# Rethinking masterplanning: A case study of Ramallah city, Palestine

Received: 8th April, 2020

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**Abstract** Conventional masterplanning (Euclidean) proved to be a failure in the case of Ramallah. The planning process for Ramallah city could not cope with the rapid urban growth in a sustainable way. Ramallah faces increasing urban sprawl, scattered neighbourhoods on the outskirts of the city and vehicular congestion. This study introduces a new module within the complex context of geopolitical constraints and obsolete planning regulations through rethinking masterplanning. In this study, spatial, statistical, sectorial and temporal analyses of the past masterplans were conducted. The proposed urban planning approach/scheme focuses on urban growth in a well-connected city centre, enforcing new sub-centres, endorses qualities of compactness, transport-oriented, walkable, pedestrian/bicycle-friendly, and above all encourages mixed land use development. Ultimately the aim is to create polycentricity in Ramallah that will embrace three self-sufficient sub-centres in addition to the central business district (CBD).

Keywords: sprawl, polycentricity, growth management, mixed-use, Palestine

# INTRODUCTION

Ramallah city, the centre of the Palestinian Authority, where most of the services and institutions are concentrated, is facing problems related to urban planning and management. Since 1993, Ramallah has been witnessing an accelerating urban growth due to local immigration and an economic boom. Rapid urban and population growth has added more pressure on the central business district (CBD), resulting in traffic congestion accompanied by increasing demand on housing and services.<sup>1</sup>

The Oslo Accords are a set of agreements between the Government of Israel and the Palestine Liberation Organization (PLO) to achieve peace in the region. Accordingly, the agreement divided the occupied West Bank into three administrative areas: A, B and C. Area A is entirely controlled by the

Palestinian Authority; area B is controlled by both the Palestinian Authority and Israel; and area C, which has the Israeli settlements, is controlled by Israel. Areas A and B were created by drawing lines around Palestinian population centres, and by the time the agreement was signed the areas surrounding areas A and B were defined as area C.

Ramallah city is located in the West Bank (WB). Geopolitics is one of the major obstacles in any future urban development of the city. In addition, outdated planning regulations and amendments played a significant role in recent Ramallah problems regarding planning and proper growth.

Investors have been establishing new neighbourhoods on the outskirts of Ramallah, aiming at profit generation projects by providing housing units for better life quality. Accordingly, residents who can afford to live in these units started to relocate to the new neighbourhoods. All these neighbourhoods are dormitories, which added more pressure on services in the city centre. These new developments can be described as uncontrolled and informal, scattered agglomerations with no active business centre, uneven distributions with low-density occupancy and high dependence on the city centre.

The chaos of the urban development in the city of Ramallah requires an examination and rethinking of the conventional masterplanning, strategies and modules of urban development within such a context.

## LITERATURE REVIEW

Migration of individuals and families from rural areas to large cities was witnessed in the post-industrial revolution era. Searching for work and better life conditions was behind the change in city morphology, which was translated into new urban areas with housing as a primary function; later land use with assigned activities created Euclidian zoning. Mass transit systems — private automobiles, bus networks, rail systems, highways and motorways — were behind the spread of low-density, built-up areas.<sup>2,3</sup> The 20th century witnessed a rapid increase in urbanisation patterns that exceeded the rate of infrastructural development.<sup>4</sup> This rapid urban growth resulted in traffic congestion, urban sprawl, slums, pollution, and increased pressure on services and infrastructure.

After the Second World War, masterplanning focused on reviving economy and living conditions, where regulations concentrated on zoning for different uses, height of buildings and standardisation of places. A new philosophy was introduced by Jane Jacobs,<sup>5</sup> who stated: 'a stable and reasonable mix of working, service and living activities provide a vital, inspiring, competitive public realm'. Jacobs classified uses into primary and secondary, where primary uses consist of residential and major employment or service functions. The primary uses produced the demand for secondary uses: shops, restaurants, cafes, schools and other small-scale facilities.<sup>6</sup>

In the 1920s, Clarence Perry introduced the 'Neighborhood Unit' concept. Perry's concept was about walkability and compactness.<sup>7</sup> Brody discussed walking distances, narrow streets, mix of uses and street networks as a new way of thinking in planning.

