



Safaa Hamada

Towards the Development of  
Regional and Urban planning in the  
Palestinian Region of the Jordan Valley.

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Area of knowledge in Geography and Regional Planning

Work developed under the supervision of:  
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January 2017


## STATEMENT OF INTEGRITY

I hereby declare having conducted my thesis with integrity. I confirm that I have not used plagiarism or any form of falsification of results in the process of the thesis elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

University of Minho, 26/01/2017

Full name: Safa' Abd-Aljaleel Kamel Hamada

Signature: 



*Dedicated to the memory of my late father*



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## **ABSTRACT**

The urban and regional planning for the Jordan Valley area aims to achieve integration between the communities and centres in the region and achieve balance in development regarding population distribution and services. In order to do so, plans and programmes must be put forward to interlink the national plans and implement them on the local and regional levels to make a connection between the national and local plans. The regional plan for the Jordan Valley area also aims to approach the various development issues in order to put forward appropriate solutions for them according to a future vision for the development of the region that is set up through sectoral policies and development programmes and plans that lead and direct the development process during the coming years.

In order to reach the stage of preparing the sectoral plans for the development of the Jordan Valley region, we studied the geographical reality of the region regarding the natural and human geographic characteristics. In addition, we investigated the planning reality in Palestine and the Jordan Valley region and determined the most significant obstacles and problems that face urban and regional planning. Furthermore, we studied the current political situation in the Jordan Valley region which is an occupied territory by Israel and most of its lands are under the total control of the Israeli occupation in respect of security and civil aspects. We also studied the planning experiences in some neighbouring countries to Palestine such as Jordan and Egypt. In addition, the modified Delphi and semi-structured interview methods were selected for this research to provide triangulation and further validation and reliability for the research.

The proposals for promotion of sectoral plans for the Jordan Valley region were prepared according to a methodology based on updating and analyzing the present situation data putting forward the future scenarios for the region, and formulating the future trends in all the development sectors through analyzing the modified Delphi study, the perspectives of the planning experts who participated in the study, and the researcher's study of the necessary needs to develop the various sectors. These aspects are explained in the fifth chapter of the present study. The study reached the conclusion that the Jordan Valley region needs to set up efficient applicable regional plans in order to develop all the planning sectors.

The most influential factors that affect the development of planning in the Jordan Valley region and in the Palestinian territories are the political situation and low population density. The study also reached the conclusion that the services and infrastructure sector is the most important since it is the

sector which faces the most obstacles and needs development, followed by the educational and health sectors in the second place.



## RESUMO

O planeamento urbano e regional para a região do Vale do Jordão visa alcançar a integração entre as comunidades e os centros da região e alcançar equilíbrio no desenvolvimento da distribuição da população e dos serviços. Para tal, é necessária a elaboração de uma estratégia que permita a articulação e complementaridade entre planos desenvolvidos a vários níveis (local, regional e nacional) e promova a sua implementação a nível local e regional. O plano regional para a região do Vale do Jordão também tem como objetivo incorporar as diversas questões de desenvolvimento por forma a propor soluções adequadas, de acordo com uma visão futura para promoção económica, social e ambiental da região, estabelecida através de políticas setoriais e programas capazes de direcionar o processo de desenvolvimento nos próximos anos.

Por forma a atingir a etapa de elaboração dos planos setoriais para o desenvolvimento do Vale do Jordão, analisámos a realidade geográfica da região relativamente às características geográficas naturais e humanas. Além disso, investigámos a realidade do planeamento na Palestina e na região do Vale do Jordão e determinámos os principais obstáculos e problemas que enfrenta o planeamento regional e urbano. Além disso, estudámos a situação política atual na região do Vale do Jordão, que é um território ocupado por Israel, estando a maior parte do território está sob o controle total israelita, nomeadamente em matéria de segurança e aspetos civis. Também abordámos as experiências de planeamento nalguns países vizinhos da Palestina, como a Jordânia e o Egito. Além disso, os métodos de entrevista Delphi modificados e entrevistas semi-estruturadas foram selecionados para esta pesquisa para permitir estabelecer triangulação e validação adicional e confiança para a pesquisa.

As propostas para a promoção dos planos setoriais para a região do Vale do Jordão foram preparadas de acordo com uma metodologia baseada na atualização e análise dos dados da situação atual, apresentando as perspetivas futuras para a região e apresentando os cenários nos diversos setores de desenvolvimento, através da implementação da metodologia Delphi, da análise das perspetivas dos especialistas em planeamento que participaram do estudo, e da análise efetuada acerca das necessidades ao nível dos vários setores. Através deste estudo chegámos à conclusão de que a região do Vale do Jordão precisa estabelecer planos regionais eficientes e aplicáveis para desenvolver todos os setores de planeamento.

Os fatores mais influentes que afetam o desenvolvimento do planeamento na região do Vale do Jordão e nos territórios palestinianos são a situação política e a baixa densidade populacional. O estudo

também chegou à conclusão que o setor de serviços e infraestruturas é aquele que apresenta uma maior necessidade de desenvolvimento, já que é o setor que enfrenta os maiores obstáculos, seguido pelos setores da educação e saúde.

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## **LIST OF SYMBOLS, ABBREVIATION, NOMENCLATURE**

**B.C:** Before Christ.

**Btselem:** The Israeli Information Centre for Human Rights in the Occupied Territories.

**CLC:** The CORINE Land Cover.

**CORINE:** Co-ordination of information on the environment.

**DBMS:** database management systems.

**DET:** Trade and environment database.

**DN:** Digital number.

**DSS:** decision support systems.

**ECE:** Economic Commission for Europe.

**ENRPP:** Emergency Natural Resource Protection plan.

**GDP:** Gross domestic product.

**GIS:** Geographical information system.

**Governorate:** An administrative division of a country.

**IT:** Information technology.

**Km<sup>2</sup>:** Square kilometer.

**MCM:** million cubic meters.

**MCU:** minimum cartographic unit.

**MOLG:** Ministry of local government.

**MOPIC:** Ministry of Planning and International Cooperation.

**OCHA:** Office for the Coordination of Humanitarian Affairs.

**PCBS:** Palestinian Central Bureau of statistical.

**PLO:** Palestine Liberation Organization.

**RS:** Remote sensing.

**SDI:** Spatial Data Infrastructure.

**SPSS:** Statistical Package for Social Sciences.

**UNRWA:** United Nations Relief and Works Agency.

**USGS:** US Geological Survey System.



## **INTRODUCTION**

Regional and urban planning in its comprehensive concept attempts to accomplish numerous objectives including achieving social justice, optimal exploitation of natural resources, urban growth averages for the various development sectors, improving the living standards of the population, taking part in putting forward suitable and objective solutions to urban, economic, social, demographic and environmental problems.

In the present study, we attempted to define some proposals to promote the regional development of the Jordan Valley, taking into consideration the different sectors of activity, such as education, services, tourism and the youth, by adopting a diversified set of scientific approaches and methods. In order to achieve this, we involved experts and specialists in the field of planning in Palestine in order to support construction of the plan on relevant scientific bases that enjoy significant research credibility. To guarantee that the plan is transferred to implementation by decision-makers, the objective of the present study is not merely for research purposes, but it is also for practical purposes that can be implemented in the real world since the region is considered one of the most important natural regions in Palestine.

The Jordan Valley is a sparsely populated region with vast, uninhabited areas. The considerable size of the Jordan Valley and its relatively sparse population make it the largest land reserve for future development of the West Bank. Urban centres could be developed in the Jordan Valley to address population growth in the West Bank; its fertile land is crucial for the production of food for the West Bank's growing population and for turning a profit on agricultural exports; and its extensive uninhabited areas make it attractive for development in terms of energy, infrastructure, and industry.

Due to various arguments, Israel does not allow Palestinians to use most of the Jordan Valley and restricts their access to the Jordan Valley's abundant water resources and refuses to draw up plans for Palestinian villages located there. Among the objectives of this policy, under which Israel exploits the area's resources and reduces Palestinian presence there to a minimum, is the control of the area by Israel and the de-facto annexation of the Jordan Valley to Israel. Ultimately, the policy is designed to set the stage for perpetuating Israel's presence in the area in the long run, even in the framework of a formal status agreement (B'Tselem, 2011b).

The urban development strategy in the Palestinian Jordan Valley region is considered a planning approach that paves the way to achieve a better future. At the same time, it constitutes the method

that helps the municipality boards in the region to make the appropriate decisions in order to achieve sustainable development for the local communities. Planning experts were involved in taking part in the process of determining the development priorities and trends in the region. It should be emphasized that the principal outcome is the presentation of proposals that may contribute to a development plan, integrate the different sectors both at an urban and regional level, enabling the decision-makers in the region to achieve a future vision and provide better lives for its inhabitants.

## **a. BACKGROUND**

### **a-a. Research problem**

The planning process in Palestine has been facing numerous obstacles and restrictions, the most important of which is the successive occupation of the region that hinders the Palestinians from taking the initiative of planning for their future. Consequently, the planning process has taken into consideration neither the needs of the region's population nor the nature of the area. Furthermore, the citizens did not take part in the planning process so that they do not feel that they belong to the planning process or support its success.

The Jordan Valley Region is considered one of the Palestinian regions that suffers from problems, the most prominent and important of which is the current political situation. Most of the area (about 95% of the Palestinian lands in the region) is still under Israeli control. The significant importance of the location of the Jordan Valley is increased due to its location at the borders. Therefore, the colonial Israeli attack is intensified, in the form of land confiscation and setting up more and more colonial settlements. The measures of the Israeli occupation policies have led to the dismemberment and marginalization of the Palestinian communities in the region. These measures include establishing colonial Israeli settlements, closed military areas, and shooting range areas on Palestinian land in order to put both the Palestinian people and the land under their control, block their future development, and loot their natural resources so that the desired development in the region would be prevented. In the face of all these challenges for the region, all efforts must be exerted by everybody in order to set up plans to develop the region.

In addition, the area is suffering from random, bad urban organization, especially in the shadow of the lack of structural and regional plans that determine the development and use of the land in most

of the demographic concentrations in the Jordan Valley. Furthermore, the area suffers from the severe decrease in population density. The region is also suffering from non-exploitation of its natural, physical and human resources for its development. Furthermore, studying the potentials of urban development of the Palestinian region of the Jordan Valley has not received sufficient concern from researchers. For all these reasons, planning must take up a new trend to approach these problems and contribute to creating a development environment in which the local communities take part side by side with all the private and public sectors. Attempts must be made in order to raise the awareness and overcome the obstacles that face the Palestinian development efforts in general in all the regions and governorates including, in the main, those obstacles resulting from the Israeli occupation measures that consist of besieging, blockades, colonial expansion, constructing the apartheid wall, and others. Therefore, we find it suitable to carry out this study in order to discover the possibilities of carrying out urban and regional development in the Jordan Valley region in parallel with the urban axis that exists in other Palestinian regions so that it may constitute a geographic study in urban and regional planning that may help decision-makers and other researchers in their future studies.

#### **a-b. Previous Studies**

The research on planning in Palestine is recent and not very abundant, conditioned by the political situation that has prevailed. However, several studies have been addressed to this subject and have contributed to the discussion about the problems and constraints that characterize the land management and its development, as well as some initiatives to promote the development and implementation of urban and regional plans.

Some studies were carried out to investigate the urban growth in a number of cities during various historical phases. Some of these studies dealt with a complete city while others concentrated on a part of a city. Other studies dealt with the economic growth due to how it impacts on the development of the country as a whole.

From the different studies, some were addressed to the subject of the analysis in this work.

A study carried out by Ziad Abdel Hadi Jawabreh, in 2001, evaluated the "Trends of Urban Development in North Aseera Town in the Light of Regional Relationship with Surrounding Population Concentrations". This research aimed to investigate and analyze the regional relationship between

North Aseera and the surrounding population concentration and identify the impact of this relationship and its effects on the urban development of the town. The study reached several conclusions and recommendations, including setting up a joint regional council that consists of North Aseera and neighbouring village councils in order to co-ordinate joint co-operation among such population concentrations and reassess provision of joint services and co-operation in the planning process. Rehabilitation of the transport network between North Aseera and neighbouring rural concentrations to shorten distances among them, on the one hand, the city of Nablus, on the other hand, so as to save the inhabitants of both effort and financial expense (Jawabreh, 2001).

Faraj Mohammad Hjab produced a work, entitled "Trends in Urban Development in the Region of eastern Nablus" in 2001. This study investigated the present and future urban development in the eastern part of the Nablus region in light of the available information and data. The main objective of the dissertation was to investigate and analyze the possibilities of development in Nablus towards the east, whether development of land that is located within the boundaries of the city or towards the population concentrations to the east of the city. The study also included some suggestions and proposals to direct urban development in this part of the region that may help to find proper solutions to the planning and urban problems that Nablus suffers from, in addition to satisfying the needs of the inhabitants of the local population.

The study showed that the eastern area of the Nablus region enjoys huge natural and human capabilities that encourage city development towards the east. The study concluded that the present planning of Nablus City, which is carried out in the absence of comprehensive perspective of the city's region, cannot supply the proper framework that would allow the city to develop properly, taking into consideration the needs and interests of the local population. Therefore, it has emphasized the necessity to prepare a general comprehensive plan for the city's region that includes future urban development of Nablus city and its suburbs within a framework of regional relationships with the surrounding demographic concentrations (Hjab, 2001).

In 2003 Asem Khamis developed a study on the "Characteristics of Urbanism and its relationship with constructed urban environment (Case study of Tulkarem Town)". This study discusses the characteristics of urban relationships with the constructed urban environment in Tulkarem town. It includes a brief discussion of the study area regarding its location and historical development. The researcher also discussed the city's master plans during various historical stages. The study area is divided into five sections. It also discusses the most important dimensions and characteristics that



played important roles in helping the area acquire urban or rural characteristics. The study also shows the dimensions that played an important role in the process of urbanism, which had a significant impact on the constructed urban environment, and how the economic dimension played a significant role in the urbanism process, followed by the dimensions of education, kinship, demography, and environment (A. Khamis, 2003).

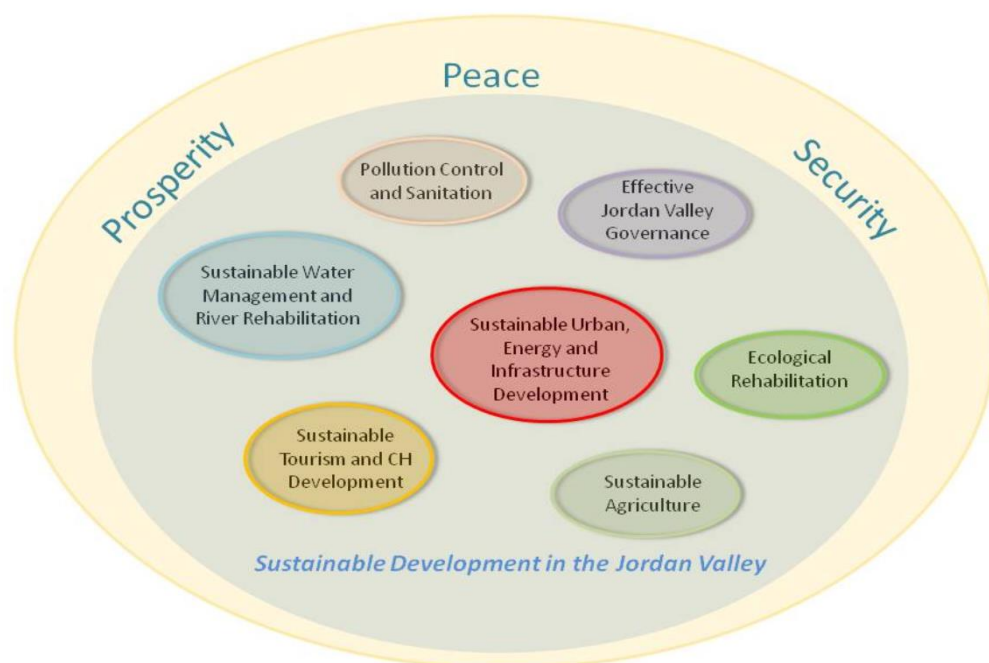
Masoud Ismael Al Hamouz published a work entitled "Trends of Development Planning of Nablus City in the Light of Proposed Strategy" in 2008. In this study, the author discussed a proposal to prepare a strategic development plan for the city of Nablus through investigating and analyzing the present situation of the city within the concept framework of strategic planning. Following this effort, a compatible vision of the city with strategies was formulated in order to attempt to achieve this vision, in addition to proposing an investment plan and an array of development projects that may achieve the proposed development strategies when applied. In its methodology, the study is based on descriptive, analytical and deductive methodologies. In addition, it used an array of instruments including interviews with people and experts and workshops that comprised a vital reference for the study. The study showed that the city's development priorities are concentrated in five basic developmental fields: the economic situation, the social situation, the institutional structure of the city, services, and infrastructure, and its urban structure and relationship with the surrounding region. The study showed that Nablus enjoys several opportunities and potentials, represented by its economic importance at both the national and regional levels, in addition to its importance at the tourism and civilization levels. The city faces some challenges and hardships, the most important of which are the challenges resulting from the arbitrary measures practiced by the Israeli occupation such as the lengthy economic blockade imposed on the city and the recurrent incursions that have resulted in the severe decline in income accompanied by soaring levels of unemployment and poverty. The study highlighted the importance of the metropolitan Nablus planning proposal as one of the basic instruments to achieve a large number of the proposed development strategies, overcome the problems that the city faces, and promote the planning process from the local to the regional level (Al Hamouz, 2008).

