase awareness among developers, designer, investors and the population on the importance of sustainable neighbourhoods.

In order to implement sustainable neighbourhood framework, the following procedures are suggested:

- The suggested framework has to be adopted from the Engineering Association and the Palestinian Higher Green Building Council, and develop it to achieve integrated guidelines.
- The Ministry of Local Government, the Ministry of Public Works and Housing, and the municipalities, have to formulate regulations for sustainable neighbourhood depending on the suggested framework.

- Furthermore the related institutions, developers, investors and designer engineers have to implement these regulations during design and implementation of the neighbourhoods.
- The related ministries and institutions have to raise the awareness among the residents about the importance of sustainable neighbourhoods.
- The residents of the neighbourhoods have to assume their responsibilities during the living in the sustainable neighbourhood and using their utilities.

As any strategic plan four to five year is an adequate time to implement the suggested framework with all its related issues to achieve sustainable neighborhood.

6.7 Conclusions

In this chapter, the aim of the research is believed to be achieved. The vision, the mission and the goals for sustainable neighbourhoods considering the outcomes of the previous chapters are identified. The sustainable neighbourhoods strategic development framework is formulated through determining main goals, objectives, strategies and suggesting appropriate actions. The next chapter will summarize the main conclusions for this research, and introduce related recommendations to achieve sustainable neighbourhoods, in addition to some suggestions for future related.

Table (6.1) provides a summary of the goals, objectives, strategies and actions for sustainable neighbourhoods defined for each of the considered domains.

Table (6.1): Goals, objectives, strategies and actions for sustainable neighbourhood

Goals	Objectives	Strategies	Actions
Efficient regulations for sustainable neighbourhood	<ol style="list-style-type: none"> 1. Formulated regulations. 2. Raised interest among stakeholders 3. Well planned sustainable neighbourhood. 4. Integrated infrastructure 5. Achieved sustainable buildings. 	<ol style="list-style-type: none"> 1. Develop sustainable neighbourhood regulations 	<ul style="list-style-type: none"> • The preparation of special regulations to promote sustainable neighbourhoods. • Adapt the green buildings guidelines and develop them to include sustainable neighbourhood.
		<ol style="list-style-type: none"> 2. Implement and monitor the implementation of sustainable neighbourhood regulations. 	<ul style="list-style-type: none"> • Integration between related organizations. • Identify mechanisms to monitor the implementation of the related regulations. • Evaluate the achievement of the goals from the residents annually.
		<ol style="list-style-type: none"> 3. Develop planning guidelines and design standards 	<ul style="list-style-type: none"> • Determine the domains of the guidelines and design standards. • Form a Task Force from relevant bodies to develop the planning guidelines and design standards. • Develop the needed criteria, guidelines and design standards for various domains
Clean air and healthy environment	<ol style="list-style-type: none"> 1. Reduced emissions to least possible values 2. Improved quality of internal environment 	<ol style="list-style-type: none"> 1. Reduction of pollution sources 	<ul style="list-style-type: none"> • Develop the guidelines of the PHGBC for construction of buildings into regulations • Encourage active transportation (walkable and bike-enabling streets) and public transportation • Provide closed and separated containers for trash

Goals	Objectives	Strategies	Actions
		2. Encouraging green concepts	<ul style="list-style-type: none"> • Green open and plantable areas • Plant rain fed trees and fast growing trees • Increase public awareness on greening • Use efficient irrigation system
		3. Achievement of better internal environment	<ul style="list-style-type: none"> • Design efficient windows • Adopt natural ventilation inside buildings • Implement thermal insulation in buildings
Efficient energy use	<ol style="list-style-type: none"> 1. Reduced dependency on fossil energy 2. Improved efficiency use of energy 	1. Increase the share of generated renewable energy	<ul style="list-style-type: none"> • Solicit government and external support of renewable energy projects, and the purchase of surplus produced energy with preferential prices • Used of solar panels to produce energy. • Used of solar panels in street lighting • Maximize utilization of efficient solar system in producing hot water • Support using smart energy-saving systems • Increase people awareness about the importance of using renewable energy.
		2. Reduce energy consumption	<ul style="list-style-type: none"> • Conduct public awareness on the efficient and sustainable energy and use of energy saving electrical devices and bulbs • Encourage the use of new efficient insulating techniques and materials in buildings
Integrated and cohesion community	<ol style="list-style-type: none"> 1. Strengthened social relations among residents 2. Easily reached vital needs 	1. Encourage mixed social levels	<ul style="list-style-type: none"> • Provide various apartment sizes • Develop and support affordable housing • Provide residents with special needs, the elderly and the kids with proper facilities