Recently, in many developed countries, masterplanning has been facing many challenges to overcome ramifications resulting from massive urbanisation, social change, limited resources and lately climate change. Masterplanning is no longer a process of creating a blueprint of future uses, it is about looking for the improvement of social, economic and environmental conditions.<sup>8</sup> AlWaer<sup>9</sup> stated that new approaches for planning have been emerging under different titles: adaptive, integrated, synergistic urban planning. These new approaches deal with urban planning in multiple, integrated and interdependent processes taking into consideration geographic, political, stakeholders' interests, resources and administrative context.

Mixed-use development is one of the widely used planning strategies in recent planning approaches.<sup>10</sup> Planners and researchers recommended that people living close to their work and within walkable distances in order to fulfil their daily needs would be the best answer to overcome planning problems such as sprawl, commuting and social segregation.<sup>11,12</sup>

According to Alan Rowley,<sup>13</sup> uses have to be mixed for better life quality and should be implemented in different settings:

- 1. Within districts or neighbourhoods;
- 2. Within the street and other public spaces;
- 3. Within building or street blocks;
- 4. Within individual buildings.

Growth management has been adopted by many planners since the mid-1980s. This was translated into the Compact City concept, which played an important role in improving existing built-up areas. Sackey<sup>14</sup> added that the Compact City concept depended on intensifying the use of land within existing settlements and concentrating on greenfield developments. Urban growth management modules generated other relevant theories and concepts. One of the best practised approaches is transit-oriented development (TOD). According to Herndon,<sup>15</sup> TOD is designed to maximise access to public transport, and often includes features to encourage transit ridership. These TODs

typically contain a train station in the centre, metro station, tram stop or bus station. The centre is surrounded by highdensity development spreading outwards from the centre. TODs are designed to be an appropriate scale for pedestrians.

According to Affouneh,<sup>16</sup> Ramallah governorate's urban fabric is characterised as dispersed and scattered, with an imbalanced distribution of population, jobs and services. High concentration of urban development in Ramallah city has created a congested CBD. The increase in car ownership has exceeded the current street capacity, resulting in a congested city centre.<sup>17,18</sup>

This study used spatial and statistical analysis accompanied by a sectorial assessment of Ramallah's approved masterplans. Different shape files were used: land use, land cover, road network and contour maps. Population density, public services, public open spaces, spatial connectivity and mobility corridors were mapped and studied. In addition, supportive structured interviews with decision makers, planners, urban planning consultants and developers were incorporated. A standardised openended interview was conducted with the head of the planning section at Ramallah Municipality, during which he provided us with the mechanisms used in the section and how the city dealt with planning regulations. Planning experts were interviewed in the same manner to get their feedback on the process of masterplanning during different eras. Developers provided us with their concerns regarding zoning and its complicated regulations. All agreed that the existing regulations and mechanisms needed a new way of thinking in order to solve the city's problems regarding traffic congestion, sprawl, environmental issues and quality of life.

In the analysis process, landscape assessment methodology was used in order

to classify the study area into different landscape character zones. Many thematic shape files were layered to produce character areas:

- 1. Sensitive/high-value areas were assigned as 'protected district';
- 2. Degraded areas were assigned as 'improvement district';
- 3. Areas of new neighbourhoods were assigned as 'transformation district';
- 4. Areas with medium agricultural value were assigned as 'development district';
- 5. Decaying areas were assigned as 'repair district'.

Regulations and guidelines were then attached to each district, in order to reach a new way of conducting masterplans for the study area, while taking into consideration the shortcomings of the classical process.