In 2014 The Jericho Master Plan was finalized and delivered to the Municipality of Jericho and MoLG (Ministry of Local Government of the Palestinian Authority), and this plan considered one of the development projects be funded and implemented jointly by the Italian Development Co-operation of the Ministry of Foreign Affairs and the Municipality of Jericho, the Ministry of Local Government of the Palestinian Authority and the Governorate of Jericho. The University of Ferrara supervises the scientific

and technical aspects of the project. In this plan, the researcher's suggested some strategies plans and in this plan the author used a set of planning tools that on one hand fully answer the need to preserve the archaeological, historic, cultural, landscape and natural heritage of Jericho, and on the other provide adequate solutions to properly plan the development of the area (Italian Development Co-operation, MoLG, & the Governorate of Jericho, 2010).

In 2015 EcoPeace Middle East published a work entitled, "Regional NGO Master Plan for Sustainable Development in the Jordan Valley". In this master plan, the main and overall objectives are promotion of peace, prosperity, and security in the Jordan Valley and the region as a whole. This master plan for the Jordan valley also focuses on the national water balances of Palestine, Jordan, and Israel in particular. In the NGO master plan the researchers have carried out studies concerning the Jordan valley in terms of the current situation and the need to develop the Jordan valley.

The objectives for sectoral development were proposed for each sector, with special emphasis on sustainable tourism, sustainable water management and river rehabilitation, pollution control and sanitation, sustainable urban energy and infrastructure development, ecological rehabilitation and sustainable agriculture (EcoPeace Middle East & Royal HaskoningDHV, 2015) (Figure 1).



**Figure 1: Strategic Planning Objectives (EcoPeace Middle East & Royal HaskoningDHV, 2015).**

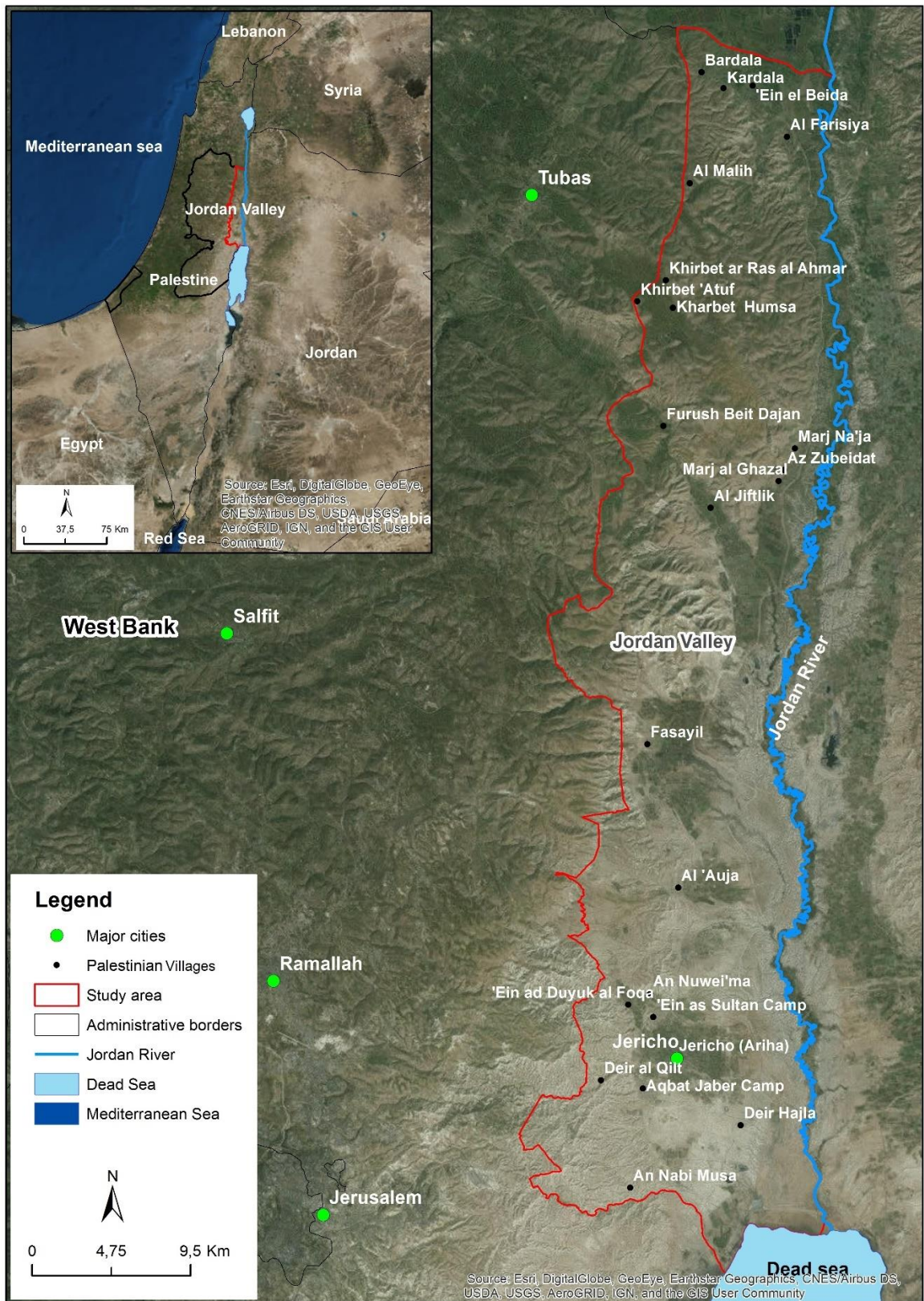
## **b. PRESENTATION OF THE STUDY AREA**

The Jordan Valley extends from Lake Tiberias, located at 212 m below sea level to the north of the Dead Sea, located at 400 m below sea level (Figure 2). It is located between the Jordan River in the east and the mountains of mid-Palestine (Nablus, Jerusalem, and Hebron) in the west (Yousef, 2000).

Astronomically, the study area is located between longitude 35.26.24 – 35.40.06 to the east of the Greenwich Line, and latitude circles 31.45.24 – 32.32.05 to the north of the Equator.

The Jordan valley region is divided into three areas:

- The Northern Aghwar, which includes Ein el Beida, Bardala, Kardala, Marj naja, Al Farisiya, Al Malih, Khirbet ar Ras al Ahmar, Khirbet Atuf, Kharbet Humsa, zbeadat, and Marj ghazal. The population of this area, according to the estimate from the Central Bureau of Statistics in 2011, is about 6041 inhabitants (Palestinian Central Bureau of Statistics, 2008).
- Central Aghwar, which includes Fasayel, Jeftlik, and Froushbeitdajan. The population of this area, according to estimates from the Central Bureau of Statistics in 2011 is about 6124 inhabitants (Palestinian Central Bureau of Statistics, 2009a, 2009b).
- Southern Aghwar, which includes Jericho, An Nuweima, 'Ein ad Duyuk, 'Ein as Sultan camp, Aqbat Jabber Camp, Deir al Qilt, Deir Hajla, An Nabi Musa and Al 'Auja. The population of this area, according to estimates from the Central Bureau of Statistics in 2011 is about 38491 inhabitants (Palestinian Central Bureau of Statistics, 2009a).



**Figure 2: Location map of the study area**

## **c. RESEARCH OBJECTIVES**

### **c-a. Main objectives**

The main objective of this study is to contribute proposals to develop regional and urban planning in the Jordan Valley region. In particular, the present study aims at achieving an array of objectives, the most important of which are as follows:

- To study the present situation of the region including the geographic, natural, and human characteristics.
- To study the political reality and the Israeli occupation policies.
- To study the urban and regional planning.
- To study the use of land and land covers.
- To analyze the region reality through determining the problems and needs for every planning sector.
- To determine the development priorities of the region.
- To determine the strategies that help in achieving the urban development in the Jordan valley region as a whole.

The study also attempted to provide as much as possible of the spatial, geographic, and statistical information about the Jordan valley region in order to benefit the planners and decision-makers in preparing sound plans for sustainable development in the study area.

### **c-b. Rationale of the Study**

The importance of the present study lies in the urgent necessity to study the current urban reality in the Palestinian region of the Jordan Valley, and determining the development potentials in it so that it may become a developed region from an urban perspective like the other Palestinian regions. It should be noted that this region is marginalized and overlooked in the urban development plans due to the Israeli occupation of the region since 1948.

Specifically, this study will investigate the urban areas scattered in the region and the potential for expanding and developing these sectors.

In addition, the importance of this study lies in analyzing the various geographical aspects of the region and their impact on urban and regional planning such as the natural and human characteristics of the region.

This study will be the first to investigate the Palestinian region of the Jordan Valley completely from the perspective of the urban and regional planning and the potential for its development.

### **c-c. The difficulties that the researcher has faced**

The researcher has faced several difficulties in obtaining data relating to ancient time periods because Palestine came under occupation by many occupation forces. Therefore, much of the old data has been lost because it was not kept by the related departments of the Palestinian National Authority, such as the data relating to the period of the British mandate or the Jordanian administration.

In addition, the researcher faced problems due to the lack of political stability since many Palestinian departments and organizations such as ministries and land research centres were exposed to Israeli military operations. Many of those departments and organizations were damaged or devastated through the demolition or bombardment operations, and so much of the archive material and equipment has been lost. On the other hand, some of them were stolen by the Israeli occupation forces, as in the case of Al-Aqsa Uprising from 2000 – 2005.

In addition, the researcher has faced difficulties in obtaining some plans that are designed for territories under Israeli occupation because they were prepared and implemented by departments and ministries without co-ordination and co-operation with other departments and ministries, such as “emergency plans”. These plans have been adopted for the purpose of protecting some Palestinian land and facilitating the lives of the people living in those territories, such as construction of schools, health centres, and housing areas, which are not accessible and easily available.

Another significant difficulty that the researcher has faced is the problem of reaching the study region continuously since almost all the research period was developed in Portugal rather than Palestine. Therefore, we had only a few weeks during these three years to do field work and to contact directly with those responsible for planning in the study area, resulting in an important limitation to the present work.

Added to this fact, a major constraint to the study and mainly to the field work was the difficulties in collecting data in the field, because the Israeli forces do not allow the Palestinians to travel to all the places in the Jordan valley region, such as colonial settlements and closed military areas. Consequently, many parts of the territory studied were impossible to reach because the access is prohibited for Palestinians.

One of the difficulties that most affected me during this period was being away from my family, even if their presence and their support were always present.

#### **c-d. Research Hypothesis and Research Questions**

This section addresses the research areas of inquiry and the specific questions examined in the research work, the methodology, and the research scope. In order to achieve the objectives of this research, three research questions were posed.

The research questions fitted into three distinct, but inter-related knowledge areas, namely, the study of the present situation in the Jordan valley from different points of view, such as the land use, land cover, the urban and regional planning situations, the needs and problems of developing sectoral plans; and decision-making support for urban planning scenarios in the Jordan valley region. The research questions were provided in sets to cover the following broad inquiries:

- **Factors that have an effect on the urban and regional planning**

Research Question 1 (RQ1): What are the geographical characteristics in the Jordan valley region? What is the political situation? What is the situation of planning in the Jordan Valley region? What is the current land cover use in the study area?

- **The problems, challenges, and the needs to develop an urban axis in the Jordan Valley region.**

Research Question 2 (RQ2): What are the most influential problems and challenges that affect the planning process in the Jordan Valley region? What are the needs to apply sectoral development in the study area?

- **Overcoming the problems and assessing the future regional planning for the Jordan Valley region**

Research Question 3 (RQ3): How can we overcome the planning problems? How can we develop the sectoral plans in the Jordan Valley region? Which strategies and measures can we implement in order to promote development in Jordan Valley region?

#### **d. METHODOLOGY**

To conduct this study, various methodologies were adopted. The purpose of the study was to obtain a deeper understanding of the available factors and resources that would help the researcher to identify strategies and propose some guidelines for the urban planning process in Jordan Valley region.

To answer the study hypotheses and questions, several scientific research methodologies were performed by using the so-called mixed method approach since the research is the practice of discovering information that was not previously available (Nada, 2014).

The reason that made the researcher use more than one method to obtain data was the difficulty in getting all the information needed for the research by adopting the single method, because of the numerous political stages that have occurred in the study area during the passage of time, as shown by the researcher in Chapter 2. Moreover, the Jordan Valley region (Al-Aghwar) is still under the control of the Israeli occupation, which causes added difficulties to data collection.

In addition, the use of the mixed method approach enabled the researcher to obtain substantial data needed for the study in order to set up a comprehensive database for the urban and regional planning, not only for the present study but also for others. This is achieved by providing an important database for both the researchers and decision-makers in Palestine.

During this research we have selected three main approaches to gather, analyze and produce the necessary information:

- The collection of geographical and statistical data, the aerial photographs and satellite images of the study area, in addition to the field study, carried out by the researcher at various time periods during the research.
- The use of the geographical information systems and remote sensing in order to deduce spatial and geographic data.



- Adopting the qualitative research method by mixing the Delphi study, unstructured and semi-structured interviews.

We investigated the current situation of the Jordan Valley region (Al-Aghwar) from different perspectives, as shown in Chapter 2 of the present study, including the natural geographical characteristics such as geology, climate, water resources, and others, by using the geographical information systems. A spatial geographic database was set up in order to produce maps and data related to the natural aspects of the region.

Furthermore, we studied the human and political geography of the region by using the statistics and the studies that approached the human geography of the region. We have set up the statistical database for the region's human aspects, including the population aspects according to the population and its concentration in the region. In addition, the political situation of the region was addressed regarding the political divisions according to the Oslo Agreements, the policies of the Israeli occupation and the colonial settlements in the region.

Moreover, the land uses in the region were studied by using the geographical information systems and remote sensing because the efficient use of modern techniques of information systems is considered a technical and analytical tool for planners and decision makers as well as those responsible for the management of the environment, population, and resources. The use of GIS decreases, to a large extent, the cost and speeds up decision-making to deal with various urgent physical and human problems. In addition, it supports the preparation of plans at a speedy rate and high quality, which reduces the loss in capacities and resources.

Then, we implemented a geographic spatial data infrastructure (SDI) that can be relied on for setting up development plans for the Jordan Valley region, not only for the present study, but also for other researchers who will prepare future studies in addition to decision-makers.

In order to investigate and determine the problems, the obstacles and requirements that face the planning for the various urban sectors in the Jordan Valley region, the modified Delphi, unstructured and semi-structured interview methods in Chapter 5 were selected in order to deduce the expert perspectives about the planning situation in the region and their suggestions for developing all the sectors, and unstructured interviews with some farmers, heads and members of the local councils for communities in the Jordan Valley region.

In addition, the modified Delphi unstructured and semi-structured interview methods were selected for this research to provide triangulation and further validation and reliability for the research.

