

ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of DEVELOPMENT RESEARCH

International Journal of Development Research Vol. 06, Issue, 08, pp.8940-8947, August, 2016

Full Length Research Article

URBAN DEVELOPMENT AND EXPANSION TRENDS UNDER THE POLITICAL INSTABILITY IN PALESTINE: JERUSALEM- RAMALLAH CASE STUDY

*1Samer Raddad and 2Narimah Samat

¹Urban Sustanability Development Research Group, Al-Quds, University, Jerusalem, Palestine ²School of Humanities, University Sains Malaysia, Geography Department, Penang, Malaysia

ARTICLE INFO

Article History:

Received 22nd May, 2016 Received in revised form 28th June, 2016 Accepted 19th July, 2016 Published online 24th August, 2016

Key Words:

Urban Expansion, Urban Development, Political Instability, Occupied Palestinian Territories

ABSTRACT

Urban development, expansion, and Land use changes in the urban environments are a global phenomenon, by 2050, urban population in the world will increase to be more than 6.6 billion inhabitants and they will live with less than 1% of the world land surfaces. Political instability is one of most important drivers that effecting on the land cover/land use change and urban expansion, especially in the areas that faced the political problems and wars. Urban development in Occupied Palestinian Territories (OPT) impacted strongly by Political Transformations during 20th century and early of 21th century. The political instability factor in OPT leaded to distortion of Palestinian urban form and effecting on future urban expansion and development. Therefore, this study aims to assess of urban development and planning in Palestine during the political transformation stages, as well as it aims to explore urban expansion trends under the geopolitical effects in Jerusalem - Ramallah urban region as a model in the Palestinian urban environment. Descriptive, historical, and cartographic methods conducted based on used Geographic Information System to explore existing and future urban expansion trends in Jerusalem - Ramallah region as a case and model in the Palestinian urban environments. The result showed how the political instability conditions effected strongly on the urban development process and expansion in the Occupied Palestinian Territories. Therefore, this study will improve our Knowledge in the urban development research context about the relationship between the urban development and the political transformations. Palestinian policy makers and planners, as well as Palestinian planning organizations at different levels need to put more efforts to prepare of the regional, sub-regional, and master plans for all Palestinian localities and regions especially in the OPT, in the conflict and sensitive areas such as Jerusalem -Ramallah region. This study recommend to adaption a new planning ideas and strategies to face the Israeli physical planning in the Palestinian urban environments like compact communities and principles of smart urban growth.

Copyright©2016, Samer Raddad and Narimah Samat. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Urban development, expansion, and Land use changes in the urban environments are a global phenomenon, by 2050, urban population in the world will increase to be more than 6.6 billion inhabitants and they will living with less than 1% of the world land surfaces (Peng *et al.*, 2005; United Nations, 2008; Schneider *et al.*, 2010). The loss of farmland, affects local climate, fragments habitats, and threatens biodiversity were the most important impacts of conversion the earth land to urban areas (Seto *et al.*, 2011).

*Corresponding author: Samer Raddad

¹Urban Sustanability Development Research Group, Al-Quds, University, Jerusalem, Palestine Therefore Land cover and land use changes are one of the real and important challenges that the world area facing. Identify various socioeconomic and environment problems need to more understanding of land cover change process, (Pelorosso and Boccia, 2009). Various approaches need to be undertaken to improve our knowledge about current and future conditions of our urban environments through an understanding and predicting the drivers, process, and consequences of urban expansion trends in order to protect our environments (Al-Awadhi, 2007; Amy, 2006; Charles and Nancy, 2005). Political instability is one of most important drivers that effecting on the land cover/land use change and urban expansion, especially in the areas that faced the political problems and wars.

Areas such as eastern Germany, Czech, and South Africa impacted strongly by political factors that effected on the distribution of people and urban development process and form (Nuissl and Rink, 2005; Saff, 1996). Also, Urban land use form in Shijiazhuang-China during 1950s effected by Japanese military walls that constructed during the Japanese occupation period (Xiao et al., 2006). Urban Development and expansion in Amman- Jordan impacted directly by the political transformations and wars in Palestine 1948 and 1967 as well as second Gulf war in 1991, Amman city witness high rate of urban expansion and development as a result of Political factor. (Potter and Nortcliff, 2009; Saleh and Al Rawashdeh, 2007). Urban development in Occupied Palestinian Territories (OPT) impacted strongly by Political Transformations during 20th century and early of 21th century. The political instability factor in OPT leaded to distortion of Palestinian urban form and effecting on future urban expansion and development. Therefore, this study aims to assess of urban development and planning in Palestine during the political transformation stages, as well as it aims to explore urban expansion trends under the geopolitical effects in Jerusalem - Ramallah urban region as a model in the Palestinian urban environment.