Figure 1: Study site
Source: GIS unit, Birzeit University

# **STUDY SITE**

Ramallah is a city located in the centre of the WB, 10km north of Jerusalem, 880m above sea level (see Figure 1). Ramallah is considered the seat of the Palestinian Authority, where the headquarters of most local and international institutions are located.

Ramallah was originally a small village, located nearby the historical regional road connecting the north with the south of Palestine through Jerusalem. It was a small village during the Ottoman era, growing slowly during the British Mandate for Palestine. Back then, the village was dominated by residential buildings surrounded by orchards. The urban fabric was dense in the core, with narrow paths and residential complexes in a courtyard style; this characteristic was gradually lost where urban expansion followed the main streets with individual houses of one storey or two. The town expanded slowly without an official outline plan in

an organic manner. During the Jordanian period (1950–67),<sup>19</sup> Ramallah became a tourist destination and began to expand as a result of population growth based on immigration from different cities and villages in the WB alongside natural growth, in addition to Palestinians who refuged to the city after Israel was declared in 1948.

In 1967, Ramallah was under Israeli occupation as well as the whole WB and Gaza Strip. During this era, the city grew slowly along the main streets in a ribbon form.<sup>20</sup> Later, in 1995, after the Oslo Accords, Ramallah city grew in an accelerating pace to cope with the new era (the era of peace). During this era, Ramallah became the seat of the Palestinian Authority, where headquarters and institutions were established in the city. The city was in need of developmental schemes to provide spaces for public services and residential quarters.<sup>21</sup>

Consequently, Ramallah faced many problems: urban sprawl, scattered neighbourhoods, traffic congestion and deterioration of infrastructure, housing and public service shortage.<sup>22</sup> During the past two decades, new neighbourhoods have been established by developers on the outskirts of the city. These new neighbourhoods are mainly dormitory compounds with very basic services such as grocery stores, bakeries and pharmacies, ultimately forcing residents to commute to the city centre for primary services including education, health, shopping and work.

## ASSESSMENT AND ANALYSIS

WB urbanisation rate is around 2.6 per cent, with a population density of 509 capita/km<sup>2</sup>.<sup>23</sup> According to Ramallah Municipality, the population density is equal to 2,400 capita/km<sup>2</sup> with a population of approximately 38,998 inhabitants. By 2030, Ramallah's population is projected to reach 80,000 capita. According to Muhsen,<sup>24</sup> Ramallah has a relatively low density but still faces vehicular congestion, urban sprawl, high land prices and lack of an efficient and reliable transport system, which is due to inappropriate planning and random distribution of resources rather than overpopulation. Traffic congestion is linked to the increase in the number of registered vehicles combined with limited street capacity and inappropriate urban planning.25

Masterplanning during the 1960s (under the Jordanian rule) focused on land use and zoning where most of the parcels within the masterplan were allocated mainly for residential and commercial uses. During this time the city grew to accommodate immigrants from different areas, especially the Palestinian refugees who were expelled from their homes after the 1948 Arab-Israeli war. The masterplan of the Jordanian time for Ramallah shows that the main land use type was residential (residential A, B and C), where social segregation was clear by dividing residents into different types according to land parcel classifications. These classifications were attached to different coloured zones: residential A means a land parcel of minimum 1,000m<sup>2</sup> with 5 and 4 metres setbacks; residential B means a land parcel of 500m<sup>2</sup> with 3 and 4 metres setbacks; residential C means a land parcel of less than 500m<sup>2</sup> with less than 3 metres setbacks. Commercial activities were concentrated in the centre in a ribbon style along the main roads, with shops at street level (see Figure 2).