Goals	Objectives	Strategies	Actions
			<ul style="list-style-type: none"> Promote periodic meetings for residents to discuss neighbourhood problems and obstacles. Holding meetings, workshops and open exhibitions that enhance social work, protect the culture and support sustainability aspects.
		2. Encourage vital needs satisfaction for social infrastructure	<ul style="list-style-type: none"> Provide public facilities like meeting space, playgrounds, parks, etc. Provide on-site jobs for the neighbourhood residents Activate residents committees Establish police station to encourage the security of the neighbourhood.
Sustainable transport system	1. Improved active transport 2. Reduced car dependency	1. Achieve walkable streets in neighbourhoods	<ul style="list-style-type: none"> Give priority access to pedestrians and cyclists over vehicles across the neighbourhood Provide daily needs in walkable distances Providing the neighbourhood with public facilities. Provide safe pedestrian paths. Design the internal streets with appropriate slope for bikes and Provide suitable bike lanes.
		2. Encourage public transportation	<ul style="list-style-type: none"> Provide scheduled bus service. Subsidize public transport. Support proper bus stops.
Efficient land-use	1. Achieved mixed land-use 2. Optimized land-use density.	1. Engorge mixed land-use	<ul style="list-style-type: none"> Provide different functions in the same area Introduce regulations encouraging and control optimized land-use. Provide adequate space for streets, public areas and public facilities.

Goals	Objectives	Strategies	Actions
			<ul style="list-style-type: none"> • Provide efficient neighbourhood master plan with adequate land distribution.
		2. Promote high density neighbourhood	<ul style="list-style-type: none"> • Encourage multi-story buildings • Encourage the provision of various apartments sizes • Encourage multipurpose buildings.
Sustainable wet utilities	1. Efficient water use Achieved 2. Reduced dependency on network water	1. Increase water harvesting	<ul style="list-style-type: none"> • Encourage building wells for rain water harvesting
		2. Activate re-use practices	<ul style="list-style-type: none"> • Implement systems to separate grey from black water • Encourage use of treated water in irrigation • Hold meetings and workshops that enhance public awareness about the importance of recycle and reuse water.
		3. Reduce water consumption	<ul style="list-style-type: none"> • Conduct public awareness campaigns on water conservation • Support using smart water supply/irrigation systems • Using circulating pump for hot water to prevent wasting water while waiting hot water.

Chapter Seven
Conclusions and
Recommendations

Chapter Seven

Conclusions and Recommendations

7.1 Summary and Conclusions

The aim of this study is to formulate an overall strategic framework that will guide the efforts to assist in achieving the goal of having sustainable neighbourhoods in Palestine.

Based on the review of the previous studies, interviews with experts, developers and decision makers, discussion with focus groups for a case study (Al Reehan neighbourhood), strategic assessment was conducted using SWOT analysis. Consequently, the goals, objectives, strategies and related actions were determined. Therefore, the aim of the thesis is believed to be achieved as the sustainable neighbourhood strategic framework was developed.

Formulating the strategic framework for sustainable neighborhood needs the following:

- Relevant tools, which included literature review of international and regional experiences, interviews, focus groups, and SWOT methodologies, had been used in this thesis to formulate the strategic framework, and to define the vision and mission statements, identify clear goals and objectives, and generate proposed and efficient strategies and actions framework.
- Analyzing a case study with all its sustainable aspects is a basis to better understand the domains of sustainable neighbourhoods.

- Proper analytical processes of internal and external factors, identifying strengths and weaknesses, as well as opportunities and threats.

The conclusions of this research show that:

- It is important to take into consideration the neighbourhood establishment during urban development in the country, and develop strategic framework that represents the impression for sustainable neighbourhoods.
- Neighbourhood is a basic part of the ecological system that should be integrated with other parts effectively; it should consider climate conditions, landscape, history, social, economic and political factors, green areas, and natural resources. It also should provide ‘good social life’, an attractive human-scale environment, and protect habitat.
- In addition to the proper regulations, air, energy, people, transportation, land and water are the main domains that are considered in developing sustainable neighbourhoods.
- To achieve sustainable neighbourhoods major strategies have been identified which include:
 - ✓ In the air domain, strategies include to reduce pollutant sources, encourage green concepts and achieve better internal environment.
 - ✓ In the energy domain, strategies include to increase the share of generated renewable energy and reduce energy consumption. This

could be achieved by using solar panels in lighting and heating water, and increase awareness of using new and efficient insulating techniques and materials in buildings.