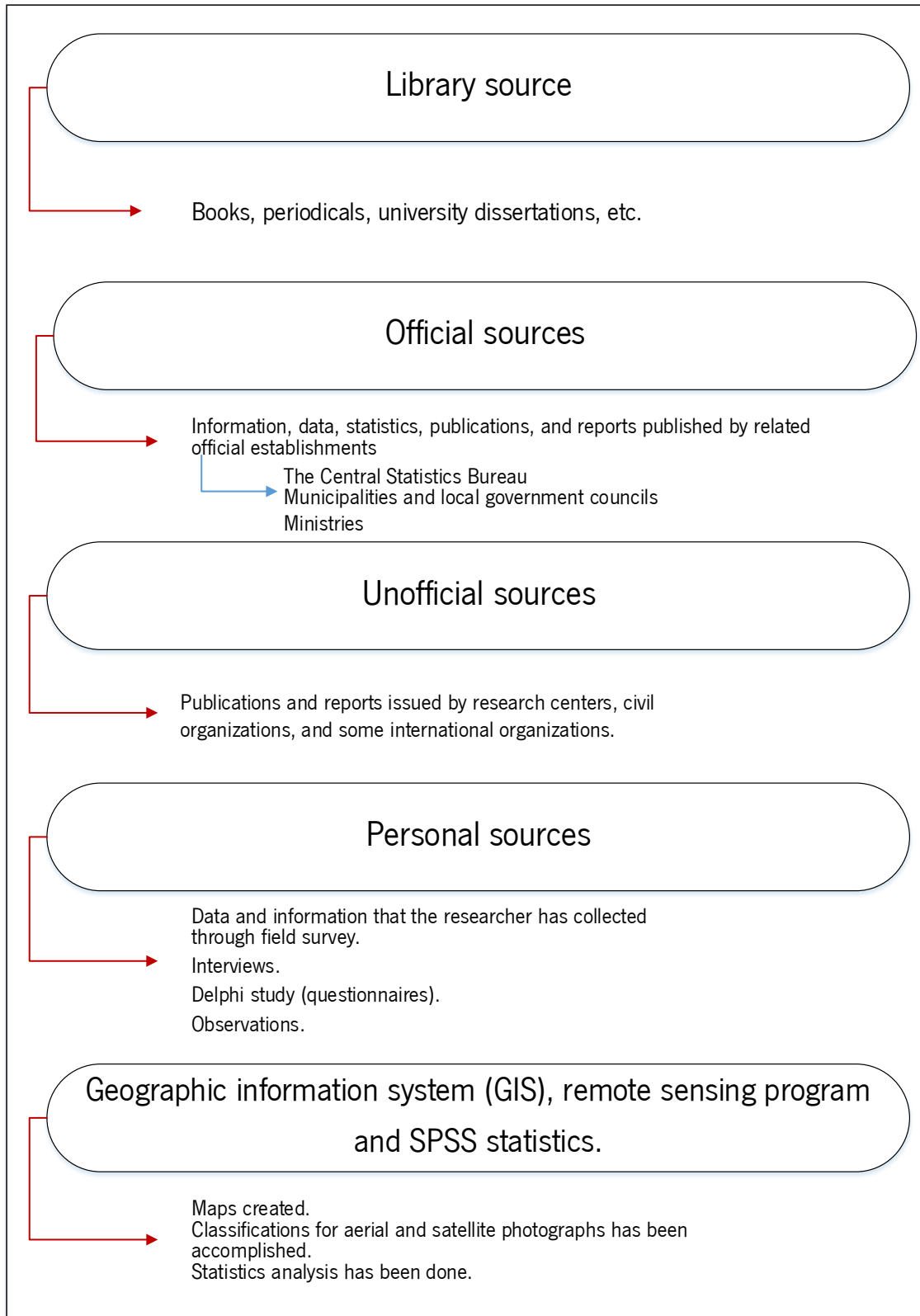
Take this turn down outIn surveying, triangulation is the tracing and measurement of a series or network of triangles in order to determine the distances and relative positions of points spread over a territory or region, especially by measuring the length of one side of each triangle and deducing its angles and the length of the other two sides by observation from this baseline.

For these methods, different research participants and an initial group of experts, who answered the research questions, were selected, taking into consideration their direct professional relation with planning in Palestine.

#### **e. DATA SOURCES**

In the light of the study's objectives and methodology, the study will rely on a number of data sources, including (Figure 3):

- a) Library sources: books, theses, journal articles, periodicals, and related university dissertations, etc.
- b) Official sources: information, data, statistics, publications and reports published by related official establishments such as:
  - The Central Statistics Bureau
  - Municipalities and local government councils
  - Ministries
- c) Unofficial sources: publications and reports issued by research centres, civil organizations, and some international organizations.
- d) Personal sources: data and information that the researcher has collected through field survey, interviews, Delphi study (questionnaires) and observations.
- e) Maps, aerial and satellite photographs that may benefit the study subject which will be processed by the Geographic Information System (GIS) and remote sensing software.



**Figure 3: Data sources**

## **f. STRUCTURE OF THE THESIS**

The present thesis is composed of six chapters. Figure 4 provides a representation of the different chapters and the subjects developed in each one.

We started with an introduction that encompasses the main issues discussed in the thesis, following a description of the background of the study, where the research problems were identified and some previous studies were discussed. Sequentially, we have made a brief presentation of the study area, and the proposed research objectives, and the research method adopted in this thesis. It gives an overview of the main arguments in the literature related to this study. It also explains the approach of the study, the strategy of examination, the techniques for collection of information, data analysis strategy, and the research difficulties.

Chapter 1 serves as a theoretical framework for regional and urban planning. It presents ideas and arguments that provided the basis for this study. It reviews the conceptual evolution and technological tools and methods. This chapter is divided into two main parts as follows: The first addresses issues of planning, regional and urban planning, and discusses the concept of the region and the divisions of the regions by natural and human factors. Then it further discusses planning according to some scientists and researchers and discusses the trends in planning. Next, we introduce some topics related to regional planning in terms of definitions and goals and the different directions. Finally, we present some aspects related to urban planning. In the second part, we present planning methods and tools.

Chapter 2 is devoted to the study and understanding of the physical and human aspects in my study area (Palestinian part of the Jordan valley region), to provide key insights into the urban and regional planning. The human and physical aspects are considered an important issue for the establishment of strategies for regional planning and development of the Jordan Valley.

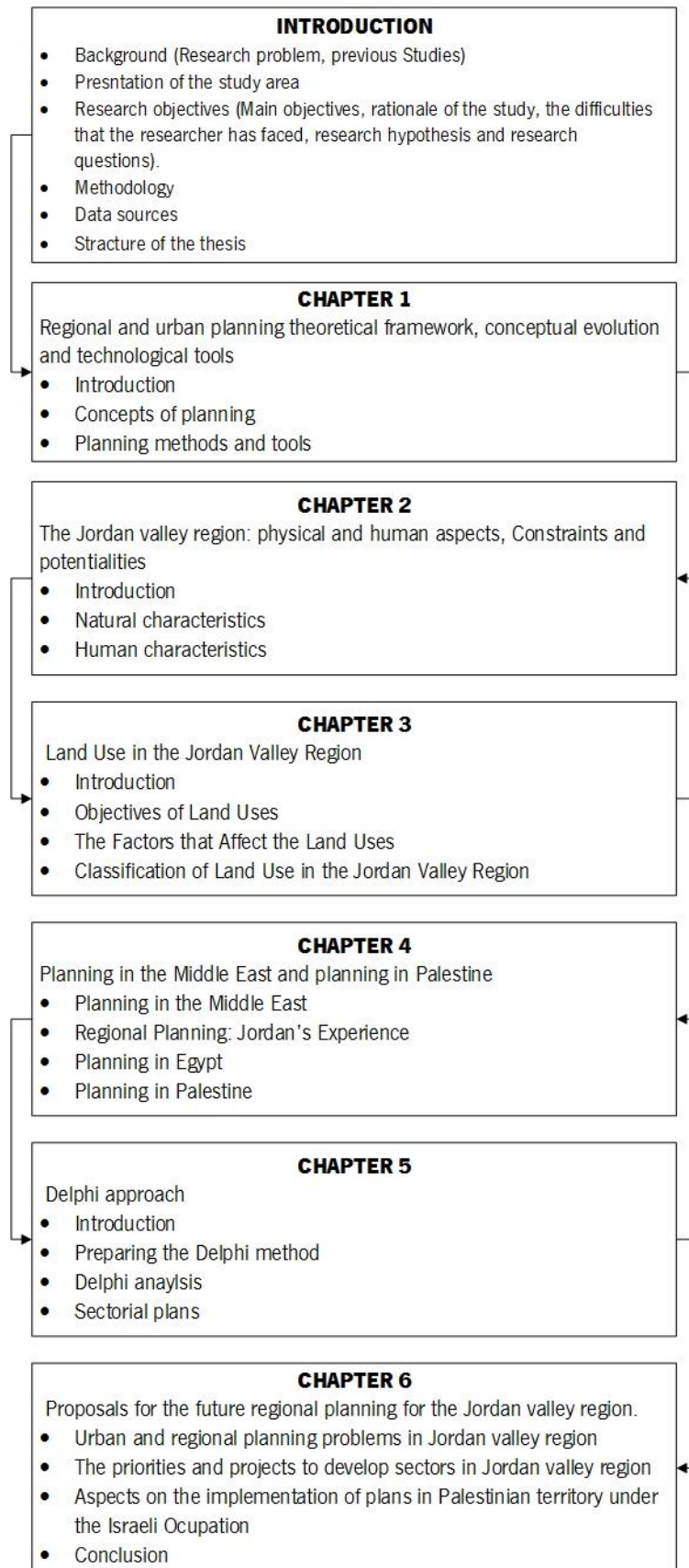
In order to promote urban and regional planning in the Palestinian region of the Jordan Valley, in Chapter 3 we studied the land uses in the region and constructed a spatial geographical database so that they relied on in the process of regional planning not only in the present study, but also by the decision-makers and development policy makers in Palestine. We start this chapter by studying the objectives of land uses, and the factors that affect the land uses. Then we studied international land use classification systems such as: The British Survey Classification System, the US Geological Survey System (USGS), The CORINE land cover (CLC) nomenclature and the Palestinian Land Use

Classification System. Following that, the study of land uses classification in the Jordan Valley region have been carried out using GIS and RS.

Chapter 4 includes an analysis of the planning process evolution in Middle East region and Palestine. This chapter discusses urban and regional planning in different countries in the middle east by firstly studying Jordan's experience, reviewing the evolution of planning, the legal basis for regional planning, and studying the plan for the Jordanian part of the Jordan valley region. Secondly, this chapter reviews the evolution of planning in Egypt. Finally, the last section of this chapter focuses on the situation of planning in Palestine by studying the evolution of planning and regulations applicable to planning in Palestine, laws, and regulations of physical planning in Palestine. After that, we studied and analyzed the plans that are put forward for the study area in order to determine its strengths and weaknesses.

Chapter 5 incorporates the research strategy; related research design, approach and methods, and data analysis covered by this thesis, specifically a modified Delphi study and semi-structured interviews. We start this chapter with an introduction to the Delphi approach. After that, we studied the stages of preparing the Delphi study and the obstacles and constraints faced by researchers in the Delphi study. Afterwards, Delphi analysis for rounds has been done.

In Chapter 6 we define the most influential limitations and problems that affect the urban and regional planning in the Palestinian region of the Jordan valley, followed by the fundamental needs this territory faces and by a set of proposals and project priorities that we consider indispensable in developing the different sectors and the whole territory.



**Figure 4: Thesis Chapters**

# **CHAPTER 1: Regional and Urban Planning Theoretical Framework, Conceptual Evolution and Technological Tools**

## **1.1 Introduction**

Planning is a method that aims to identify and investigate all available potential and resources in a region, a country or any other location at all levels starting from a town, an establishment, a village, a region, or a country. In addition, planning identifies the way of exploiting such potential and resources to achieve desired objectives within a specified period of time. However, modern theory sees that planning is a sustainable process that is connected to a specified period of time (Alzouka, 1991).

The planning process consists of three stages: the stage of determining the desired objectives, selecting the method of exploiting available resources, and the execution process (Alzouka, 1991).

Regional planning includes putting forward a practical method to exploit the region's natural potential and resources, setting up an economic, social development plan for the region, organizing the urban development of the region, and determining the region's relations and connections with other regions. In general, regional planning includes the natural, social, and economic aspects. Concentration is put on the three aspects at the regional level.

At this level, more emphasis is given in more detail than the first level of the distribution of urban and rural communities, their volumes, functions, population distribution in the region, use of the land at present and in the future, available public services such as regional roads, traffic, and transport networks that connects the urban population together whether within the same region or that connects the region with other neighbouring regions (Ghunaim, 2008).

The region is an area of land characterized by specific characteristics that distinguish it from other neighbouring regions. Hence, the region may be climatic. In this respect, the area of land is characterized by general climatic aspects that prevail in it and distinguish it from other neighbouring regions. On the other hand, the region may generally be natural or vegetation. In this way, its various natural elements including its geographic location, geographic features, climate, plants, and animals are homogeneous and this is what makes it different from other regions. Obviously, such natural elements affect the region's inhabitants and determine their characteristics and various activities. Consequently, they determine the availability of their various needs and their civilized levels (Ghunaim, 1990).

## **1.2 Concepts of planning**

In this section, we are going to discuss the fundamental concepts of the planning process such as region, regional planning, urban planning, etc.

This chapter is considered a significant introduction to the thesis as a whole since it is vital to be aware of the concepts relating to the topic of urban and regional planning relevant to this study, with clarification of the objectives and directions of the urban and regional planning on which the current methodology to promote the development in the Jordan Valley region will be based.

### **1.2.1 Region:**

The surface of the earth consists of various cadastral units according to the variation of the factors affecting the formation and appearance of the earth's surface, in a way where it is difficult to find two exact matching areas. These areal units that are distinguished from each other are called regions and in this context, we should explore some of the definitions for the region:

After analyzing the concept of the region, we have found that there are different perspectives for it, where Adel Abdel Salam has defined the geographical region in his book (Syrian Geographical Regions) as a geographical unit that consists of all the geographical elements that distinguish the regions, where these elements have their own harmony and interaction that are different from one region to another (Abdel-Salam, 1994). While Whittlesey has defined the region as a distinct part of the earth's surface, and the American geographer Teita has defined it as a complex system that consists of secondary systems: natural, economic, political and social. Ahmad Khaled Allam sees that the region can be defined as a social, economic and geographical natural unit that consists of parts connected to each other with a harmony and integration, where each part has its own place according to its importance and its objective (Diab, 2012). Minshull says that, "The region is the state that shows the surface of the earth, which includes the terrain, climate and all the other natural factors that are limited in a specific geographical scope (Diab, 2012).

The European Commission (2004) defines the region as, "a tract of land with more or less definitely marked boundaries, which often serves as an administrative unit below the level of the nation-state." Regions within (or even across) nations may be defined based on a number of characteristics, ranging from administrative areas to shared geographic, cultural or socio-economic features, such as their



landscape, climate, language, ethnic origin or shared history. Regions based on these features rarely coincide with the most precise boundaries defined by public administrations. Administratively defined regions should not be treated as fixed once for the purposes of dealing with either spatial planning or regional development activities. Ideally, administrative regions will be defined in a way that best captures how people relate to and understand regions, as defined are, therefore, usually a compromise between administrative and other characteristics (Adams & Harris, 2005).

The region is an area of land characterized by specific characteristics that distinguish it from other neighbouring regions and according to that, identification and distinguishing of the region can rely on both natural and human factors.

- **The natural identification of the region:**

The region may be characterized by using climatic factors. In this respect, the area of land is characterized by general climatic aspects that prevail in it like distribution and reliability of rainfall; the lengths of dry and rainy seasons; the prevailing winds; the amount and range of temperature and atmospheric humidity in the air and distinguishes it from other neighbouring regions. On the other hand, the region may generally be natural or vegetation. In this way, its various natural elements including its geographic location, geographic features, climate conditions, soil types, plants, animals and distribution and the nature of the topography are homogeneous and that makes it different from other regions. Obviously, such natural elements affect the region's inhabitants and condition their characteristics and various activities. Consequently, they determine the availability of their various needs and their civilized levels (Ghunaim, 1990).

- **The human's identification of the region:**

The borders have been set by humans, whether for political or administrative purposes. These borders have divided the surface of the earth into distinct states, and each state is to be divided into directorates, states, provinces, governorates or principalities. It is possible for the human borders either to match the natural borders, to be close to natural borders or even not to match them at all. When planning a region's border, the population should be homogeneous in each unit and brought together based on common specifications, mainly their lives are integrated economically and socially inside these small units, but this rule often deviates from the prevailing pattern of the population, and this could be due to reasons related to transportation.

Because it determines the population's movement, the direction of their growth, their different activities and the level of the services provided to them, determines the ranges in which the government practices its power.

According to that, the region is an area of land that is dominated by special and specific natural elements distinguishing it from the neighbouring regions, also it is inhabited by a group of people that have their own specific characteristics in different aspects, such as ethnicity, history, customs and traditions, population growth and density, economic activity and their level of civilization.

The region might occupy a large area of land so that it is a continent, a part of a continent or a country, and in this case, the natural features become multiple and human aspects vary. The region could be a very small country or a part of a country regarding the area, and often, in this case, the natural and human features become homogenous (Wooldridge & Gordon East, 1975).

In order to achieve optimum utilization of the resources and the available capabilities in the region, and to achieve growth in income resources that would lead to sustainable development and the desired objectives within a certain time, there must be a study of the concept of planning. During the planning process, the work performed should be subject to comprehensive and continuous studies combined with up-dating of all its data, information, discussions, analysis and results.