In 1983, during the Israeli occupation on the WB, Shlomo Khayyat, an Israeli planner, prepared a masterplan for Ramallah using Euclidean zoning.<sup>27</sup> He stated that private land ownership was the major planning obstacle in developing public spaces and public service areas. He proposed new neighbourhoods around the city as a future vision. Khavyat recommended enhancing infrastructure lines, creating new developmental areas to the south and south-east, while restricting development in the north and northwest areas to preserve agricultural lands. The masterplan of 1983 divided the city lands into different zones with different land uses without any vision for mixed uses or developmental areas to work as sub-centres; instead the plan kept the city monocentric (see Figure 3). The masterplan of 1983 added more residential zones to the previous ones, maintained segregation between zones and confined commercial activities to the old city centre.

After the Oslo Accords in 1993, planning responsibilities within municipal



Figure 2: Ramallah masterplan of 1962

Source: Ramallah Municipality26

![](_page_6_Figure_1.jpeg)

Figure 3: Ramallah city masterplan 1983

Source: Abu Helu<sup>28</sup>

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boundaries were transferred to the newly established Palestinian institutions. There were two levels of planning: one dealing with regional planning issues, which was attached to the Ministry of Planning and International Cooperation (MOPIC), and another at the local level, which was attached to the Ministry of Local Government (MOLG). MOPIC prepared plans dealing with natural resources protection and land use development for the WB and Gaza on a regional scale. MOLG was in charge of planning at the local level (municipalities and villages) within areas under the Palestinian Authority control (zone A and zone B). MOLG failed in preparing structural plans for local communities due to the lack of qualified and skilled staff, lack of control on lands beyond the communities' approved masterplans and use of obsolete planning regulations.<sup>29,30</sup>

From 1992 to 2004 Ramallah Municipality issued building permits for different uses (commercial and housing) reaching 1,500 donums.<sup>31</sup> The number of households jumped from 6,981 in 1997 to 13,636 in 2010.32 In 1997, the city planning department prepared a new masterplan to cope with the increasing need for new developments. The plan targeted the city centre and the areas surrounding the municipal boundary that were not included within the old masterplan. The proposed plan focused on the areas to be annexed to the city while keeping the city centre free from development. Most of the newly annexed areas were for residential use only, without taking into consideration the need for services in the peripheries. This ultimately added more complication in the centre where most of the services were located (see Figure 4). The approved masterplan of 1999 consisted of housing (46 per cent), industrial (4 per cent), public buildings (4 per cent), open spaces (0.7 per cent) and roads (24 per cent).<sup>34</sup> In

other words, by concentrating on adding more zones for residential use only, new sub-centres were still missing in the newly planned areas in the new masterplans. The proposed neighbourhoods on the periphery of the city lacked the primary needs of the inhabitants, which ultimately forced them to commute to the city centre. This way of adopting the conventional planning approach obliged people to own cars in order to access their needs, keeping in mind the absence of suitable public transport.

The head of the planning department in the municipality of Ramallah, Issa Sayegh, stated that the new masterplan of 1999 aimed to meet the residents' needs mainly for housing and to control urban sprawl on the outskirts of the city. Consequently, such developments put stress on existing services, as well as loss of agricultural land, natural vegetation and ecosystem. Sayegh added that the late 1990s witnessed an economic boom, internal local immigration, high demand for housing, rise in car ownership, stress on road network and more pressure on the CBD. Finally, the masterplan did not manage to solve any of the existing problems facing Ramallah city and the CBD area specifically (see Figure 5).

In the past few years, the planning department in the municipality has tried to introduce mixed-use zones into the masterplan, but this was not approved by the official higher planning governmental institution (MOLG). The masterplan of 2011 (see Figure 6) has 13 major zones; 36 per cent of the total area was for residential use, 19 per cent road network, 22 per cent future development, 5 per cent light industry and craft market, 3.2 per cent public services such as education, health, civic facilities and 1 per cent parks and open public spaces.<sup>36</sup>

Figure 6 shows that radial streets start at the CBD, with active commercial ribbons along these main streets. Two commercial

![](_page_8_Figure_1.jpeg)