MATERIALS AND METHODS

This study conducts descriptive, historical, and cartographic methods. Urban development and political transformations evaluated based review of literature in the Palestinian urban planning context during the political transformation stages. Arial photo 2010 with spatial resolution 0.5x0.5 meter, used in the Geographic Information System (GIS) environment to digitize all the human communities that includes Palestinian localities and Israeli settlements as well as military campus and the separation wall in the study area. Observation, Visual interpretation, and GIS Technologies used to explore existing and future urban expansion trends in Jerusalem – Ramallah region as a case study area and model in the Palestinian urban environments.

Study area

Jerusalem and Ramallah study area located in the middle part of the West Bank (Fig.1) with an area 1340 km² and a Palestinian inhabitants of 454647. in this area while Jerusalem area including all Jerusalem governorate and Ramallah area involve three major cities which called Ramallah , Al Bireh , and Beituniya (PCBS, 2009). This area is religious, political, and administrative centre of the Palestinian in Occupied Palestinian Territories (OPT).

RESULT AND DISCUSSION

Political Instability and Urban Development in the Palestinian Territories The Palestinian Territories were under ottoman administration from 1915-1918; the ottoman government controlled all the Palestinian territories and divided them into administrative units called (wilayat and sanajek). The ottoman government set planning policies and laws like the management of states law in 1871 and the municipalities low in 1877 (Ishtayh and Habis, 2004. It sets permission of building systems in the cities and rules of low of land ownership for roads system and regional development. In this period the ottoman government emphasis on physical planning like roads and building systems especially in the cities (Khamaisi, 1997). The Palestinian Territories were under the British mandate from 1917- 1948. The first stage was military administration on all the Palestinian lands, the military authorities used ottoman laws in the planning system in this period, in the early stages of military occupation, in the second stage the military administration converted to mandate authority . many changes and events occurred in the British mandate stage that effected social and economic sectors in Palestine in this period the British authority started and established the national state for the Jews in Palestine based on the British governments promise to the Jews in 1917 (Balfour Promise).

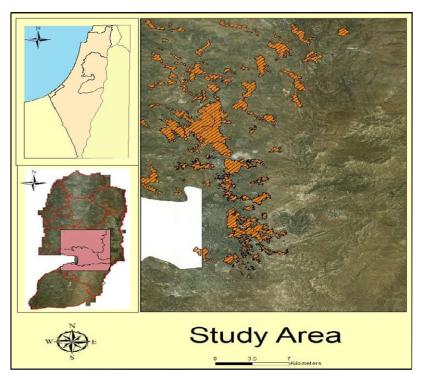


Figure 1. Study Area - Palestinian Localities

Table 1. classification of West Bank Land Based on Oslo II Interim Agreement (ARIJ, 2005)

Areas definition in Oslo II InterimAgreement:September1995	Percentage of the total area of the West Bank and Gaza strip.
The Israeli army has pulled out fully and Palestinians hold all responsibilities for internal security and public order	17.7% of the West Bank And 70.2% of the Gaza strip
Palestinians have full control over the civil administration and Israel continues to have overriding responsibility for security	21.3% of the West Bank
Palestinians have responsibility for civil life such as economics, health and education; however, Israel retains full control over security and administration related to territory	61% of the West Bank and 29.8% of the Gaza Strip