- ✓ In the people domain, strategies include to encourage the mixed social levels and provide satisfactory vital needs for social infrastructure.
- ✓ In the transport domain, strategies include to provide walkable streets in neighbourhoods and encourage public transportation.
- ✓ In the land domain, strategies include to encourage mixed land use, and promote high density neighbourhood.
- ✓ In the wet utilities domain, strategies include to increase the water harvesting, activate re-use practices have to be activated, and reduce water consumption.
- There should be diversity of use; including housing, work, shopping, civic, cultural and health facilities, in a compact urban fabric. Buildings should be densely populated, and to let the residents live and work in the same location. A mixed-use neighbourhoods, high buildings and block size that meet sustainable density, improve public places, and make use of region characteristics.
- The research identifies the basics of sustainable neighbourhood characteristics and highlight specified strategies, objectives and actions to achieve sustainable neighbourhood. These identified strategies help the institutions, the developers and decision makers, to adopt this new

trend locally in developing new neighbourhoods in Palestine, as the concept of sustainable neighbourhood is being more acceptable by people who are more willing to live in the sustainable neighbourhoods.

7.2 Recommendations

The study proposes a set of recommendations for the government, municipalities, strategists, developers and decision makers in order to support having new sustainable neighbourhoods, or develop existing neighbourhoods to become sustainable. These include the following:

- The relevant decision makers and ministries such as the Ministry of Public Works and Housing and Ministry of Local Government, the municipalities, and the semi-public institutions, such as the Palestinian Housing Council and the Palestinian Higher Green Building Council, and the Engineers Association, have to exhibit a leading role in supporting sustainable neighbourhoods, through devising relevant policies, legislations, and regulations.
- To adopt the proposed strategic framework after proper debate with the relevant key actors. All involved actors have to be engaged in the detailed strategy development and action plan implementation.
- A detailed road map, including detailed action plan, with specific dates budgets and responsibilities should be prepared considering the developed strategic development framework.

- Developers and investors should be pioneering in initiatives that will result in sustainable neighbourhoods.
- Professional societies, such as the Engineers Association, and technical experts need to conduct awareness campaigns and train engineers and planners, as well as developers, on various sustainable neighbourhoods' domains issues.
- People in all community levels should be aware of the positive impact of sustainability and sustainable neighbourhoods.
- The basics of sustainable neighbourhood should be merged in the local laws and regulation to be implemented.
- Enhance personal decision-making practices, participate all neighbourhood issues and responsibilities with all social segments, enhance transparency, provide the youth with sustainability related programs, knowledge exchange, workshops. With active participation of all segments of the neighbourhood communities in planning and design of the area.
- Enhance the potential of the neighbourhood to be the core of the change into the sustainability for the city.
- In addition to the design standards related to the buildings specifications in the sustainable neighbourhood, the Government and related stakeholders have to study and determine the specifications for the sustainable neighbourhoods planning guidelines. These

specifications should cover the different domains of sustainable neighbourhoods which are: air, pollution, renewable energy, population density, public transportation, land requirement and wet utilities.

- Due to the lack of local studies of sustainable neighbourhoods, this research is considered to be pioneering in this domain. The result present a good opportunity for future research to be expanded in each element of sustainable neighbourhoods separately.

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Appendixes

Appendix I

Interviews

The Palestinian Higher Green Building Council

- **Dr. Mutasim Ba'ba'**

The Head of the Technical Committee of the Green Building Guidelines. Interviewed on 07/04/2017.

The Ministry of Local Government

- **Dr. Tawfeeq Al Budairi**

Deputy Assistant, Ministry of Local Government. Interviewed on 12/02/2016.

- **Dr. Azzam Hjuj**

General Manager of the General Directorate for Planning and Urban Planning, Ministry of Local Government. Interviewed on 22/02/2016.