Figure 4: 1999 masterplan

Source: Abu Helu<sup>34</sup>

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![](_page_9_Figure_1.jpeg)

## Sprawl Developments and Spatial Relation to CBD

Figure 5: Scattered neighbourhoods

Source: Ramallah Municipality adapted by author

and mixed-use zones were proposed away from the city centre, with tourist zones and a park/open space in the middle, in order to attract people away from the centre. According to a study carried out by Arabtech Jardaneh<sup>37</sup> engineering firm in 2017, road networks are described as narrow and congested in the CBD area. Private car ownership is escalating due to

![](_page_10_Figure_1.jpeg)

Figure 6: Masterplan of 2011

#### Source: Abu Helu<sup>36</sup>

loan facilitations by banks; consequently, existing car parks cannot cope with the increasing numbers of cars visiting the centre. The majority of public transport terminals are located in the city centre and its immediate vicinity, which adds more pressure on the CBD. Commuters to Ramallah seeking public services, places of work and recreational services have to reach the CBD to fulfil their needs using either private vehicles or current transport modes.<sup>38</sup>

# RETHINKING RAMALLAH MASTERPLAN

Ramallah suffers from urban sprawl, monocentricity, segregation and congestion. Masterplanning according to the conventional planning process and usage of old regulations for Ramallah failed.<sup>39–41</sup> Ramallah planning went through a piecemeal planning process starting from the Jordanian time (1962) until 2017. The main task of masterplanning was to expand the old masterplan by providing more areas to the existing one (see Figure 7) to cope with the inhabitants' needs for more space.

The process of masterplanning has been adopting Euclidian zoning since the 1960s. British Mandate urban planning regulations have been used by the Jordanian and the Palestinian planning institutions with minor modifications. These regulations are obsolete after a century, due to changes in lifestyle, transport means, urbanisation trends, environmental concerns and varying contexts. This study attempts

# Timeframe of Ramallah Master Plan Expansion From 1960-2014

![](_page_11_Figure_7.jpeg)

![](_page_11_Figure_8.jpeg)

Source: Abu Helu42

to incorporate the previous concerns in order to introduce a new way of thinking in masterplanning to overcome the consequences of the previous mechanisms used.

In order to propose a new mechanism for proper masterplanning for the city, a thorough study was conducted to assess the different character areas of the city region. Land cover and environmental settings were incorporated in order to minimise impact on natural settings of the study area. Polycentricity was the main driving force in the proposed guidelines in order to alleviate pressure on the centre. Services within walkable distance were enforced by providing the subcentres with the primary needs for the inhabitants.

According to the National Protection Plan<sup>43</sup> prepared by MOPIC, Ramallah municipal area contained 26.15 per cent medium-value agricultural land, 1.3 per cent high-value agricultural land, and the remainder comprising built-up areas surrounded by bare land (see Figure 8). These classifications were used in order to propose new developmental projects in the proper land classification.

![](_page_12_Figure_5.jpeg)

Land Cover

![](_page_12_Figure_6.jpeg)

Source: Abu Helu44

# **CHARACTER AREAS**

The analysis started with landscape assessment for the study site. Ramallah municipal area was divided into different character areas in order to propose developmental projects according to landscape (see Figure 9).

# Protected areas (restricted growth district)

These consist of high agricultural value areas, historically significant areas, biodiversity areas, steep slope areas and valley terraces. According to the National Protection Spatial Plan,<sup>45</sup> 1.7km<sup>2</sup> of the district is classified as natural reserves with limitations for future developments. Urban development should be restricted

![](_page_13_Figure_5.jpeg)

Source: Ramallah Municipality adapted by author

Journal of Urban Regeneration and Renewal Vol. 14, 4, 1–21 © Henry Stewart Publications 1752-9638 (2020)

in this zone, where developers have to prepare a landscape assessment statement before receiving approval for any proposed project (see Figure 10).