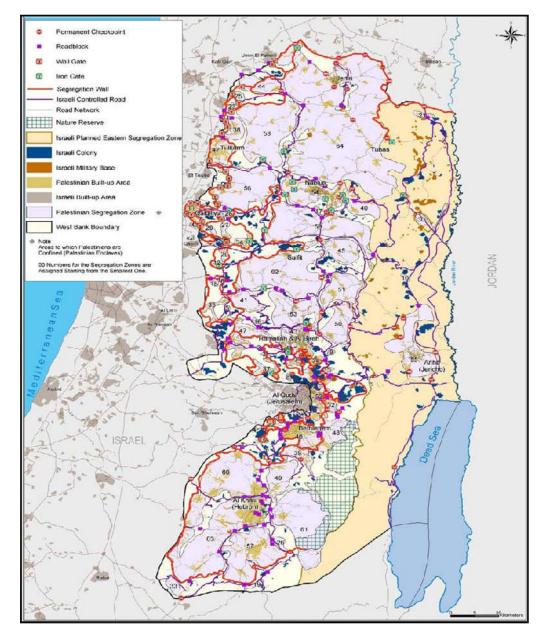


Figure 2. The West Bank Under Israeli Closure (ARIJ, 2004)

The British mandate authorities allowed the Jewish to immigrate to Palestine and build the settlements. (Ishtayh and Habis, 2004). Between 1932-1948 approximately 350000 Jews immigrated to Palestine (ATG.2005), The British mandate authorities in 1934 canceled the ottoman planning laws and set am new laws for the municipalities in Palestine and 1942 established the planning organization in Palestine that included three levels national, regional, and local.

High representation and town planning consultants are confirmation on regional and local plans, the town planning consultants name was Henry kandel who set the confirmation of the plans from 1935 to 1948. Some of these plans are working until now like the Jerusalem regional plan RJ-5 and the Nablus regional plan S-15. The major goal of all these plans is to restrict the growing of the Palestinian urban localities in Palestine Khamaisi, 1997).

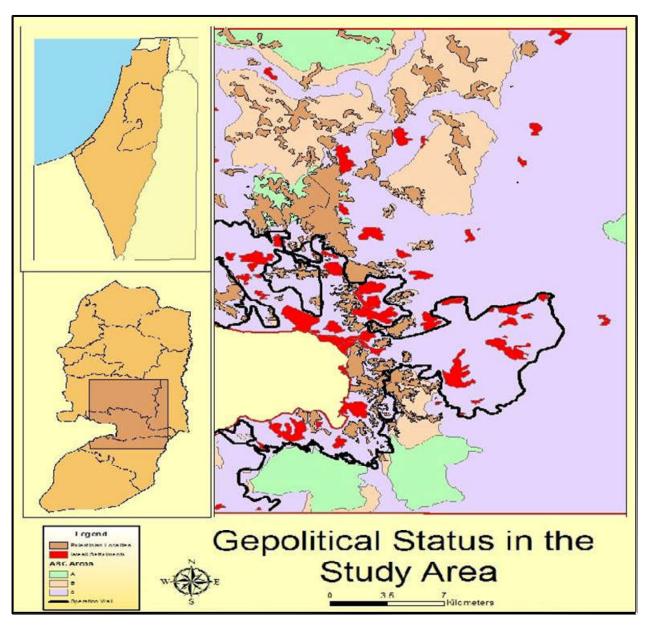


Figure 3. Geopolitical Status in Jerusalem and Ramallah Region

By the end of the British mandate stage in 1948 the Palestinian territories were divided to three main political areas (the areas called Israel, west bank, and Gaza strip). Israel established in 1948 on 77% of the total area of Palestinian Mandate and it was under the Jewish control, the Israeli government set new plan and laws based on their goals but the west bank that included East Jerusalem 21% of the total area of Palestinian Mandate was under the Jordanian administration from 1948-1967. In this period the Jordanian government issued in 1955 the cities organization law and in 1966 building organizing (79) (Halabi, 1997). The numbers of municipalities in the west bank during the Jordanian period 25 municipalities. The Jordanian authorities did not amend the brutish planning system and it was only prepared as a master plan and plans for Palestinian cities and urban areas but those plans did not meet the future needs of the population in the Palestinian urban areas. Actually the Jordanian administration completed the British planning system role in restricting the growing of the Palestinian urban localities in the west bank as well as it was

interested in the east bank more than west bank (Khamaisi, 1997). Gaza strip was under the Egyptians administration from 1948 to 1967, the Egyptian authorities continued with on the 1936 law with some adjustments in the law but without an effective role in the physical planning system in the Gaza strip. According to Samara (2005) the urban development policies. plans, and laws that were applied in Palestine were imported from other communities and systems and imposed on the Palestinian community without meeting the population's needs. After the occupation of the Palestinian Territories that included the West Bank and Gaza Strip by the Israeli army in 1967, the physical planning system was under the Israeli military administration. the Israeli Army with the planning organizations amended the laws and plans as well as set the new military laws in the Palestinian territories to achieve the political goals of the Israeli government .All of those law and plans aimed at the monitoring of the Palestinian urban development and control on more lands in the occupied Palestinian territories (Samara, 2005).