UN-Habitat

- **Dr. Lubna Shaheen**

UN-Habitat, Project Manager. Interviewed on 24/02/2016.

An-Najah National University

- **Dr. Ali Abdelhamid**

An-Najah National University, Head, Department of Planning, An-Najah National University. Interviewed on 30/03/2016.

- **Dr. Khaled Al Sahili**

An-Najah National University, Dean of the Faculty of Engineering and Information Technology. Interviewed on 07/04/2016.

- **Dr. Sameh Muna**

An-Najah National University, Department of building. Interviewed on 07/04/2016.

Amaar Group

- **Eng. Muneef Traish**

Previous General Manager, Amaar Group. Interviewed on 03/03/2016.

- **Eng. Nabeel Al Aref**

Project Manager, Al Reehan Company. Interviewed on 03/08/2016.

- **Eng. Badawi Qawasmi**

Project Manager, Palestine Investment Fund. Interviewed on 04/09/2016.

Appendix II

Interview Thematic Analysis

1. What are the most important international domains for sustainable neighbourhood?

Experts	Decision makers	Related institutions	Developers
<ul style="list-style-type: none"> • Economy, respecting the living levels, jobs and income. The cost of getting the service. • Environmental, safety, clean environment and the protection from all sources of pollution and disturbance. • Social aspects and social justice which are related to providing basic services as education, health, cultural dimensions and entertainment • Transportation, especially public transportation. • Building integrated thermal system. • Integrated Infrastructure. • Landscape. • Clean outdoor space. 	<ul style="list-style-type: none"> • No international standards. 	<ul style="list-style-type: none"> • Social. • Economical. • Environment. • Culture right. • Right to work, to get house, to educate, to have clean environment. • Homogeneous and Compact community. • Mixed land use. • Transportation and pedestrian area. • Clean and green environment. 	<ul style="list-style-type: none"> • No Answer.

2. What are the elements that can be studied to achieve sustainable Palestinian neighbourhoods?

Experts	Decision maker	Related institution	Developers
<ul style="list-style-type: none"> • Provide suitable housing for certain categories. • Economical dimension, fits between the income and suitable residence. • Infrastructure; like streets, transportation network, sewage, waste, and public facilities. • Social services; as education, health, cultural aspects and entertainment. And the cost of services. • The social harmony and the social relations. • Security and safety criteria. • Renewable energy; such as solar energy instead of electrical energy. • Recycling waste. 	<ul style="list-style-type: none"> • Cultural dimension. • Financial dimension. • Government policies. • Site selection. • Availability of working, health, housing and services. • Ownership of land and its distribution. • Environment. • Ecological balance. • Infrastructure. • Providing local services. • Housing projects sustainability. • Save the land for new generation. • The policy of the government. • Geopolitical issues. • Protect the ecological balance. • Economic social and political sectors. • Environmental aspects. • Get rid of occupation. 	<ul style="list-style-type: none"> • Resources which consist of energy, water and materials. • Energy, reduction and generation. • Water and the waste. • Materials. • Pollution. • Lighting. • Transportation. 	<ul style="list-style-type: none"> • Near lands from the urban centers. • Housing units with reasonable prices. • New, modern and huge infrastructure. • Environmental sustainability criteria. • Site selection related to threatened settlement areas.

<ul style="list-style-type: none"> • Recycling water and reuse it in gardens irrigation. • Urban and urban microclimate. • Laws and regulation. • Public and private Spaces. • Land use and distribution. • Transportation network. • Building scale and construction laws and material used. • Keeping suitable outdoor temperature. 	<ul style="list-style-type: none"> • Socioeconomic aspects. • Cultural heritage. • Geographical management. 		
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3. How can sustainability criteria be implemented through the Palestinian communities?

Experts	Decision maker	Related institution	Developers
<ul style="list-style-type: none"> • Building up culture and awareness. • school will have efficient function. • Awareness programs adapted from the government, through media, social media, public culture, lectures and conventions. • The society needs encouragement and motivation. • Developers have to take sustainable concepts in consideration during the design stage. • Separate the garbage. • Use of energy efficient devices. • Be efficient in using materials in the construction. • Use local resources as much as possible. • Keep the environment clean. 	No answer	No answer	<ol style="list-style-type: none"> 1. Educate people about the distinction of living in the neighbourhood 2. Provide public spaces whether gardens or pedestrian sidewalk, to ensure kids and mothers safety during moving. 3. Building commercial center, which provides basic needs. <ul style="list-style-type: none"> • Public transportation.