# Improvement areas (controlled growth district)

These unfortunately have been degraded through negligence and human activity,

located around and within built-up areas. They consist of bare land and areas of medium agricultural value (see Figure 11). This district should be protected from further degradation and investments should be directed to improve the quality of the landscape. Urban growth should be allowed with special regulations to maintain landscape quality and define built-up percentages on land parcels,

![](_page_14_Picture_5.jpeg)

Figure 10: Protected areas

Source: Author

![](_page_14_Picture_8.jpeg)

Figure 11: Improvement areas Source: Author

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setbacks, heights, material, percentages of open spaces and parks, etc.

# Transformation areas (infill/ redevelopment district)

These areas contain neighbourhoods around the centre such as Al-Masyoon, Al-Tereh, Al-Rihan and the Diplomatic Compound (see Figure 12). They are provided with infrastructure, wide streets and basic daily needs. They are not, however, provided with some basic services such as schools, health centres, recreational and commercial services, which force people to commute to the centre. These areas should be developed to accommodate needed services to work as sub-centres.

# **Developmental areas (growth district)**

The district contains medium value agriculture land. These areas should be

developed to accommodate mixed-use projects in order to achieve polycentricity in the city region (see Figure 13). Detailed landscape documents defining the overall structure of the projects should be mandatory. These areas consist of the hilly fringes surrounding the city and are suitable for creating new supportive, mixed-use, compact, pedestrian/cyclefriendly sub-centres combined with an effective and reliable transport system, enabling people to live within a fiveminute walk of a neighbourhood centre, with easy access to transport, shops and other facilities.

# **Deteriorated areas (repair district)**

These contain decaying areas that need to be reimagined, restructured and regenerated. Like the CBD, they suffer from vehicular and human congestion, environmental and visual pollution

![](_page_15_Picture_9.jpeg)

Figure 12: Transformation areas

Source: Author

![](_page_16_Picture_1.jpeg)

Figure 13: Development areas

Source: Author

and deteriorating building facades (see Figure 14). The light industrial zone (southern zone) also suffers from vehicular congestion, environmental and visual pollution, inappropriate infrastructure and random scattered structures that violate building regulations. This zone has residential apartments in between industrial establishments and workshops. These areas should be replanned: evacuating industrial workshops to new industrial areas away from residential zones, demolishing deteriorated buildings, redesigning building facades and providing greenery and parks.

# **PROPOSED SUB-CENTRES**

Figure 15 shows a schematic road map for rethinking masterplanning in Ramallah city, taking into consideration the landscape character areas. Agricultural high-value areas should be protected in order to provide the city with a green buffer zone at the western edge (restricted growth district). Infill planning should be applied in the areas

![](_page_16_Picture_7.jpeg)

Figure 14: Deteriorated areas Source: Ramallah Municipality

of random and scattered developments (infill redevelopment district). According to Ramallah Municipality studies, the infill and intended growth districts would accommodate population growth until 2050. Developments in areas of medium agricultural value should be controlled, where specific development such as mixed use provided with urban open spaces (controlled growth district) should be encouraged. Districts with deteriorating environment should be under consideration for revitalisation and redevelopment (repair district). Development should be concentrated in areas assigned as intended growth districts, where sub-centres should be established in three areas around the city centre to achieve polycentricity. These areas are proposed to be the new compact mixed-use sub-centres to achieve 'live, work and entertain'.

These sub-centres have to be connected by a ring road and provided with terminals of park and ride. Bus rapid transit (BRT) occupying an exclusive lane mode is proposed for the ring road and main roads. Low-frequency buses and stations are assigned for collector roads and neighbourhood roads. This road network hierarchy will create a pedestrian-friendly CBD with public transport stops.<sup>46</sup>

In the process of rethinking and restructuring Ramallah city's masterplan, polycentricity is proposed as a solution to alleviate pressure on the CBD and achieve connectivity among the scattered clusters along the ring road. Planners for the proposed sub-centres should incorporate TODs in order to encourage using public transport rather than private cars. Sub-centres should be compacted, walkable and pedestrian-oriented urban places, connected by public transport and dynamic transport networks. Selfsufficient sub-centres should have retail stores, businesses and civic facilities such as libraries, schools, community centres, places of worship and health clinics.