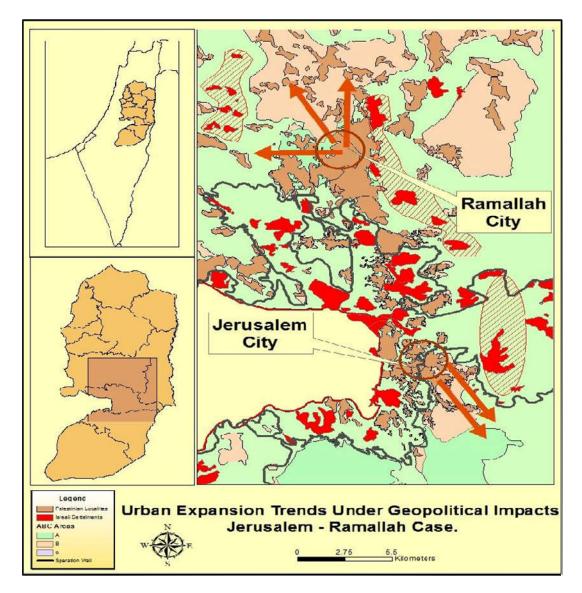


Figure 4. Future Urban Expansion under the political conflict in the study area

The Israeli land policy in the Palestinian Territories focused on land expropriation for the construction of Israeli colonies on Palestinian lands. Two primary goals guided the expropriation of Palestinian land for the colonization project: expansion of Israeli settlement and separation from the Palestinian population (Applied Research Institute-Jerusalem (ARIJ), 2004). Israel used military tools in the urban planning context to control Palestinian lands and the limitation of urban expansion of Palestinian localities through surrounding urban areas by physical tools and penetration into urban and regional areas to separate between the Palestinian localities (khamaisi, 2005). In 1993, the Palestine Liberation Organization PLO signed the "Oslo I" Accords accepting just 22% of the Mandate (Historical) Palestine that including the West Bank with East Jerusalem and Gaza Strip. These areas According to the Agreement will be a basis for the future Palestinian State with East Jerusalem as a capital of the Palestinian State. The "Oslo II" Interim agreement, signed in Washington in September The "Oslo II" Interim agreement, signed in Washington in September 1995, West Bank was divided into three areas "A", "B" and "C" with different control levels between the Palestinian and Israeli.

Table (1) shows distribution of areas "A", "B" and "C", has scattered the OPT into isolated cantons, which are physically separated from each other and from the Gaza Strip. It was also agreed upon to having a safe passage, linking the Gaza Strip with the West Bank, but the Israelis did not allow it to function. Today, Palestinian has semi- control over 39% of the West Bank land and 70.2% of Gaza strip. (ARIJ, 2005; ARIJ, 2011). Israel used colonies physical systems that including civil, agriculture, industrial, and military settlements as well as bypass roads system and segregation wall to achieve the Israeli Policies, plans and goals in the Palestinian Territories that aiming to more control on the Palestinian areas and limited the Palestinian urban expansion and development Figure (2). There are around 184 settlements in the West Bank. Total of Israeli settlements area in the west bank increased from 77, 6 Km² in 1989 to 134,3 km² in 1997 to 177, km² in 2003 (ARIJ, 2004). According to ARIJ, (2011) Israeli settlements with military bases occupied 535 km² of the area C (3456 km²) while the Palestinian built up area cover only 55 km² as well as, Israeli settlements increased more than 600% during 20 years since 1991 in the Bank. Therefore, we can note Israeli strategy and practices to more control in the area C and destroy any chance to establish the future Palestinian state. Israel Bypass roads are used by the Israelis to link colonies with each other and with Israel, The construction of bypass roads commonly occurs along the perimeter of Palestinian built- up areas. These roads are of course under Israeli control and entail a 50 to 75 meter buffer zone on each side of the road in which no construction is allowed. The construction of these bypass roads required the confiscation and destruction of approximately 87 km² of Palestinian lands most of which is agriculture areas as well as it cut the Palestinian areas into 64 homelands in the west bank (ARIJ, 2004). Today, Palestinian are denied access to most of bypass roads network with 824 km in the West Bank (ARIJ, 2011). As a result, these roads carve up the Palestinian areas into isolated ghettos and often deprive Palestinians of vital agricultural land and limit of Palestinian urban expansion in the west bank.