### **1.2.2 Planning:**

In order to promote sustainable management and exploitation of regions, resources are important to implement a set of tools and methodologies generally designated as planning.

Planning is a method that aims to identify and investigate all available potential and resources in a region, a country or any other location at all levels starting from a town, an establishment, a village, a region, or a country. In addition, planning identifies a way of exploiting such potentials and resources to achieve desired objectives within a specified period of time. The modern theory sees that planning is a sustainable process that is connected to a specified period of time (Alzouka, 1991).

Planning can be defined as an organized and a sequential study toward accessing the existing object or target with the lowest cost and the highest payouts, and planning is a continuously varying

process along with the change of time and environmental conditions. Also, planning provides solutions for many problems that the region is suffering from or that might occur in the future (Sa'b, 2009).

Planning as a general activity is the making of an orderly sequence of action that will lead to the achievement of a stated goal. Its main techniques will be written statements, supplemented as appropriate by statistical projections, mathematical representations, quantified evaluations and diagrams illustrating the relationship between different parts of the plan. It may, but need not necessarily, include exact physical blueprints of objects (Camhis, 1979).

Planning, also called urban planning or city and regional planning, is a dynamic profession that works to improve the welfare of people and their communities by creating more convenient, equitable, healthy, efficient, and attractive places for present and future generations. Planning enables civic leaders, businesses, and citizens to play a meaningful role in creating communities that enrich people's lives. Good planning helps create communities that offer better choices for where and how people live. Planning helps communities to envision their future. It helps them find the right balance of new development and essential services, environmental protection, and innovative change.

Good planning will always look for win-win situations, i.e. solutions that enable more than one interest group to attain their respective goals. The planning process consists of three stages: determining the desired objectives, selecting the method of exploiting available resources, and the execution process (Alzouka, 1991).

The core of the planning process means that the planning differs from other sciences because the planning is ultimately a prescriptive and not a descriptive activity (Catanese & Snyder, 1979).

The planner does not only seek to describe the reality or present as it is, but also to suggest and show methods and procedures by which this reality can be changed into a better one, so the planning process must be characterized by the vision, prudence, managing, thinking and making efforts to achieve the desired goals.

Planning is an art, a science, and approach, and it is also a multi-dimensional activity, which seeks to achieve integration between its various dimensions, and addresses in the time dimension the past, present and future, and constructs the bridges between them. It is also a collective process and not an individual one, and everyone in the planning group has his role that cannot be excluded. At the

same time, the planner cannot carry out his planning role successfully alone without the participation and co-operation of other planners at the various stages of the planning process (Ghunaim, 2008).

Benton has defined planning as a general planning that is a mental preparation for action in order to work in building a mental map, and according to Benton's definition, planning includes intentional acts which must be imagined and held in the imagination before it takes its place in reality, which means that it should be created before it works, and this is the rule of thinking before working. With this concept, people perform planning all the time (Bruton, 1984).

Through the previous concepts of planning, we can conclude the dimensions of the planning process, which are:

- Planning is a comprehensive study, systematic, sequential, analytical, technical and practical.
- Planning includes a balance between the working parts and their relationship to the whole, which means balancing between objects and manpower in place.
- Planning includes execution of the plans and recognition of the human practical ability, and also the natural and social conditions of the environment to accomplish a set of organized objectives for planning.
- Planning is processed according to stages with specified times - short, medium and long term which is the time allocated to execute the plan, and also geographic regions, including local, national, regional and global planning.

### **1.2.3 Regional planning**

When a man realizes the importance of place and time, some questions come to his mind, such as: what is regional planning? What is its importance? and how can a human, wherever he is on this earth, make himself more active and have a bigger role in building and planning?

- **Introduction**

The study of regional planning's definitions represents a major part in reaching the objective because the development of the Jordan Valley at the regional level has the effect of raising the efficiency of the region and increasing the benefits of its resources, thus the concept of regional planning helps in

determining the best method in reaching the desired objectives. The field of regional planning has both geographical and planning dimensions. Due to the diversity of economic systems prevailing in the world and the planning perspective, no particular or specific definition for regional planning was determined.

- **The concept of regional planning**

Regional planning is that level of national planning, which is practiced in a specific area of the state, known as the region, to form a method to prepare and clarify the detailed goals in arranging the social, economic, and architectural events in that place. Therefore, regional planning is the kind of planning that holds the main features of planning which are represented by being sequential actions designed to solve the problems of the future (economic, social and urban) over different periods of time depending on the type and level of the planning.

These actions are divided into a number of stages, starting by identifying problems and ending by setting and correcting the different working methods that are contained in its comprehensive formulas, the announcement of the policies used or the strategies in that planning.

Planning is also considered an alternative or a mixture of means in formulating the general, detailed and special objectives, where these objectives can possibly be determined and measured.

Planning can also allow us to determine a potentially different constraint and obstacles and how to overcome these and reach the desired future (Glasson & Marshall, 2007). Although the regional planning at this level forms an elastic concept and refers to an intermediate area between the national and local levels of planning, but this concept is also wide and large and makes the regional planning multi-meaning, multi-directional and multi-sided, according to the difference in the tasks and properties of regional planning itself.

The core and objectives of regional planning vary because of the differences in the spatial factors from one place to another, and because of the continuous revolution process in the world. The differences in defining regional planning go back to the philosophical differences between the regional planning concepts according to the determination of its spatial and timing shapes, and by that its objectives.

At this time Glasson & Marshall, 2007, saw that the existing political and civilized differences between all the world's areas required resorting to regional planning in order to achieve the necessary action to reduce the gap between these differences.

The Polish researcher Khuzula determined the concept of regional planning that aims to achieve the spatial similarity and consistency through decisions that determine the locations of various activities which lead to the achievement of the development which ensures an advanced level of income and therefore better quality of life (Al Sade, 1989). In other words, Khuzula sees that regional planning is a policy planning tool to achieve regional development.

As in Friedman, the definition of regional planning as a process of identifying and highlighting the social goals to be achieved by re-organizing and arranging various activities in areas located outside the cities borders (Friedman, 1964). That is referring to the countryside areas and the industrial parks and other uses covered by the urban planning which is considered to be another level of planning which is practiced in areas with urban uses (cities and urban centres), or what is known as local planning, which agreed with Keeble in its definition to the concept of regional planning, who saw him as the tool of choice to ensure specific communities to develop land uses in non-urban areas and organize an appropriate transport network, rather than choosing a specific position for a particular use (Keeble, 1969).

Regional planning is a branch of land use planning and deals with the efficient placement of land use activities, infrastructure and settlement growth across a significantly larger area of land than an individual city or town. Regional planning addresses problems of economic, social and political transformations at geographical scales greater than a municipality, state or even country. The region is connected and united by cultural identity, economic interests, geographic features, as well as common developmental and environmental concerns.

- **Aims of Regional Planning**

Through the previous concepts of planning, we can conclude the aims of the regional planning process. These are: to use the resources in an optimal manner to achieve the development potential of the region over a given time-frame with minimal negative effects, and by that to achieve an economic equity. To guarantee planning and an equitable distribution of the population and the economic

resources of a country. The task of arranging the available land in a pattern that is the most profitable and productive to the region and the country as a whole. To allocate some of the basic resources to create economic activities in the regions which are lacking development to make the economy stable through planning for an adequate number of medium-sized towns and providing them with services, employment, social and cultural facilities. To prevent irregular and unhealthy urban expansion (Alani, 2007).

- **Orientations of regional planning**

Some researchers believe that the practical and the scientific orientations of regional planning can be determined by selecting what is essentially (comes primarily) and what is representative of reality (comes after the basic orientation); hence we can distinguish between two different directions for regional planning (Alani, 2007).

The first direction concerns economic and social planning as a basis for distributing the sites of the different activities and the locations of different human settlements within the regions, in other words, the determination of the final sizes of these settlements comes within the necessary economic and social planning in a particular region, which determines the goals for that region.

The second direction is concerned with the natural planning and takes into consideration the various environmental factors, and here the regional planning takes its path through this logic when it considers the spatial organization, rural, urban and their various regional requirements, and mainly their role in determining the regional planning path, whose fields vary on this basis.

- **Levels of regional planning**

According to the diversity of regional planning and the presence of more than a trend in adopting this method, regional planning has been classified in three categories (Glasson & Marshall, 2007).

National/regional planning. This is the level of planning that is related to the distribution of specific investments based on the national development plan among the different regions and within the policy of achieving balance between these regions in the social, economic and urban aspects according to

the human and natural resources of each region, and by that achieve justice in the distribution of income and the provision of services.

**Local/Regional Planning.** This is the level of regional planning that is concerned with the actual positioning of the economic and social activities, which means achieving optimal distribution of activities in the areas of the same region and giving a detailed image for the region's development in its various sectors on the geographical level (urban and rural), and organizing land use in different geographical environments in the same region.

**Project/Regional Planning.** This level of planning is considered as a part of the local regional planning concerned with the plan of the project whether it is industrial, agricultural or serving within the region or when it is common in more than one region. This level of planning also studies the effects of these projects on the growth of the region.

#### **1.2.4 Urban planning**

Urban planning, either in the form of designing new urban settlements, promoting urban growth or as the regulation of urban development is an activity that has existed since the first civilization. Although the nature, form, and approaches to urban planning differ from place to place and are evolving, the basic purpose of planning still remains unchanged - to ensure a healthy, safe and efficient urban environment for people to live in and perform their activities.

Urban planning is a tool and a means to achieve the public interest, for all sectors and segments of society, by setting perceptions and visions of the future conditions desirable for the distribution of land use and activities in place and at the right time. To achieve a balance between the needs of development in the present and the near future, and the development needs of future generations in the sense of achieving sustainable development (Moussawi & Haider, 2006).

The majority of specialists in urban planning believe that planning seeks to influence the future by certain actions taken at the present time, and the degree of influence in the future depends on the type of planning practice: there is strategic urban planning, comprehensive planning and executive planning.

It may be difficult to reach a comprehensive definition of urban planning because the specialist's attention taken to its different aspects, some of them focus on applying the physical aspects to the process of urban planning, and others see it as a new specialty means of employing and using natural



and human resources in order to reach composition and development of an urban environment suitable for human life so that he can satisfy his physical and moral needs.

Urban planning is known as, "developing a plan to achieve the objectives of society in the specific functional field for the geographical area over a specified time, and it must be realistically achieving the objectives in a timely manner".

Also, urban planning is considered the strategy or set of strategies pursued by those responsible for making decisions regarding the development and guidance and adjusting the growth and expansion of urbanization in the city so as to allow for activities and urban services best geographical distribution and the greatest benefit for the population (Alani, 2007).

Urban planning is a complex and multi-disciplinary process requiring the consideration of a number of economical, sociological, transportation and environmental issues. A successful urban planning project requires the satisfactory combination of cost, environmental and cultural requirements. It is important at the early urban planning stage, to consider how a plan will affect the urban area. Hence an urban plan, which is simulated and evaluated thoroughly at the early stage, would improve the urban regeneration project in terms of cost, efficiency, and productivity. Therefore, urban planning is a multi-objective decision-making task which aims to plan the urban environment in terms of its physical, social, legal, and economic requirements. Visual and environmental elements could achieve many benefits from systems that can help demonstrate and evaluate various aspects of urban planning at an early stage to key stakeholders and the local community. The adoption of a virtual prototyping design concept can bring decision-makers and stakeholders together to exchange ideas, quickly assess alternatives and reach a consensus (Yao, Tawfik, & Fernando, 2006).

- **Properties of urban planning**

Urban planning is different in its nature and characteristics due to the special nature which deals with a complex urban environment rapidly evolving and shifting and hence can identify some of these properties in the following aspects. It takes into account the social, cultural and psychological aspects as basic components of the schemes that are placed in the urban environment, so urban planning confirms the link between the architectural and behavioural aspects. It also deals with the physical characteristics and different phenomena in urban areas. It addresses the urban area as interdependent

in all its components and elements together. Urban planning, like other types of planning associated with political, administrative and financial decisions, defines the power and the roles played by the planning system. Urban planning deals with a heterogeneous environment socially for the existence of differences among the populations in the customs and traditions, culture and religion, and this is what must be taken into account when developing basic plans and urban designs. Finally, it achieves a regional balance between all areas, and the balance means here the tendency to direct investments in urban development for all regions and the widest rather than confined to be limited centres where their concentration may result in many problems (Alani, 2007).

- **The objectives of urban planning**

Urban planning seeks to achieve a set of objectives. To improve the natural environment of the community in order to increase the human activities and to make the environment beautiful, healthy and useful in order to perform its function fully. To regulate the relationship between the different uses of urban land. To improve and develop the public benefits to the population in the first place. To coordinate public policy and development and processes carried out by members of the community. To expand and strengthen the economic base of the community. To support and provide the greatest possible balance between production and divergent sectors or between services and the urgent needs of the people. To avoid misuse or resource depletion affecting the actual value of the production in terms of quantity and quality. To achieve good distribution of the projects contained in the plan within the overall framework which covers avoiding unequal growth of the sectors without the other sectors. To provide a suitable environment for housing, investment and the provision of essential services to the community. To protect areas of special status such as historical, archaeological sites and nature reserves. To solve the problems of urban localities such as traffic problems, the problems of indiscriminate growth of some neighbourhoods and sectors. To ensure better spatial distribution for the urban land use that provides the population with the greatest benefits of these uses through various activities that have been achieved (Al-Shami, 1971).

### **1.3 Planning methods and tools**

Planning is a process that designs a plan of action or evaluates the impact of a proposed action to achieve a desirable future. During this process planners often obtain the necessary data from different sources, analyze them efficiently and comprehensively, and present the results in an easily understandable form. The rationale for such a process is that public policy and decision-makers derive their decisions based on the anticipated future from knowledge about the past and the present of a community. The three-step procedure data collection, analysis, and presentation have the goal of accurately presenting the information to reflect what has happened and what may happen. Urban and regional planning is a complex and multidisciplinary process requiring the consideration of a number of economical, sociological, transportation and environmental issues. A successful urban planning project requires the satisfactory combination of cost, environmental and cultural requirements.

It is important at the early urban and regional planning stage, to consider how a plan will affect the urban area. Hence, an urban plan, which is simulated and evaluated thoroughly at an early stage, would improve the urban regeneration project in terms of cost, efficiency, and productivity. Therefore, urban and regional planning is a multi-objective decision making task which aims to plan the urban environment in terms of its physical, social, legal, economical, visual and environmental elements, and could achieve many benefits from systems that can help demonstrate and evaluate various aspects of urban planning at an early stage to key stakeholders and the regional community. The adoption of a virtual prototyping design concept can bring decision makers and stakeholders together to exchange ideas, quickly assess and build consensus (Jepson & Friedman, 1998).

Planning can be promoted in different ways, taking into consideration the involvement and the effective participation of authorities and the different planning actions? Therefore, according to the authors, we can distinguish formal, informal practices, and covert planning.

- Formal planning:

In formal planning, one or more of the institutions producing official or semi-official documents describes the main objectives and actions, roles and locations and deadlines of the programme. These documents serve as clear guidelines for the implementation and evaluation of the programme. It has put much emphasis on formal planning because it is highly visible and easier to evaluate (Jiménez-Pérez, n.d.).

- Informal planning:

This includes an informal plan for administrative decisions that affect the programme, which is not included in the corporate strategy documents. Informal planning can almost exclusively be by leading institutions in the project. It is necessary for teams to build and improve the plans, allow for daily adjustment which uses information and new opportunities (Jiménez-Pérez, n.d.).