The sub-centre core should accommodate high-density, mixed-use buildings (vertical mixed use) with retail, offices and apartments that should be located in close proximity to existing travel patterns and access points. It should also include recreational and cultural provision, plazas, businesses and parks, with wide pavements for pedestrian movement, green pathways and cycle tracks.<sup>47</sup> The sub-centre intermediate ring zone (transitional zone) should consist of medium to high-density development of multiple uses and should be located near existing access points. It should accommodate retail, offices, row houses, attached houses, town houses and family apartments, in addition to civic facilities connected by a tight network of streets, with wide pavements, green pathways and cycle tracks.

The sub-centre outer ring zone should accommodate low to medium-density residential neighbourhoods. It may have a wide range of residential one-storey to three-storey building types: single, side yard and row houses and attached and detached houses.

These guidelines pave the road for a new way of thinking in masterplanning. These guidelines will help planners and decision makers to introduce new techniques rather than the obsolete conventional regulations used. This approach will enhance the neighbourhood concept combined with enhanced transport modes and enhanced pedestrian settings. In addition, this approach will incorporate landscape protection and maintain natural settings. By enforcing the sub-centres in the periphery, pressure on the CBD will be alleviated, and commuting to the centre will be minimised.

## CONCLUSION

Conventional masterplanning proved to be a failure in the case of Ramallah, due to the various problems the city has been facing for the last two decades. In order to achieve sustainable future development in Ramallah, this study suggested an overall rethinking of Ramallah's masterplanning. Ramallah faces urban problems such as urban sprawl, vehicular and human congestion. These problems are not due

![](_page_18_Figure_1.jpeg)

Figure 15: Proposed sub-centres

Source: Ramallah Municipality adapted by author

to overpopulation but to inappropriate planning and monocentricity.

According to the analysis conducted for the study area, the pressure on the CBD should be alleviated, the quality of life in the peripheries should be improved and the environment should be preserved. The proposal suggested the creation of supportive sub-centres linked by an internal ring road within the city boundaries to direct traffic (human and vehicular) in and out of Ramallah's CBD.

The study introduced new guidelines for rethinking Ramallah masterplanning. A thorough landscape assessment for the land cover/use of the municipality area was conducted. Then different character areas (districts) were defined: protected areas; improvement areas; transformation areas; development areas; deteriorated areas. Each district has its own identity and character, so different guidelines were attached in order to achieve proper planning mechanism for each one. Sub-centres were proposed in the 'developmental areas' where landscape character areas allowed such a proposal. These sub-centres (TODs) were connected by a public transport route leading to the city centre.

The proposed methodology will achieve environmental sustainability, improve quality of life in the sub-centres and the city centre, encourage pedestrianfriendly settings and control sprawl.

This study introduced a new and challenging module within a complex context. It is about time to rethink masterplanning before it becomes irreversible. Further studies are needed to regulate the proposed sub-centres and different character areas. Further studies are also needed to propose a structural plan for one of the suggested subcentres, clarifying interlocking mixed-use development around TODs.

The methodology introduced in this study could be used in different contexts. It sets an example for the preparation of future masterplans, which takes into consideration environment, transport and traffic problems, scattered development, investment-driven projects, new mushroom neighbourhoods on the outskirts and deteriorating landscape quality. This planning process started with landscape assessment for the study area. Different thematic shape files were used — land cover, land use, agriculture, built-up areas, transport network, topography, population density — in order to classify it into different zones of varied characteristics and values. This resulted in landscape values that could be attached to each zone, which facilitates the process of allocating different scales of development and different ranks of protection.

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