The Israeli Government started on the 16th of June 2002 the construction of a massive Segregation Wall between the West Bank and Israel, the Segregation Wall consists of 8-12 m high concrete partitions with military watchtowers with 250 m intervals (ARIJ, 2004). On April 30, 2006, Israel creates a new plan to create a new route of segregation wall in the West Bank. New route will run on 725 km in total. The Israeli occupation is still main factor, which has had a direct impact of the planning process in the occupied Palestinian Territories (khamaisi, 2006). According to the Ministry of Planning and International Cooperation (MOPIC) both rural and urban areas are in need of development after 30 years of occupation:

"The Israeli territorial strategies of unrealistically limiting border expansion of cities and villages has overloaded infrastructure and increased population density in the built-up areas. It has also translated to the random, unplanned, and unlicensed construction of houses and urban sprawl. Furthermore, it has contributed to rural-urban migration by people who are unable to find housing in the rural areas" (MOPIC, 1998)

Consequently, the political factor is major driving force which affected on the urban development process and urban expansion trends in the Palestinian Urban Environment. Hence, this study will focuses on the East Jerusalem and Ramallah cities as a model on the relationship between the urban expansion trends and the political instability in the OPT.

Urban Expansion Trends in Jerusalem –Ramallah Region

Jerusalem and Ramallah area witnessed geopolitical changes during occupation years as well as it impacted by the political transformations that occurred in the Occupied Palestinian Territories since 1967 until today. The Study Area extent on 1340 km2 with 23.7% of the west bank area as well as it extended on four districts land Jerusalem, Ramallah, Bethlehem ,and Jericho (Figure 3). This study area included 105 Palestinian localities that extended on 98.5 km² with 376900 people (PCBS, 2008). While the Israeli settlements which involved cities and villages as well as military campus and industrial areas was 78 localities that occupied 52 km² with 153192 settlers (ARIJ, 2014). Jerusalem city is the capital and heart of the Palestinian state, as well as it has a great religion, culture, and political views in the heart and mind of

the Palestinian .Furthermore, in 1993 Palestine Liberation Organization (PLO) signed the peace agreement with Israel and accepted 22% of Mandate Palestine area that including west bank that including East Jerusalem city, as well as Gaza strip. Consequently, the official and popular Palestinian views consider the East Jerusalem city as a capital of the future Palestine state. Despite the fact that Israel accepted and signed the peace agreement with PLO, East Jerusalem city still under full Israeli military occupation, why? Because the vision, policy, and practise of Israel Governments in the Jerusalem city, especially in East Jerusalem city is a different view. Israel aimed from the first days of occupied the west bank that including East Jerusalem city in 1967 to Israelis the East Jerusalem city through unilaterally annexed the East Jerusalem city to Israel state after war 1967, as well as increasing the Jerusalem municipality boundaries (Figure 3) from 6.5 km 2 to 71 km2 to involve 28 Palestinian localities (ARIJ, 2006). Furthermore, Israel governments applied many colonization projects during the occupation years to Israelis the East Jerusalem city through applied occupation policies and practice in the city, such as confiscating Palestinian lands, building the Israeli settlements and expanding it, demolishing Palestinian houses, razing lands, isolating the East Jerusalem from the West Bank by constructing the bypass roads and segregation wall (Figure 2). All of Israeli occupation policies and practices impacted on the East Jerusalem urban form and expansion trends, because these practices limited the normal expanding of the Palestinian localities and cut the spatial joining them. On the other side, Israel allows and promote the expansion and development process in the Israeli settlements at urban and pre-urban areas of the East Jerusalem city. Consequently, Israeli colony spatial system leaded to Isolate the East Jerusalem city from the west bank and cut the geographical connection between the Palestinian communities.