- Covert planning:

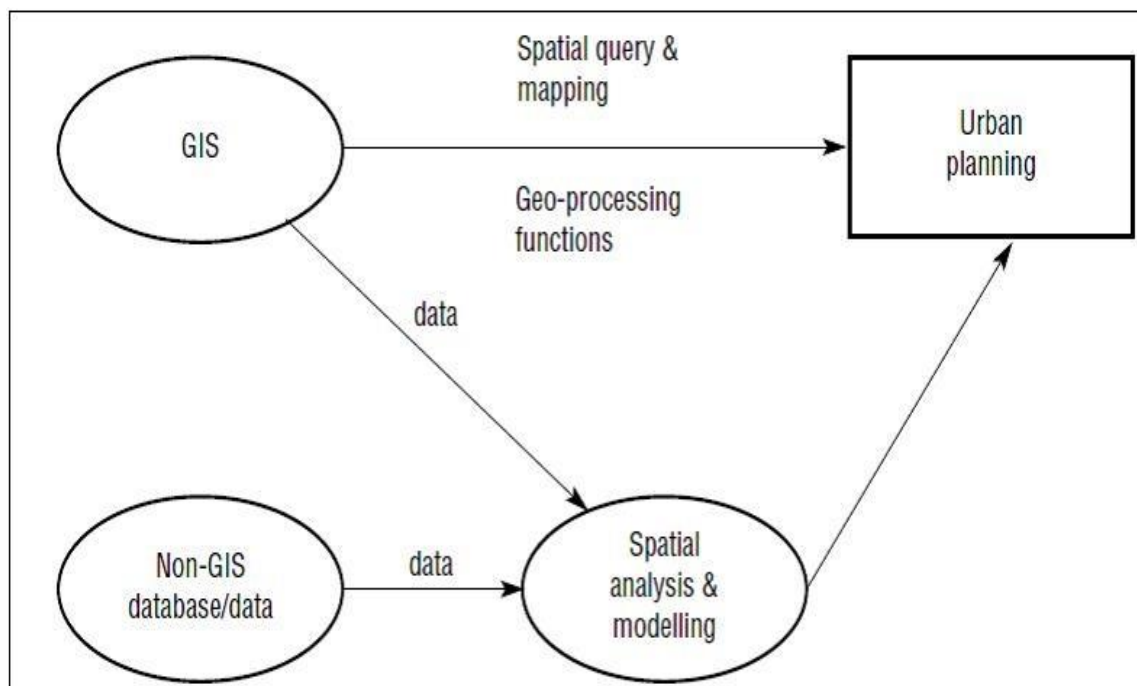
This is secret planning, which is used for political change or reform, Beard (2003) identified the goal of covert planning within the agenda of planning endeavours in occupied areas. In terms of empowering and reforming the local government and changing or even ending the occupying one. The covert planning efforts in the occupied territories are to enable the local authority and achieve results on the ground, not for political transformation of it (Araj, 2010).

The implementation of these different practices is conditioned by the existing political, economic and social factors in a specific territory and have a diversified impact over the territorial organization and its development.

Traditional urban planning uses basic tools, such as 2D, 3D-maps, and text-based documents, to deliver a satisfactory urban design solution to all the stakeholders. More recently, databases, computer graphics, photogrammetric techniques, geographic information system (GIS) and remote sensing (RS), and other technological tools have been adopted to support the process of urban and regional planning. Such tools have proved to be effective for professionals to perform urban and regional planning tasks. However, they still lack the capabilities for satisfying the increasing need for collaborative urban planning to allow a wide range of professionals to be involved in the process to exchange and discuss ideas and problems by visualizing and interacting with complex data. The aim of urban and regional planning support systems is to provide an intuitive and collaborative urban and regional planning environment to enhance participation of stakeholders in urban and regional planning through the use of innovative IT tools (Goodfellow, 1996).

The integration of Geographic Information Technologies on planning has been a tremendous evolution, allowing improved performance in the analysis of large amounts of data related to the territory. GIS have been increasingly used by planners and is now an important tool for urban and regional planning.

The Geographical Information System (GIS) is one of the information systems that is based on the computer. GIS can integrate data that are collected from different sources in order to provide the necessary information for decision-makers in urban planning. There are other information systems that can be utilized in urban planning such as database management systems (DBMS), and decision support systems (DSS). GIS can be utilized not only as a database but also as a toolbox for urban planning (Fig. 1-1). By using the database-oriented GIS, we can store and connect spatial and textual data by using the geo-relational model, so that they can be used for data retrieval, query, and mapping. By doing this, planners can extract data from their databases and input them to other modelling and spatial analysis programs. In this way, the GIS data can be combined with other tabular databases or field surveys so that the geographical information can be used to make more efficient planning decisions. By using the GIS as a toolbox, planners can perform spatial analysis by using the geoprocessing functions such as map overlay, connectivity measurement, and buffering. Map overlay is probably the most useful tool because planners have been using map overlay in land suitability analysis which is in itself an important component in urban planning (Yeh, 1999).



**Fig. 1-1: GIS and urban planning (Yeh, 1999)**

There are many uses of GIS in urban planning such as database management, visualization, spatial analysis, and spatial modelling. GIS is used for the storage of land use maps and plans, socio-economic

data, environmental data, and planning applications. In this way, planners can extract useful information from the database through spatial query. By using mapping, planners can explore the distribution of socio-economic and environmental data, and then show the results of spatial analysis and modelling exercises. On the other hand, spatial analysis and modelling are used to analyze spatial statistical, select sites, identify planning action areas, analyze land suitability, model land use transport, and assess impacts. In addition, the most frequently used GIS functions in spatial analysis and modelling include interpolation, map overlay, buffering, and connectivity measurement. The use of the above functions varies according to different tasks and stages of urban planning ( Yeh, 1999).

- **The importance of GIS in planning**

There are many advantages to using GIS in urban and regional planning. First of all, it not only improves mapping but it also provides better access to maps, and gives improved map accuracy, more effective thematic mapping, and reduces storage costs. In addition, it is more efficient in retrieving information; faster and more extensive access to the types of geographical information which is important to planning, better analysis, and communication to the public and staff; improved quality of services, for example, faster access to information for planning application processing (Yeh, 1999).

Comprehensive Planning: planners use GIS in order to prepare plans, which set the standard for policy decisions relating to long-range changes to a community's physical environment. In addition, planners utilize GIS in order to facilitate citizen participation and community input when developing a vision for the community that promotes quality of life for all citizens. At the same time, GIS tools help planners analyze problems more quickly and thoroughly, formulate solutions, and monitor progress toward long-term goals for the community (Yeh, 1999).

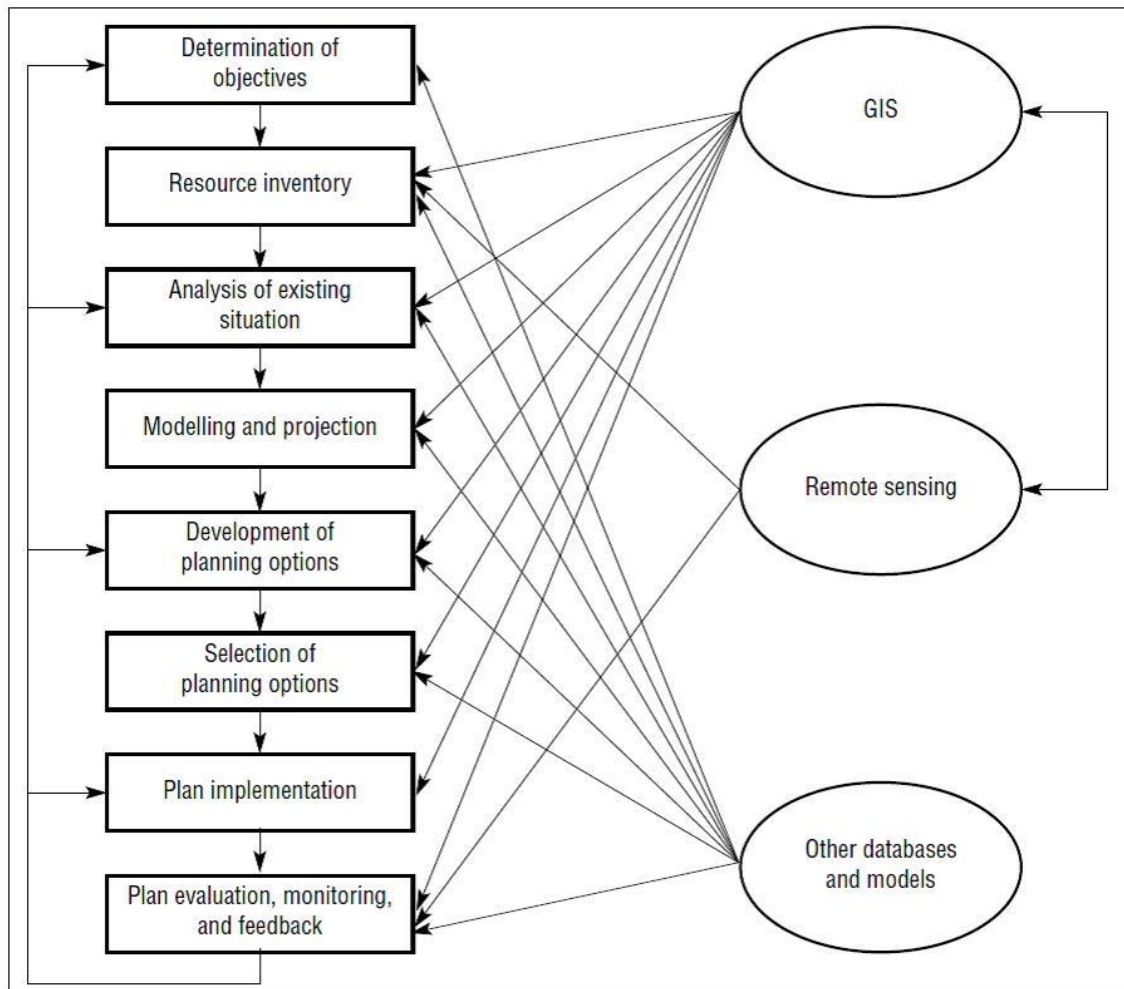
GIS was originally developed as an information management tool to deal with map-based physical applications such as tax mapping or surveying inventorying of utility networks running mainframes or mini computers. At present, Remote Sensing and GIS software are based on the internet. Consequently, planners use GIS technology in order to research, develop, implement, and monitor the progress of their plans so that they can facilitate the decision-making process.

GIS and remote sensing (RS) are effective and useful and can be used in order to facilitate the functions and performance of the planners during the spatial decision-making related to the

development or analysis of spatial problems. They are used in various scientific fields including, for example, studying the distribution of the various services, analysis of land use, division of Transport and Communications because they save a lot of tabular data. In addition, they can do arithmetic processing in order to extract the results in a short time with little effort and less financial cost (Yeh, 1999).

GIS and RS applications are used in land use, transport, housing, land development, and environmental sectors including site selection and land suitability analysis. In contrast, network analysis and route selection are most frequently used in transport planning, and environmental planning and management use buffer and overlay processing. There is an increasing trend toward the integration of modelling in different sectors of urban planning (Yeh, 1999).

Nevertheless, the use of GIS differs according to the different stages of the urban planning process. GIS is better used in modelling and developing planning options rather than determining the planning objectives. The stages of the urban planning process are the determination of objectives, resource inventory, analysis of existing situations, modelling, projection, development of planning options, selection of planning options, plan implementation, plan evaluation, monitoring, and feedback (Fig. 1-2). Since GIS can only provide some of the data and techniques that are needed at different stages of the urban planning process, it also needs to involve other databases, techniques, and models.



**Fig. 1-2: Integration of GIS, remote sensing, and other databases and models in the planning process (Yeh, 1999)**

Resource inventory: when integrated with remote sensing, GIS can save time in collecting land use and environmental information. As remote sensing images are becoming an important source of spatial information for urban areas, they can help to detect land use and land use changes for whole urban areas. In particular, stereoscopic pairs of digital aerial photographs can be used to derive 3-dimensional CAD models of buildings for dynamic visualization of a city, or for direct import into a GIS database.

Analysis of existing situations: GIS can help to store, manipulate, and analyze physical, social, and economic data of a city. Planners can then use the spatial query and mapping functions of GIS to analyze the existing situation in the city.

Modelling and projection: GIS can also be used for prediction and projection. It is possible to use spatial modelling of spatial distributions in order to estimate the impact of existing trends of population, and of economic and environmental change. GIS can also be used to model different development



scenarios. It can show the modelling results in graphic form, making them easy to communicate with the decision-makers. Planners can use such information to formulate different planning options and help guide future development so that they avoid such conflicts.

Development of planning options: Land suitability maps can be used to identify the solution space for future development. The association of spatial optimization models with GIS can help to formulate and develop planning options which try to maximize or minimize some objective functions. The simulation of different scenarios of development with GIS can help in developing planning options.

Selection of planning options: The final selection of a planning option is increasingly a political process, but planners can provide technical inputs to this process in order to help the community in making their collective choices. The integration of spatial and non-spatial models within GIS can help to evaluate different planning scenarios. The use of GIS with multi-criteria decision analysis can provide the technical inputs in the selection of planning options (Yeh, 1999).

Plan implementation: GIS can be used in the implementation of urban plans by carrying out environmental impact assessment of proposed projects to evaluate and minimize the impact of development on the environment. Following such work, remedial measures can be recommended to alleviate the impacts.

Plan evaluation, monitoring, and feedback: when used together with remote sensing, GIS can help to monitor the environment. It can, for example, be used to monitor land use changes.

Another technological evolution for geographical information management is the Spatial Data Infrastructure (SDI).

**SDI** is a spatial database that includes the use of technological programmes, methods, human resources and activities in order to process, distribute, maintain, and save the spatial data. The SDI was first used by the American National Research Council in 1993 when it was used for the frame of information technology and policies in the institutions in order to facilitate construction and exchange of using related geographical data and information sources through the society at all the national, regional, and global levels. In addition, SDI provides opportunities to discover spatial data, potentials of assessment and application by users of various specializations and sectors including the government, planners, business, non-profit, academic and research sectors so that people can obtain the data that they need easily.

The importance of using the spatial database is related to the increasing level of urbanization and the need to deal with larger amounts of information. Numerous countries have constructed spatial databases, such as Hong Kong where the government believed that obtaining data from diverse sources might raise public concern. Therefore, it carried out several projects using various governmental establishments. The data were consolidated to reach one integrated pattern; then they were evaluated and classified by the officials. The Land Information Centre, and the Land Survey and Maps Department at the Ministry of Lands constructed a geographical data pattern for services, analyzed the current population situation, merged the evaluation records of the infrastructure for services and streets that work on surfaces, and knew the demands of the public facilities for the infrastructures of the cities (Pun-Cheng, Lai, & Chang, 2016).

One aspect that was also very pertinent during the research, and that limits the construction and implementation of planning projects is related with lack of data or the difficulty of access to it.

In the process of field study and the stage of information collection, the researcher found that the required data and information for developing an urban axis in the region of the Jordan Valley (Al-Aghwar) was difficult to obtain or is non-existent. For various and specific categories such as the data of water networks, power grids, sanitation networks, education and health services, and land uses, researchers have to communicate with numerous parties that required a great amount of their time and efforts. On the other hand, if there were a system specialized in collecting such data and information, and constructing a database that contains all the significant data and information and posts them on a website, researchers and interested parties may have easy access to such data and information that may have positive effects on academic research and also in land management. Furthermore, researchers and planners will concentrate on putting forward development plans and approaching the problems that the urban concentrations suffer from rather than wasting time and effort in their attempts to reach the basic data.

In order to benefit from the experiences of developed countries in this respect such as the USA, Britain, and Hong Kong, the researcher suggests the construction of a spatial database in Palestine that only needs to be constructed once because it is a one technological system at the level of Palestine, but it could be used several times. For the purpose of constructing this database, efforts must be consolidated in preparing this database at the local, national and regional levels at the various institutions, ministries, and concerned parties in order to save time and effort. In addition, material costs for preparing this base can be shared. Consequently, high costs that are paid by individual

institutions can be reduced in obtaining spatial data. The database must be managed carefully in order to verify the data accuracy before publishing so errors can be avoided. Therefore, this base helps in supporting the economic, social, urban and sustainable development in Palestine. The spatial database must consist of persons, data, policies, institutional arrangements, methods and technological programs so that such data can be available free of charge for researchers. On the other hand, some data that accumulates high costs in preparation and obtaining could be sold.

The database contains all the data and statistics related to each population concentration or region, including the data and information related to significant aspects such as the population, available services, infrastructure, economic activities, land uses, geographical and environmental aspects, and land proprietorship. Such descriptive or statistic data are linked with maps and space aerial photographs.

The construction of the spatial database in Palestine helps in going ahead with development projects, enables the experts, planners, and decision-makers to solve problems that may take place in any region quickly and easily. The data contained in this database can be up-graded and other data may be added whenever there is a need to do so. The chronological arrangement of the data also makes it easier for the researcher to investigate developments and changes through the various time periods so that the data can be saved and so that they might not be lost as the case in some Palestinian data that were lost during the various periods of occupation in Palestine. The database also reduces wasting time, efforts and duplication of data production. In addition, it would enable users to obtain data and statistics easily and efficiently. At the same time, it would maintain the safety and security of the data and information.



## **CHAPTER 2: The Jordan Valley Region: Physical and Human Aspects, Constraints and Potentialities**

### **2.1 Introduction**

The Jordan Valley is a sparsely populated region with vast, uninhabited areas. The considerable size of the Jordan Valley and its relatively sparse population make it the largest land reserve for future development of the West Bank. Urban centres could be developed in the Jordan Valley to address population growth in the West Bank; its fertile land is crucial for the production of food for the West Bank's growing population and for turning a profit on agricultural exports; and its extensive uninhabited sections make it attractive for development in terms of energy, infrastructure, and industry.