4. How can sustainable neighbourhood criteria be implemented through official agencies?

Experts	Decision maker	Related institution	Developers
<ul style="list-style-type: none"> • The culture of sustainable cities or sustainable developments must be adapted on a national level, through various institutions. • Work according to national policies. • Implement the regulations. • Encouraging policies to sustainable systems. • The policies of the government. • Study laws and regulations internationally, and how the government deal with such issue. • The municipality can buy lands and assign it for public spaces, • Open streets. • Establish infrastructure. • Support from the Ministry of Transportation, Ministry of 	<ul style="list-style-type: none"> • Laws and regulations. • National planning. • SWOT analysis must be applied to laws and regulations with respect to sustainability criteria. 	<ul style="list-style-type: none"> • Knowledge and systems. • Policy of planning. • Laws. 	<ul style="list-style-type: none"> • Compromised with the local governments.

<p>Local Government, and Municipalities</p> <ul style="list-style-type: none">• The Energy Authority must take its turn in the process of supporting renewable energy.• Water Authority is responsible on issues related to public water, sewage are relevant to municipality.• Separate waste or garbage, this need using specialized containers, for carton, plastic, glass and so on, to facilitate recycling.			
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5. What is the procedures towards a strategic planning for sustainable neighbourhood?

Experts	Decision maker	Related institution	Developers
<ul style="list-style-type: none"> • Study, assessment, analyzing, setting priorities, setting visions. • Start with awareness and studies for the people and they take the action. • Start with ministry strategy, put objectives, then goals, objectives, and according to this, laws and regulations can put. • Get information: number of residence, number of building, the needed area for private and public services. • The way to benefits from GPS to determine places for functions, to reduce distances between them. • Estimate the energy consumption, and the related information. • Study the climate and resources. • Study the topography. 	<ul style="list-style-type: none"> • Look for the location. • How to develop. • Study the social and physical factors. • Preparing the plans. • Provide services as electricity and transportation. • Clear plan for schools and health. • Cooperate with Water Authority and the Electricity Company. • Study the strength and weakness and laws and regulations related to housing sector. • Study the legal framework that controls housing sector. • Apply SWOT analysis for laws opposite to sustainability criteria. 	<ul style="list-style-type: none"> • Institutions. • Sustainable development strategy for the government. • Modify the policy in the regulations, and the legal framework. • Integrated planning approach. • Mechanism for implementation and monitoring regulations. • Cooperate with the private sector and community. 	<ul style="list-style-type: none"> • Being sure that there is real needs for establishing neighbourhoods. • Infrastructure must be the responsibility of the government. • Meet the aspiration of the people, from historical and cultural issues. • Take in consideration the principles of people life, family size, housing unit area, preserve cultural heritage. • New construction methods.

Appendix III

Focus Groups in Al Reehan Neighbourhood

1) Why did you select Al Reehan neighbourhood to live in?

- Calmness. The neighbourhood is expected to be calm with limited annoying sources, like cars, commercial centers, malls and construction projects.
- Elegant. The interest in every detail of the neighbourhood gives the neighbourhood a specialty; all the networks are underground including water electricity, gas, telecommunications and wastewater.
- Clean. As the neighbourhood is new, it is expected to be clean with separated closed garbage cans, and clean view with no optical confusion from electrical wires or water network.
- Close to village atmosphere. The limited number of houses in the neighbourhood, planted streets, calmness, clean air, and less noise make the feeling of residents in a small village, which is very interesting for wide segment of people.
- The resident's encouragement. The residents in the neighbourhood encourages other people to live in it, considering the good social life, good facilities, clean environment, and close to the city.
- Closeness to Ramallah City. The location of the neighbourhood is about 7-10 minutes of Ramallah City where many residents work.
- The existence of green and open area. The master plan of the neighbourhood shows that about 45% of the lands are green and open

areas, as considered as an attractive element for the people in the neighbourhood, but in fact it is less than this ratio, it's about 10%. In addition, the neighbourhood has variety of public spaces like gardens, parks, play ground and small and wide yards.