Ramallah city is one of major cities in the West Bank. After the establishment of the Palestinian Authority in 1995, Ramallah city become centre of the political and administrative in the West Bank, because most of the political, economic, and administrative Palestinian organizations are cantered in Ramallah area. Israeli Authorities prevent the formal Palestinian organizations working in Jerusalem city and forcing them move to locate in Ramallah city and located outside of the Jerusalem city borders. Israeli governments trying to destroy the Palestinian dream to establish a capital city for the Palestinian in the Jerusalem area through create a new geopolitical status in Jerusalem -Ramallah region as shown in (Figure 2) and force them to change their capital physically. Figure (4) shows distribution of the Palestinian localities and the Israeli settlements as well as separation wall in the study area. We can note future urban development and expansion in East Jerusalem and Ramallah cities under the new geopolitical status. In East Jerusalem case we can note how the separation wall surrounding the Israeli settlement in the east and how the separation Which give all of these settlements more area to expand and joining them spatially together, as well as joining them directly with the west Jerusalem area by bypass roads system. In another side the separation wall is closed to the Palestinian localities. The separation wall prevents any possibility to normal expansion and geographical joining between the Palestinian localities, especially between Ramallah north and the Jerusalem city

south. No chance for the Jerusalem city to growth and expand to north, west, and east directions, only south and southeast direction can the Palestinian to expand with limited area. Therefore, we will see more and more increase of population and urban intensity rates within the Palestinian localities in East Jerusalem area and push the Palestinian Jerusalem residents to move outside of the city and establish informal settlements in the suburban areas in north and east of the city such as kufer Agab. Samirames, and Anata areas. These areas witnessed high increase building rates with very high population intensity without legally and planned housing and services. This situation leaded to many and huge socioeconomic and environmental crisis in the urban and suburban areas in the Jerusalem city. Also, we can note Ramallah city cannot extent into east and south directions because affected the distribution of Israeli settlements and separation wall. The geopolitical status push the Palestinian in Ramallah city to extent only into the west and north directions, but this expansion will face Israeli settlement zone in the west areas of the Ramallah area.

Conclusion

The urban planning as a scientific aspect aims to improve the quality life in the urban environment and contribute positively to facing the urban problems and challenges. But unfortunately in Occupied Palestinian Territories the view is different while Israel military authorities used the planning concepts, laws, policies, and practice to more control on the Palestinian lands. The Israeli physical planning in the study area used to increase of the Israel settlements and sellers in the Jerusalem urban area. Also, the Israeli physical planning aims to more control on the existing and future Palestinian urban Expansion and development to achieve Israeli political goals that emphases on the Jerusalem city a capital of Israel state and destroyed future Palestinian dream to establish a capital city in the Jerusalem city. Ramallah city become a temporally capital of the Palestinian and centre for the most of the governments and non-governments organizations a result of the Israeli policies and practice. Political transformations during 20th century helped Israeli military authorities to use the planning tools to achieve political goals in the Occupied Palestinian Territories. This study showed how the political instability conditions effected on the urban development process and expansion in the Occupied Palestinian Territories. Jerusalem - Ramallah region is only a model and we can explore many cases in the Occupied Palestinian Territories like this situation and impacts. Therefore, this study will improve our Knowledge in the urban development research context about the relationship the urban development and the transformations. Also, it will support of the Palestinian urban planners and managers and promote them to more understanding and awareness about the urban expansion trends in the OPT. Palestinian policy makers and planners, as well as Palestinian planning organizations at different levels need to more efforts to prepare of the regional, sub-regional, and master plans for all Palestinian localities and regions in the OPT, especially in the conflict and sensitive areas such as Jerusalem -Ramallah region. This study recommend to find a new planning ideas and strategies to face the Israeli physical planning in the OPT like compact communities and principles of smart urban growth. These planning concepts and ideas

need to more research efforts from Palestinian Planners and researchers to exam and modified it to make the Palestinian urban environments more livable and sustainable under the political instability.