Israel does not allow Palestinians to use most of the Jordan Valley, restricts their access to the Jordan Valley's abundant water resources and refuses to draw up plans for Palestinian villages to be located there. Among the objectives of this policy, under which Israel exploits the area's resources and reduces Palestinian presence there to a minimum, is the control of the area by Israel and de-facto annexation of the Jordan Valley to Israel. Ultimately, the policy is designed to set the stage for perpetuating Israel's presence in the area in the long term, even in the framework of a formal status agreement (B'Tselem, 2011b).

The present chapter is structured to present a debate about the geographical aspects in the Jordan valley region.

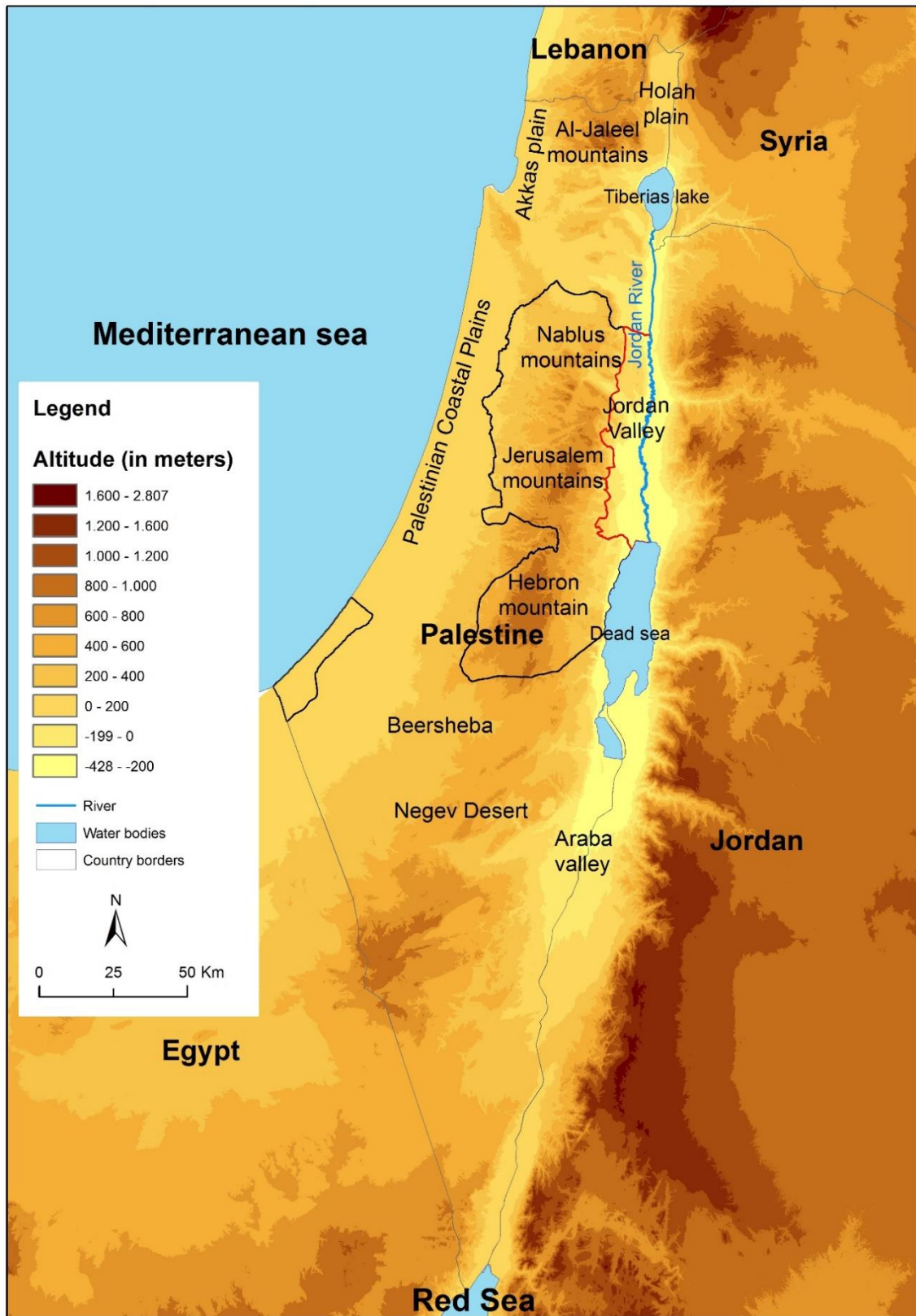
We first address the issues of natural characteristics, discussing the geological structure and the evolution of the sedimentary rocks, then studying the landscape and topography to show the different morphological units present and the structure of the landscape. Later, we focus on the climatic elements because climate has an important impact in planning studies. After that, we study the water resources, soil, natural vegetation and agricultural land in the Jordan valley.

Secondly, we specifically study the human characteristics, reviewing the history of the Jordan valley region, and the evolution of the administrative division and political situation, after that studying population and communities in the Jordan valley. Finally, we will analyze the spatial organization of the communities.

## **2.2 Natural characteristics**

The area of the Palestinian territory is relatively small, extending about 27,000 kilometers square, and consisting of a huge diversity of geomorphological elements, where the terrain varies from being lower valleys than sea level, flat plains that are a little higher than sea level and intermediate and high hills that include some mountain chains (Fig. 2-1). This variation reflects on the difference of the other natural elements, which has led to classifying Palestine into natural regions where their properties are specified on the level of structural terrain and climate vegetation matching for each region.

Through looking at the terrain map of Palestine, the landscape image is clearly shown, which is represented as a longitudinal strip of coastal plains that is adjacent to the Mediterranean Sea to the west, which includes Akka's plain (Fig. 2-2) in the north and the Palestinian coastal plain in the south, where they have a moderate climate, fertile soil, and availability of water resources, followed by an internal longitudinal strip of mountain heights which include: Al-Jaleel heights in the north (Fig. 2-3), Nablus and Jerusalem heights in the centre, Hebron heights in the south. This region is distinctive by having a moderate Mediterranean Sea climate, where a variety of trees flourish, some of these trees are evergreen, and others are deciduous, such as Oak, Palestinian Elah, Conifers, Cypress, Carob, wild olives and others. These trees are spread over the mountain summits and the western hillsides that are facing the rainy wind. However, regarding the eastern hillside, that is subjected to rain, and the base of the mountain, shrubs, and herbs areas are the dominant species.



**Fig. 2-1: Topographical regions in Palestine**



**Fig. 2-2: Akka's plain (Palestinian Archive at Birzeit University, n.d.)**



**Fig. 2-3: Al-Jaleel heights (WAFA INFO, n.d.)**

Then the mountain heights strip is followed from the east by the Rift Valley region, where most of the land drops down lower than sea level, and its climate is often dry and semi-dry. This area includes the Al-Holah plain and Tiberias lake from the north, Jordan valley and the Dead Sea from the centre



and the Araba valley from the south. Finally, the Negev desert region (Fig. 2-4), which is distinctive by having a dry climate and a desert soil, except the Beersheba area that contains the fertile Loess soil that is good for agriculture.



**Fig. 2-4: Negev desert (Tourist, n.d.)**

These elements extend in the form of a longitudinal line from the north to the south, except the Negev desert region, where it occupies the southern part of Palestine, and presents the form of a letter V in English (Fig. 2-1).

The reasons for the diversity of topography in Palestine are related to the following factors:

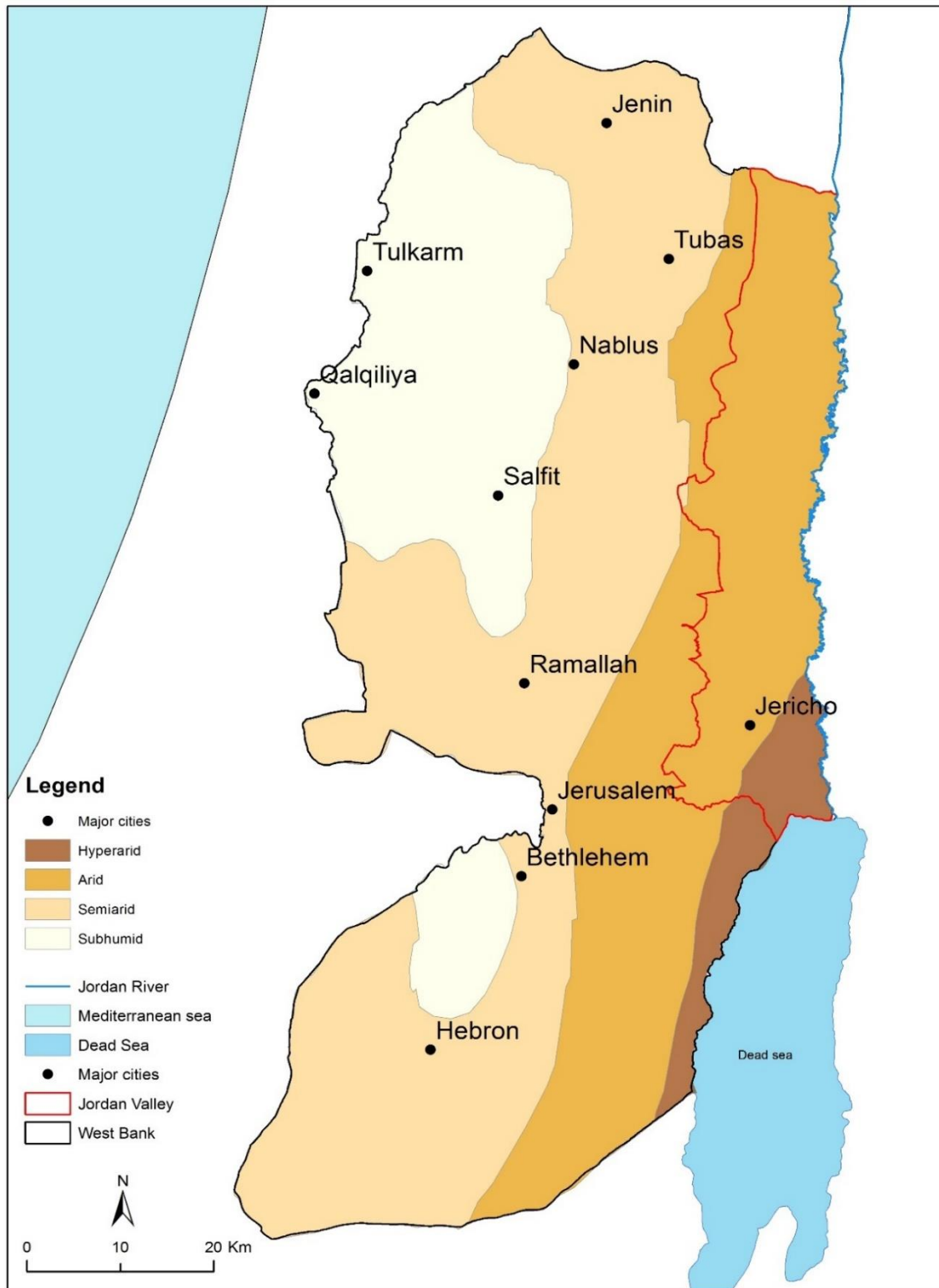
- a) The diversity of geological structures.
- b) Climatic factors that influenced the evolution and the formation of topography in its current form.
- c) The great African Rift, which resulted in the Holah plain, Lake Tiberias, the Jordan valley, Dead Sea and the Araba valley.

In Palestine, we can analyze the climate by using two classifications of climate zones: The Thornthwaite and Koppen classifications.

- Thornthwaite Classification of Climate Zones in Palestine:

In the classification of the American Thornthwaite, the climate zones appear as four climate zones that differ in terms of the humidity index. These are as follows (Fig. 2-5):

- a) The wet zone: this is concentrated in Upper Galilee and the northern coastal plains.
- b) The semi-wet zone: this is found in Lower Galilee; the mountains of Nablus, Jerusalem, and Hebron; in addition to the southern plains.
- c) The semi-arid zone: this zone extends over the eastern slopes of the northern and central heights in addition to the northern regions of the Jordan Valley and the Negev.
- d) The arid zone: this zone covers the southern regions of the Jordan Valley and the Negev (Yousef, 2000).



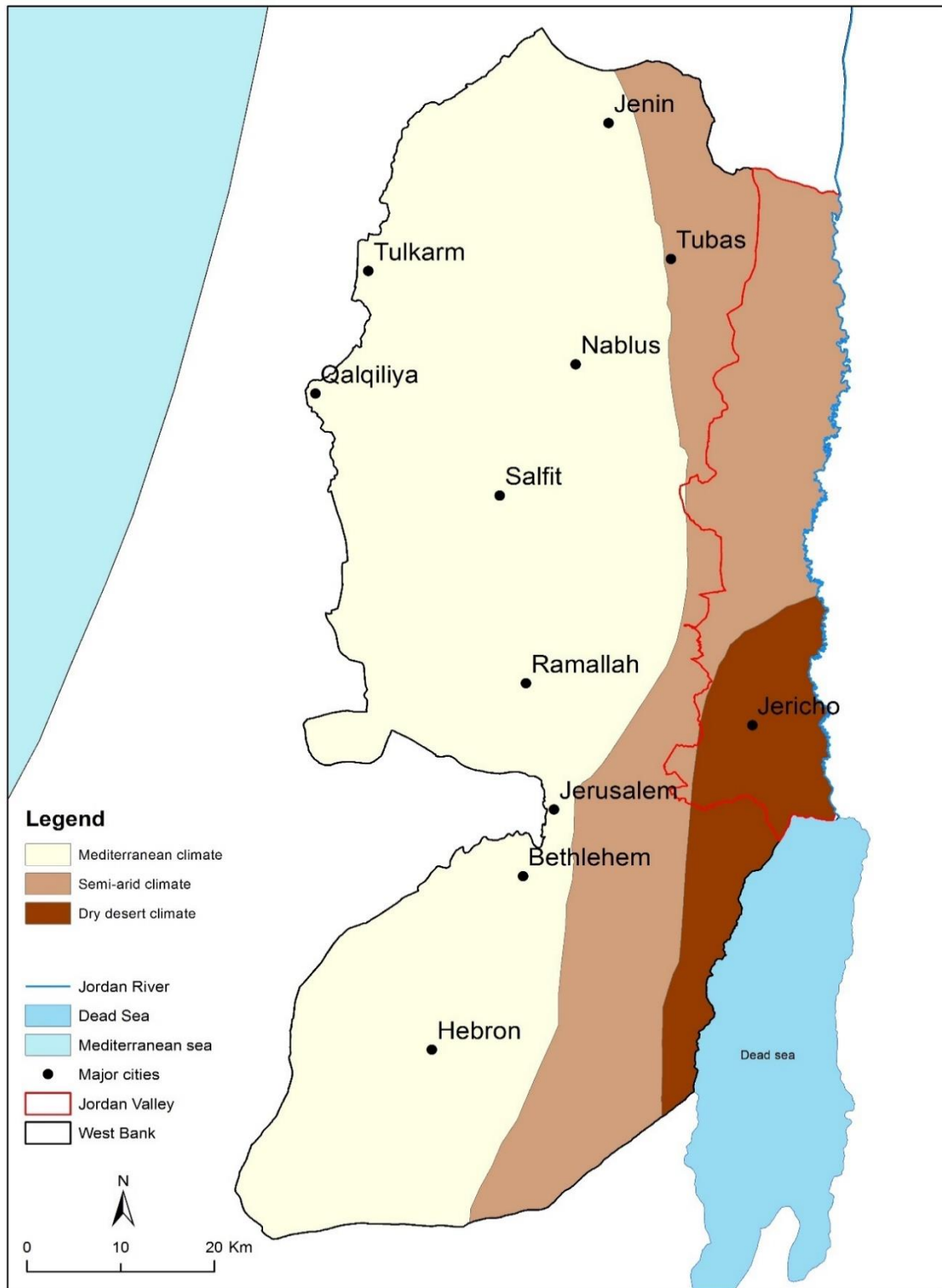
**Fig. 2-5: Thornthwaite classification of climate zone in West Bank.**

- Koppen Classification of Climate Zones

In the classification of Koppen, Palestine is classified into three zones due to its small area.