- The existence of public facilities. As Amaar group advertising, the neighbourhood has different facilities as school, mosque, commercial center, kindergarten.
- New roads network. The newly constructed roads encourage people to live in the neighbourhood, with less polluting and less need for car maintenance.
- Infrastructure. New and modern infrastructure distinguishes Al Reehan neighbourhood infrastructure, including underground water, electricity, wastewater and telecommunication networks, and makes these as attractive elements in the neighbourhood.
- Acceptable Prices of apartments. The apartments in the neighbourhood vary between 100-250sqm, which give a wide range of price for different levels of the people.

2) To get a sustainable neighbourhood, that does not pollute the environment and deplete its resources, what should be consider in the neighbourhood in this regard?

- Utilize the roof for solar units for renewable energy. The roofs of the buildings can be utilized with solar units that produce electricity from solar energy to be used in the buildings.

- Use rain water for irrigation. The areas of surfaces and the yards in the neighbourhood are large and can collect out a huge amount of rain water in winter; this water can be used in the irrigation of the green areas and street trees.
- Reuse water. Recycled water can be reused in irrigation, and flushing toilets.
- Use solar energy in streets lighting. Solar units can be fixed at the top of the electric light poles to produce energy that lights the streets at night instead of electricity.

3) How has social life and community participation been encouraged in Al Reehan neighbourhood?

- The presence of social facilities. The existence of playgrounds, parks, yards for each building, small and wide public gardens, where people can meet, talk and spend time.
- Cul-de-sac roads. These give privacy for residents of the neighbourhood, where no strange people enter the dead end roads.

4) What are the facilities in Al Reehan neighbourhood that reduce expenses and costs for residents?

- Sewerage network. The existence of sewerage network canceled the cost and effects of Pit absorbance for sewage.
- The electricity network. This with 32 Ampere for each housing unit, which enables easy use for electrical devices.

- The presence of playgrounds. These playgrounds which reduce the entertainment costs that can be paid to spend on leisure.

5) How dose Al Reehan neighbourhood deal with water as an important element that has to be saved?

- The established water wells for some buildings to collect rain water and store water for summer time, as the water is not available all the days during the week.
- The presence of irrigation network, which prevents wasting water.

6) How dose Al Reehan neighbourhood deal with air as an important element have to be preserved to be clean?

- The apartments are opened from three elevations that provide good air circulation inside the rooms.
- The staircase has large windows to get good ventilation.
- The orientation of the buildings takes into consideration the wind movement in the site.
- The provision of wide and large vertical shafts to get the maximum internal ventilation.

7) How dose Al Reehan neighbourhood deal with energy as an important element have to be saved?

- Using solar panels on the commercial center which provide the commercial center with about 30% of its need of electricity.

- The location of the sewage water treatment unit is in the lowest point of the neighbourhood, eliminating the need for using energy for pumping.
- Using solar systems that provide hot water for apartments in most days of the year.
- Using central gas tanks, which prevent wasting gas and reduce high cost.

8) What are the energy resources in Al Reehan neighbourhood?

- Electricity
- Cooking gas
- Solar energy

9) How dose Al Reehan neighbourhood deal with land as an important element have to be saved and not depleted?

- Use of the extracted rocks in the building construction, especially in the establishment phase and in the construction roads.

10) How can Al Reehan neighbourhood be developed to become a sustainable neighbourhood?

- Using solar panels on the roofs of the buildings
- Reuse of water in irrigation like rain water and recycled water
- Collection of rain water and using it.
- Planting trees to give nice atmosphere, beautiful views, and cool temperature.

11) What are the opportunities for Al Reehan neighbourhood to become sustainable neighbourhood?

- No master plan for the area which give chance for development as required in the neighbourhood.
- The ability to accept new concepts in the Palestinian community.

12) What are the strength points in Al Reehan neighbourhood with regard to be a sustainable neighbourhood?

- The existence of gardens and common areas.
- Good relationships between residents.
- The privacy for the residents is good.
- The neighbourhood is secured and safe.
- The existence of irrigation network.
- Using solar units in the buildings roofs.
- New roads network.
- Cul-de-sac roads to give privacy.
- Mixed functions and mixed land use.
- Variation in the apartment's areas and prices.
- Calmness, with no disturbance.
- Clean air.
- Closeness to Ramallah City.

- The existence of green areas.
- New and modern infrastructure networks.
- All electricity, water, telephone, gas line and internet networks are underground.

13) What are the threats for Al Reehan neighbourhood to that make challenges in becoming a sustainable neighbourhood?