REFERENCES

- Al-Awadhi, T. 2007. Monitoring and Modelling Urban Expansion Using GIS and RS: Case Study from Muscat, Oman. Paper presented at the Urban Remote Sensing Joint Event.
- Alternative Tourism Group (ATG) 2005. Palestine and Palestinian. Beit Sahour.
- Amy, R. 2006. Urban Sprawl: A Growing Concern for Agriculture. *Journal of Natural Resources and Life Sciences Education*, 35, 152.
- and Future Prospects. Paper presented at the 2nd Arab forum on management of large cities.
- Applied Research Institute-Jerusalem (ARIJ) 2006. Geopolitical Status in Jerusalem Governorate. Jerusalem.
- Applied Research Institute-Jerusalem (ARIJ) 2007. Status of the Environment in the Occupied Palestinian Territory, Jerusalem.
- Applied Research Institute-Jerusalem (ARIJ) 2011. Status of the Environment in the Occupied Palestinian Territory-A human rights based approach, Jerusalem.
- Applied Research Institute-Jerusalem (ARIJ), 2005. The Status of Environment in the Occupied Palestinian Territory. Jerusalem.
- Applied Research Institute-Jerusalem (ARIJ). 2004. Impact of Urbanization on Land use and Local Communities in the West Bank, The Project Final Workshop Technical Report, Jerusalem.
- Charles, L. R. and Nancy, S. J. 2005. The Environmental, Social, and Health Dimensions of Urban Expansion. Population and Environment, 26(6), 505.
- Cooperation (MOPIC). 1998. The National Physical Planning Policies, Ramallah.
- Halabi, U. 1997. Planning and Zoning Laws in Palestine .Institute of law, Birzet Unversity
- Ishtaih, M. and Habis, U. 2004. Municipalities and local governments organizations in Palestine. Palestinian Economic Council for Development and Reconstruction. Ramallah.(In Arabic)
- Khamaisi, R. 1997. Institutionalizing planning system in Palestine, reconstruction of Palestine, Rural and Urban Development, Center for Arab Unity Studies, Beirut.(in Arabic).
- Khamaisi, R. 2005. Urban Planning Policies in the Jerusalem Area. Engineering conference. Bierzet University. Ramallah, Palestine.
- Khamaisi, R. 2006. Planning and developing a new Palestinian urban Core under conditional Israeli Occupation: Ramallah City Paper presented at the 42 end International Society of City and Regional Planners Congress, Turkey. Ministry of Planning and International
- Nuissl, H. and Rink, D. 2005. The [']production' of urban sprawl in eastern Germany as a phenomenon of post-socialist transformation. Cities, 22(2), 123-134.

- Palestinian Central Bureau of Statistics PCBS 2009. Population, *Housing and Establishment Census* 2007. Ramallah.
- Palestinian Central Bureau of Statistics, 2008. Population, Housing and Establishment Census 2007 Census Final Results in The West Bank. Ramallah Palestine.
- Pelorosso, R., Leone, A. and Boccia, L. 2009. Land cover and land use change in the Italian central Apennines: A comparison of assessment methods. Applied Geography, 29(1), 35-48.
- Peng, G., Li, J., Chen, Y. and Wu, J. 2005. Dynamic research of Changde City's expansion changes based on remote sensing and GIS. Paper presented at the Geoscience and Remote Sensing Symposium, 2005. IGARSS '05. Proceedings. 2005 IEEE International.
- Potter, R. B., Darmame, K., Barham, N. and Nortcliff, S. 2009. "Ever-growing Amman", Jordan: Urban expansion, social polarisation and contemporary urban planning issues. *Habitat International*, 33(1), 81-92.
- Saff, G. R. 1996. Urban change during the political transition in South Africa: The case of Cape Town. Unpublished Doctoral dissertation, The State University of New Jersey (1996).

- Saleh, B. and Al Rawashdeh, S. 2007. Study of Urban Expansion in Jordanian Cities Using GIS and Remoth Sensing. *International Journal of Applied Science and Engineering* 5(1): 41-52.
- Samara, A. A. (2005). Management of Physical Planning in the Occupied Palestinian Territories: Existing Challenges
- Schneider, A., Friedl, M.A. Potere, D. 2010. Mapping global urban areas using MODIS 500- m data: New methods and datasets based on 'urban ecoregions'. *Remote Sensing of Environment*. 114(8)1733-1746.
- Seto, K. C., Fragkias, M., Güneralp, B. and Reilly, M. K. 2011. A meta-analysis of global urban land expansion. PloS one, 6(8).
- United Nation. 2008. World Urbanization Prospects The 2007 Revision. New York.
- Xiao, J., Shen, Y., Ge, J., Tateishi, R., Tang, C. and Liang, Y. *et al.* 2006. Evaluating urban expansion and land use change in Shijiazhuang, China, by using GIS and remote sensing. Landscape and Urban Planning, 75(1-2), 69-80.