Fig. 2-6 shows these zones in the West Bank. These are:

- a) The Mediterranean Climate Zones: this zone is included in the humid hot summer climates in which the annual average of temperature reaches 20° centigrade. It spreads in northern and central Palestine until it reaches a line that extends from the west to the south of Hebron in the east. From the extension of this line, it goes north in parallel with the Jordan Valley until Jalloud valley and the northern coasts of Tiberias Lake. The area contained in this line receives rain that exceeds an annual average of 400 – 500 mm.
- b) The Hot and Semi-arid Savannah Climate Zone: this zone is represented by a strip that receives an annual average of rain that ranges between 200 – 350 mm.
- c) The Hot, Dry Desert Zone: this zone spreads in the southern and south-eastern parts of Palestine, including the Negev, the countryside of Jerusalem and Hebron, which includes the eastern slopes of Jerusalem and Hebron that overlook the Jordan valley, the Dead Sea, the Valley of Arava, and the Negev. The annual average temperature exceeds 20 degrees centigrade, and the annual amounts of rain decrease to less than 200 mm. (Yousef, 2000).



**Fig. 2-6: Koppen Classification of Climate Zones.**

### 2.2.1 Geology

The Jordan Rift Valley was formed many millions of years ago, in the Miocene epoch (23.8 to 5.3 million years ago), when the Arabian Plate moved northward and then eastward away from Africa. One million years later, the land between the Mediterranean and the Jordan Rift Valley rose so that the sea water stopped flooding the area (Horowitz, 2001).

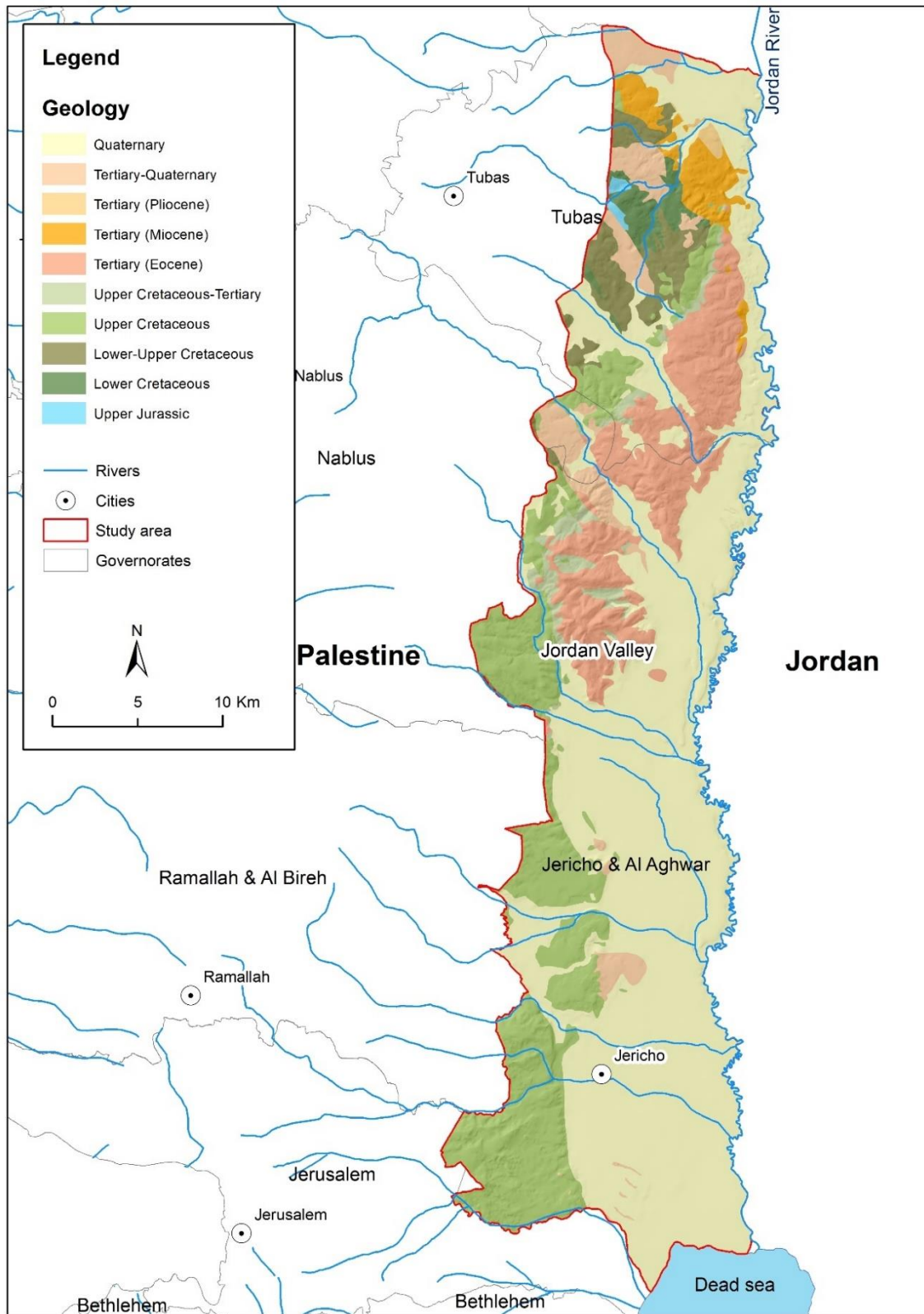
The waters formed a narrow, crooked bay, connected to the Mediterranean through what is now the Jezreel Valley. By about two million years ago, as the mountains rose, this bay became an isolated inland sea that submerged the Rift Valley from Lake Tiberias to the southern reaches of the Wadi Araba.

As the earth cycled through its ages of ice and heat, rain and drought, the shoreline of this lake advanced and retreated. At times, the waters deepened and flooded the rift; at others, they vanished completely. The most recent of these prehistoric lakes, known to geologists as Lake Lisan, formed around 70,000 years ago. At its height, its surface was more than 100 metres above the level of today's Dead Sea. However, towards the end of the last ice age, as the climate grew warmer and drier, Lake Lisan began to evaporate faster than it was replenished (Horowitz, 2001).

Approximately 15,000 years ago the shoreline had retreated to roughly the level we see today, slowly concentrating the salt and killing the plants and animals that lived in the lake. The flat plain that runs along the valley floor is the lakebed, exposed by the retreating waters and the Dead Sea is all that remains of Lake Lisan (Horowitz, 2001).

The geological and environmental evolution of the valley since its inception in the Oligocene, can be seen in a variety of sedimentary and magmatic rock units, Fig. 2-7, preserved as continuous sequences in the deeper basins. The outcropping formations around the basins represent alternating deposition and erosion phases.

This dominant physiographic and geologic feature is a 375-kilometer (km) long strike-slip fault zone that affects the climate, hydrology, and anthropogenic activities of the region. Vertical displacement of the faults of more than 3000 metres resulted in the development of Hula, Lake Tiberias, the Jordan valley and the Dead Sea (Al-Zoubi, Heinrichs, Sauter, & Qabbani, 2006).



**Fig. 2-7: Jordan Valley geology (Hamada, Vieira, & Ghodieh, 2015).**

From Fig. 2-7 we can observe that the majority of sedimentary rocks which appear in the Jordan Valley area go back to Mesozoic and Cenozoic eras, while the oldest sedimentary rocks were deposited in the upper Jurassic, the lower and the upper cretaceous periods. The oldest rock appears in the eastern slopes of the northern and central highlands of Palestine which have high slope steps and tough rocks, while the youngest rocks appear in flat plains, like Al Auja Jericho Fasayil, Ein Elbaida, Kardala, and Bardala.

Consequently, we can identify a very diverse set of lithologic materials in the study area, which we are going to characterize briefly, according to the representation in Fig. 2-7.

- **Mesozoic formations**

Mesozoic geological formations that appear in the Jordan valley back to upper Jurassic and lower/upper cretaceous, is as follows.

- a) Upper Jurassic**

The oldest rock layers in the Jordan Valley go back to the time of the upper Jurassic (Fig. 2-7). These formations are found in a small area in the northern-western region of the Jordan Valley. These layers consist of multi-coloured clay rocks due to the existence of iron oxides. At the end of this era, a significant decline occurred in the area of east Palestine and in parts of the Arabian Peninsula, which has led to a deposition of limestone and dolomite (Abed, 1999).

- b) Cretaceous**

These rocks are divided into upper and lower cretaceous, the majority of this period's configurations appear on the surface of ground in the west of the Jordan Valley at the foot of the mountains at the centre of Palestine, where cretaceous rock is characterized by thick formations.

- Lower cretaceous

The configurations of this epoch are spread in a small area in the northern-west of the Jordan valley. The lower cretaceous consists of sandstone, dolomite, marl, sand, shale, clay and sandy limestone. The upper part mostly consists of shale and carbonate formations. The lower part mostly consists of water-bearing sandstone (Buhairi, 1973).



- Upper cretaceous

The configurations here include Cenomanian, Turonian, Senonian, Campainian and Maastrichtian that consist of chalk, chert, limestone, and marl. Limestone and chert layers are prolific aquifers in a large area of the Jordan valley. The number of wells varies significantly and a large number of them are controlled by cavernous zones in the limestone which is affected by the geologic structure. Flowing wells are common in areas of elevation. Limestone and dolomite layers are prolific aquifers in the eastern and western mountain basins (Abed, 1999).

### **c) Cenozoic**

This era is sub-divided into two periods, which are Tertiary and Quaternary. As we can see from Fig. 2-7 the sedimentary rocks of the Cenozoic period (Tertiary and Quaternary) cover a large area of the Jordan valley and the majority of this era's rocks appear in the northern, eastern and central parts of the Jordan valley.

- Tertiary

These spread in the Eocene, Miocene and Pliocene configurations of the Jordan valley. The Jordan valley was formed in the Miocene era, and the continental sediment was deposited in the Jordan valley. The Tertiary sedimentary rocks in the Jordan valley are divided into two parts, the upper part includes marl and clay. The lower part consists of water-bearing conglomerates, sand and gravel. It also consists of chalk, limestone, and sandstone (Abed, 1999).

- Quaternary

The Quaternary period follows the Neogene period and extends to the present. The Quaternary Period is divided into two epochs: The Pleistocene (2.588 million years ago to 11.7 thousand years ago) and the Holocene (11.7 thousand years ago to today) (Gibbard, Boreham, K.M. Cohen, & Moscariello, 2007). The Quaternary in the Jordan valley contains sedimentary rocks, which were deposited in the Holocene period. Sediment alluvial fan is deposited along flanks from aquifers that contain most of the freshwater of the basin, marl and clay (Buhairi, 1973).

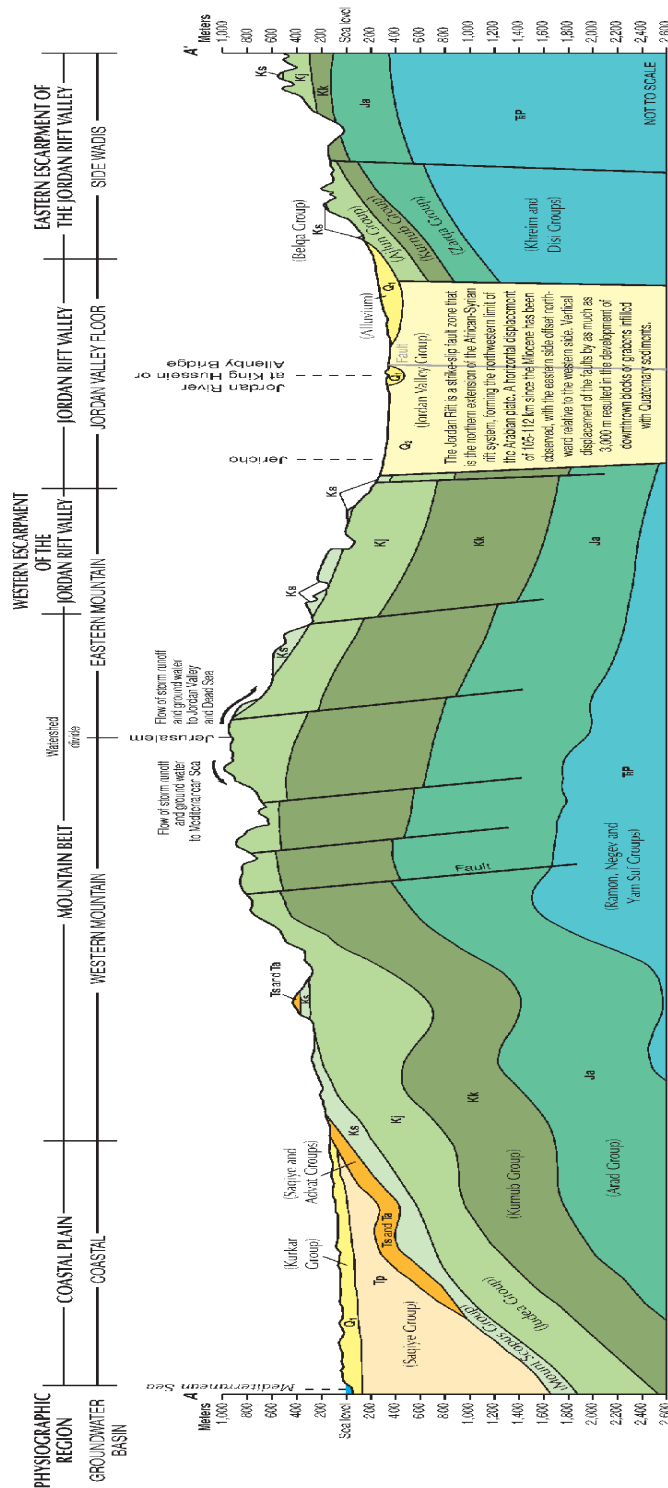


Fig. 2-8 is a schematic cross section which shows the arrangement of rock units along a vertical slice through the earth's surface from the Mediterranean Sea to the east of the Jordan River and illustrates the relative vertical positions of the rock units. In general, rock units thicken west of Jordan River and continue to thicken toward the Mediterranean Sea. Rock units have been faulted and folded. Volcanic deposits occur as sacrificial flows and as volcanic necks in subsurface area. (Local name is in parentheses)

**Fig. 2-8: A schematic cross section (Jarvis, 2012).**

## 2.2.2 Topography and Landscapes

The Jordan valley extends from Lake Tiberias, located at - 212 m below sea level, to the Dead Sea, located at - 400 m below sea level. The length of the Jordan valley from north to south is 150/km. The Jordan valley land descends from north to south 180/m, at a rate of 1.7/m per kilometre. The study

area is the part of the Jordan valley that extends along the western bank of the Jordan River from the Armistice Line (Green Line), in the north, to the northern tip of the Dead Sea, in the south. It is approximately 70 km long with a total area of about 400 km<sup>2</sup>. Elevation ranges from 200-300m below sea level (The Applied Research Institute – Jerusalem (ARIJ), 1994).

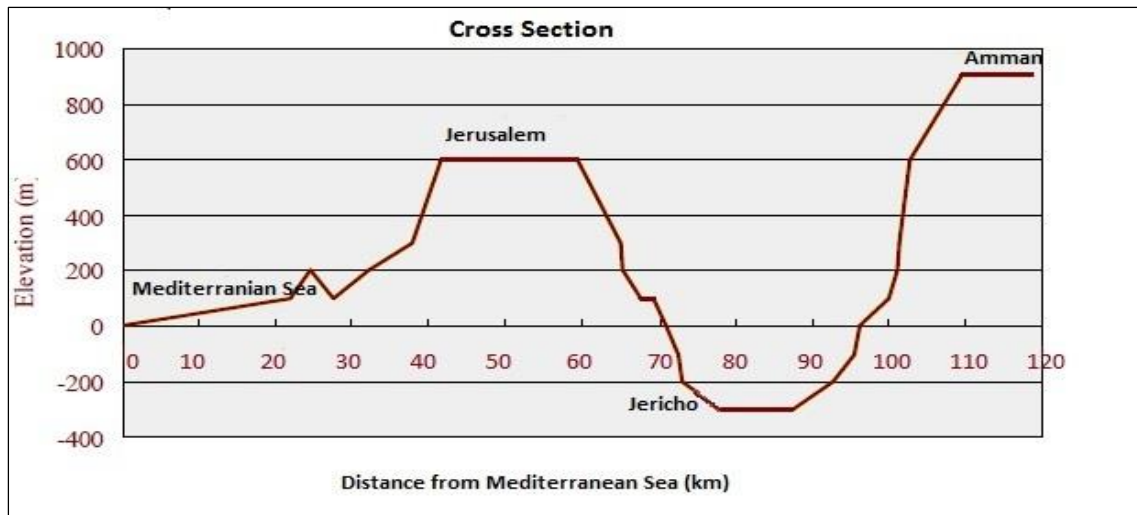
The Jordan valley was divided into two parts as follows:

- a) Valley (Algor). It contains the territory stretching from the foothills of the eastern highlands of Palestine to the western highlands of Jordan until the beginning of the Jordan River basin. The length of the Jordan River in this area has become double because of the many Springs which have formed during its run-off.
- b) Zour. This is the deep area which was dug out by the Jordan River during run-off. The hills of the sandy soil separate these two areas (Yousef, 2000).