- Laws and regulations, which restrict developers and investors to apply new concepts of sustainable neighbourhood.

Lake of planning, and unavailability of a master plan for the surrounding areas gives the possibility to establish facilities that may impact the sustainable

14) What are the weakness points in Al Reehan neighbourhood with regard to being a sustainable neighbourhood?

- High initial cost for construction.
- Verity of the original home land for residents
- The lake of the public awareness about green and sustainable neighbourhood.

15) What did you expect in Al Reehan neighbourhood and what did you found?

- Wide green areas which was on plan about 40% but it is reduced to 10%
- More calmness, which was the case before the opening of the nearby Sky Land Park especially in the summer season.

جامعة النجاح الوطنية
كلية الدراسات العليا

التخطيط الاستراتيجي نحو ضواح فلسطينية مستدامة

إعداد

ديمة رضا أحمد سلامة

إشراف

أ. د. سمير أبو عيشة

د. مهند الحاج حسين

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.

2017م

ب

التخطيط الاستراتيجي نحو ضواحي فلسطينية مستدامة

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الملخص

في فلسطين، وكما هو الحال في مختلف دول العالم، بدأ يتولد اهتمام متزايد نحو الحفاظ على البيئة والاستدامة في مختلف مجالات الحياة. ومن ضمن هذه المجالات التي حظيت باهتمام متزايد استدامة المجتمعات، بما في ذلك الضواحي السكنية. وقد اكتسبت جوانب مثل الطاقة والمياه والأراض والنفايات والنقل اهتماما كبيرا في هذا الإطار. وفي الوقت نفسه، كان على قطاعات الإسكان وتنمية المجتمعات أن تطور نظاما متكاملًا يشمل كافة النواحي الاجتماعية والاقتصادية والبيئية من أجل تشجيع وجود مجتمعات محلية أكثر تنوعًا تأخذ بالإعتبار الجوانب المختلفة للوصول إلى ضواحي مستدامة. لذا كان التخطيط الاستراتيجي للضواحي السكنية المستدامة هو محور الدراسة في هذا البحث.

ويهدف هذا البحث إلى فهم خصائص الضواحي المستدامة على الصعيدين الإقليمي والدولي، للمساعدة في صياغة إطار تنمية استراتيجي للضواحي المستدامة في فلسطين. وتأتي أهمية تطوير مثل هذا الإطار في فلسطين لنقص موارد الطاقة والمياه ومحدودية الأراضي بالإضافة إلى التحديات التي تواجه قطاعي المواصلات والبيئة، حيث شكل ذلك دافعًا للقيام بهذه الدراسة.

ويقدم هذا البحث إطاراً مقترحاً للتخطيط التنموي الاستراتيجي للضواحي السكنية المستدامة في فلسطين، وذلك بعد دراسة وتحليل وفهم التجارب والقضايا المتعلقة بالضواحي السكنية المستدامة حول العالم، بالإضافة إلى تحليل المقابلات مع الخبراء والمطورين ومخرجات

الإجتماعات مع مجموعات بؤرية من سكان الضواحي التي أجريت اثناء تحليل ضاحية الريحان في فلسطين كحالة دراسية.

ويحلل البحث العناصر الرئيسية ذات الصلة والتي تشمل الجوانب الإيجابية (نقاط القوة والفرص) والجوانب السلبية (نقاط الضعف والمعوقات) التي تواجه الضواحي المستدامة، وصولاً لبلورة الرؤية والرسالة والاهداف والإستراتيجيات، بالإضافة الى الإجراءات اللازمة لتطوير ضواحي فلسطينية مستدامة.

ويوصي البحث صانعي القرار والمساهمين والمطورين بأن يولوا اهتماماً أكبر فيما يتعلق بالضواحي السكنية المستدامة، كما يوصي باعتماد وتطبيق إطار العمل المقترح في هذه الدراسة، لتحقيق ضواحي فلسطينية مستدامة. بالإضافة إلى ذلك، يوصي البحث الحكومة وكافة الأطراف ذات العلاقة دراسة وتحديد المواصفات والمعايير التخطيطية والتصميمية للضواحي المستدامة. وقد قدم هذا البحث مقترحات لاجراء بحوث مستقبلية لتحقيق الإستدامة في مجال الضواحي السكنية المستدامة.