The landscape and topographic conditions in the study area are varied and can be categorized into three types which are mountainous, foothills and flat area described as follows:

- a) The mountainous area is located in the upstream area of valley Al Fara. The elevation reaches up to 600 m above sea level.
- b) Most of the study areas are covered by foothills with the steep slopes. The elevation of the foothills range from 0 to 200 m above sea level.
- c) Flat area, which is lower than sea level and has relatively high agricultural production, lies along the Jordan River. The length and the width of the area are about 10 km and 1 to 2 km, respectively.

Fig. 2-9 shows the topographic cross section from the Mediterranean Sea to Amman. The distance of the section between the uppermost elevation at Jerusalem and lowermost at Jericho is only about 15 km. The topographic relief of the section changes from around 600 m above sea level to lower than 300 m below sea level. This indicates that the average gradient of the section is about 17% (Japan International Cooperation Agency (JICA), 2006).



**Fig. 2-9: Topographic cross-section of the Jordan Valley (Japan International Cooperation Agency (JICA), 2006).**

### 2.2.3 Climate

The climate in a region is the sum of an array of factors and variables that influence it so that it differs from one region to another. It is one of the natural elements that affects the lives and activities of human beings.

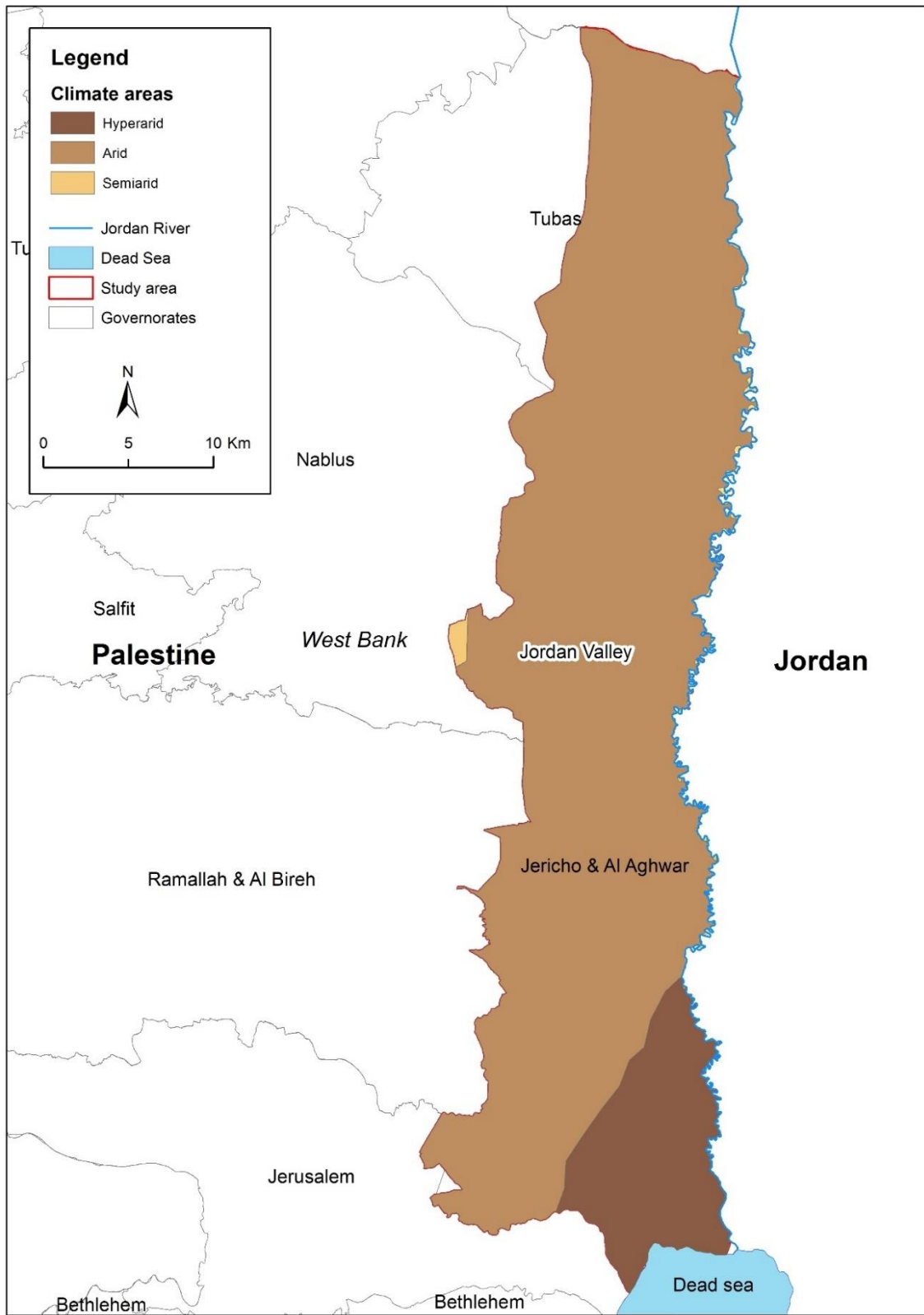
The terrain of Palestine is considered one of the most important geographical factors that influence the spatial variability of climate elements. The distribution of rainfall, temperature and humidity take the form of longitudinal ranges that stretch from the north to the south and their borders coincide with the boundaries of the terrain and extend in the same direction.

The Jordan Valley area, as a natural section of Palestine, has a climatic privacy since it is a canyon (Ghour) area surrounded by mountains from the east and west. Therefore, it is far from the sea influences and winds that soothe the atmosphere and bring the winter rains in Palestine.

The study area is highly influenced by the arid and semi-arid climate (Fig. 2-10), which is characterized by long, hot, dry summers and short, moderate winters. The climate condition in the study area is described in the following sections.

The climate of the Jordan Valley is dry, with hot summers and warm winters. Freezing and frost rarely occur in the area which is dominated by a semi-tropical climate.

The most important climate elements that influence the planning of land use are temperature, humidity, winds, rains, solar radiation, and evaporation.

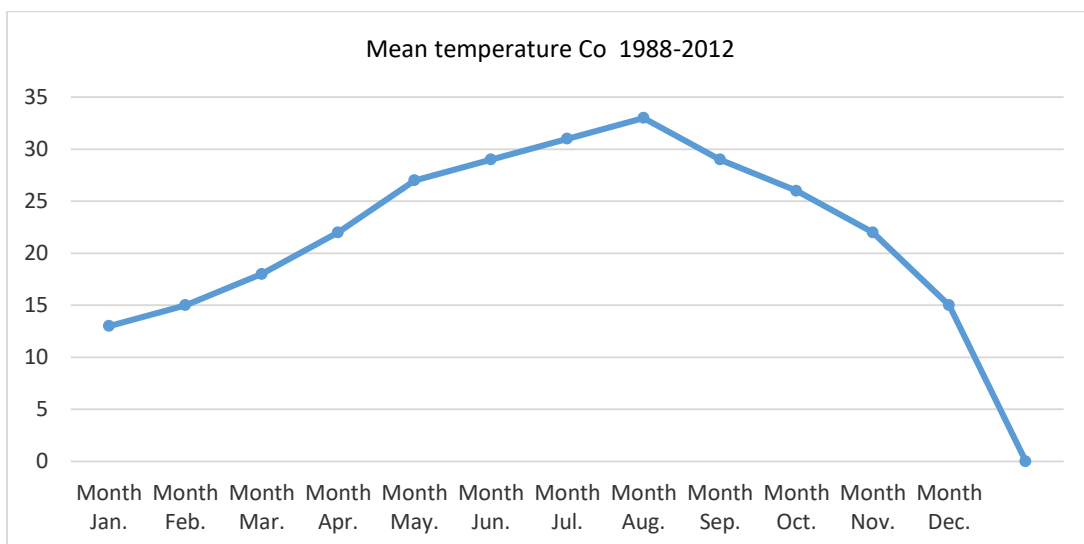


**Fig. 2-10: Climate zone in the Jordan Valley.**

- **Temperature**

The temperature is considered the main climate element on which nearly all the climate conditions depend. The temperature affects the air pressure, which in turn affects the winds that affect rainfall. In addition, the temperature is the measurement of the thermal energy that air acquires from the solar or terrestrial radiation. Temperature differs from one place to another due to the geographical location, altitude, prevailing winds, and the longitudinal degree of the location (Al-Jawhari, 1981).

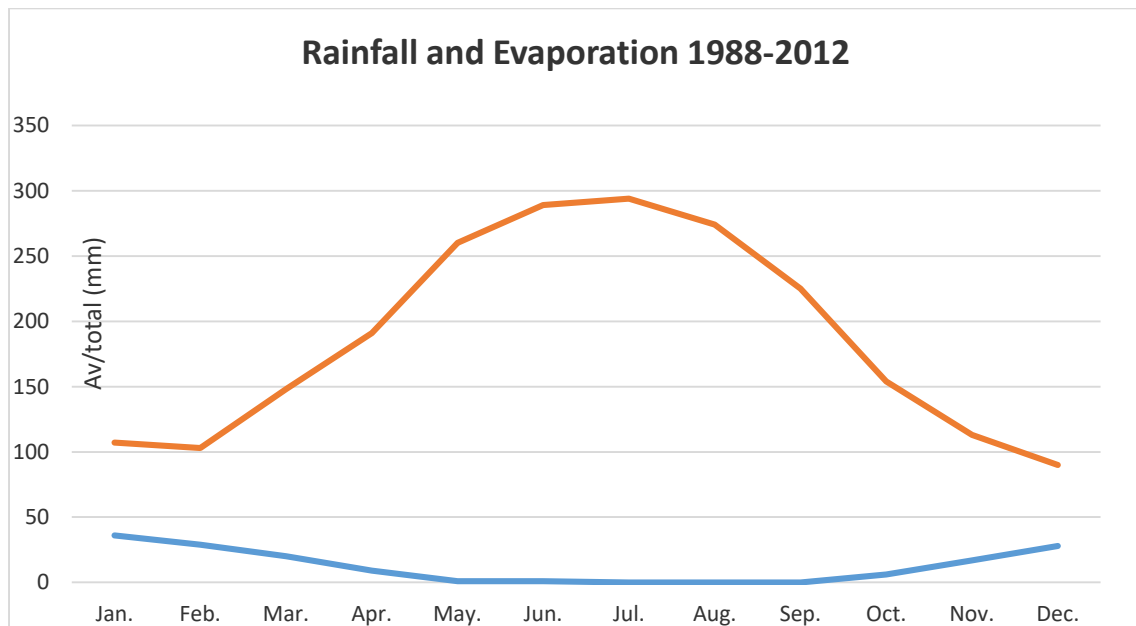
The location of the Jordan Valley to the east of the mountain heights prevents the north-western winds, which soothe temperatures, particularly in summer, from reaching the area. The temperature increases as we move from the north to the south. From Fig. 2-11 we can observe that January is considered the coldest month of the year, the lowest average temperature in January is six degrees and the highest average of temperature is 20 degrees, whereas August is considered the hottest month of the year, the lowest average of temperature in August is 22 degrees and the highest average degrees is 39.6 degrees. The highest values of temperature were recorded during the period between 1988 and 2012 as it reached 48 degrees in August. The lowest values of temperature were registered during the same period between the years of 1988 and 2012 in January as it reached five degrees in 2008, according to the Palestinian Department of Meteorology ("Climate data for the years 1988-2012," n.d.).



**Fig. 2-11: Mean temperature in the southern part of the Jordan valley (Jericho).**

- **Rainfall**

Rainfall is considered one of the water sources in the study area. A large part of the rainfall in the study area is observed in the winter season, especially between mid-November to March, with marked annual variations. The potential evaporation rate exceeds the rainfall (Fig. 2-12).



**Fig. 2-12: Rainfall and evaporation in the southern part of the Jordan valley (Jericho)**

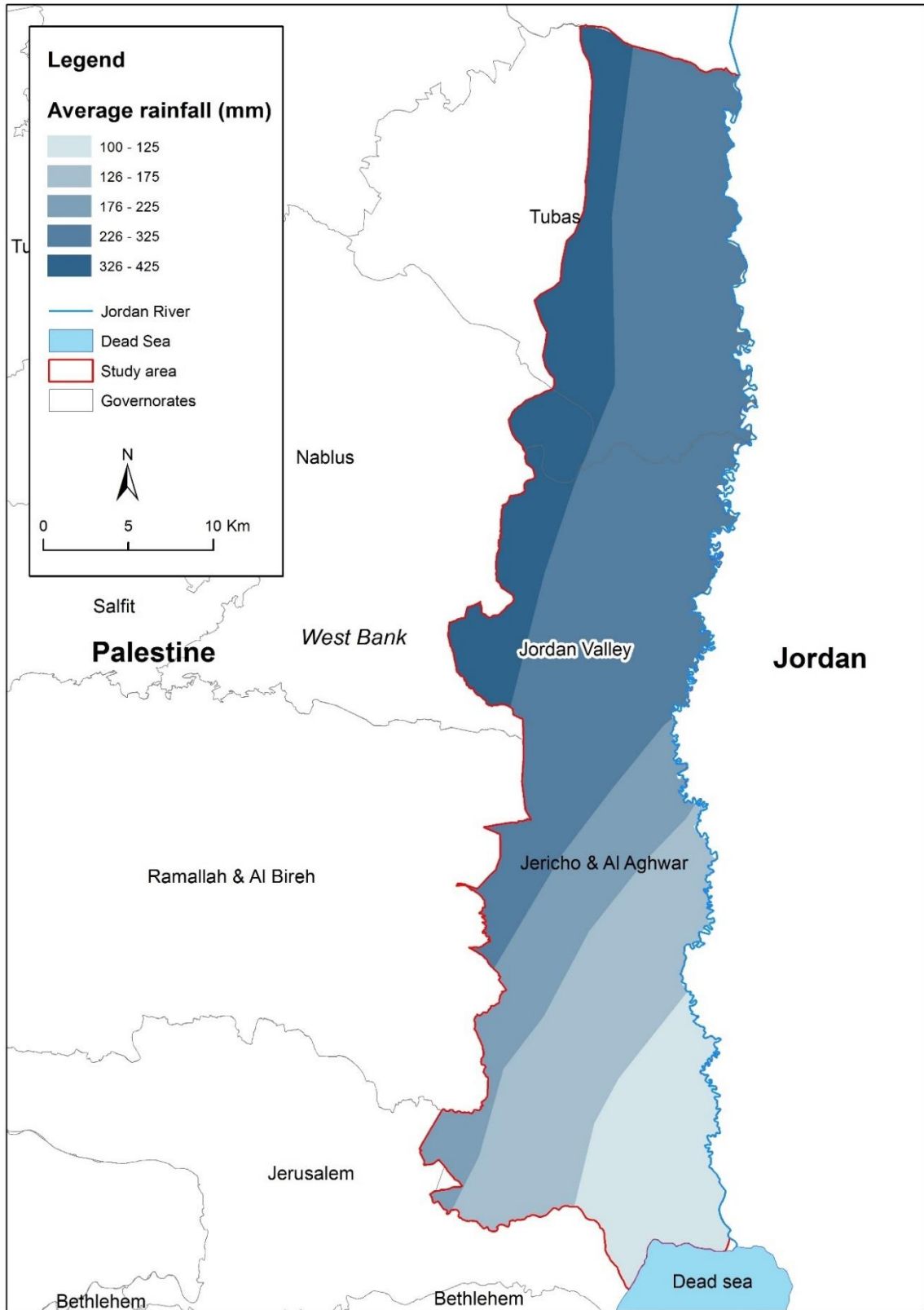
Due to the dry climate that dominates the Jordan Valley, the rainfall is characterized by short heavy rain storms that cause torrents and floods following the rain storms in the area.

Rainfall distribution in the Jordan Valley: The rainfall decreases as we move from the north to the south, in contrast with the temperature and evaporation intensity which increase as we move southerly. Fig. 2-13 shows the distribution of rain quantities in the Jordan Valley areas, and we can notice that the lowest amount of rainfall occurs in the most southern region to the north of the Dead Sea area, reaching 100 mm. The amount increases gradually as we move towards the north so that it reaches the highest amount, 375 mm, in the area of the eastern slopes, located in the northwest of this zone.

According to the records of the Department of Metrology, in Jericho, which is located in the south of the Jordan Valley Region (Ghour), the annual average rainfall during the period between 1988 and 2012 was about 147 mm, whereas the rainy days ranged between 20 and 25 days a year. In the

northern area of the Jordan Valley region in Bardala, the average rainfall during the period between 2009 and 2012 was about 260 mm, and the number of the rainy days in the year was between 30 and 61 days.





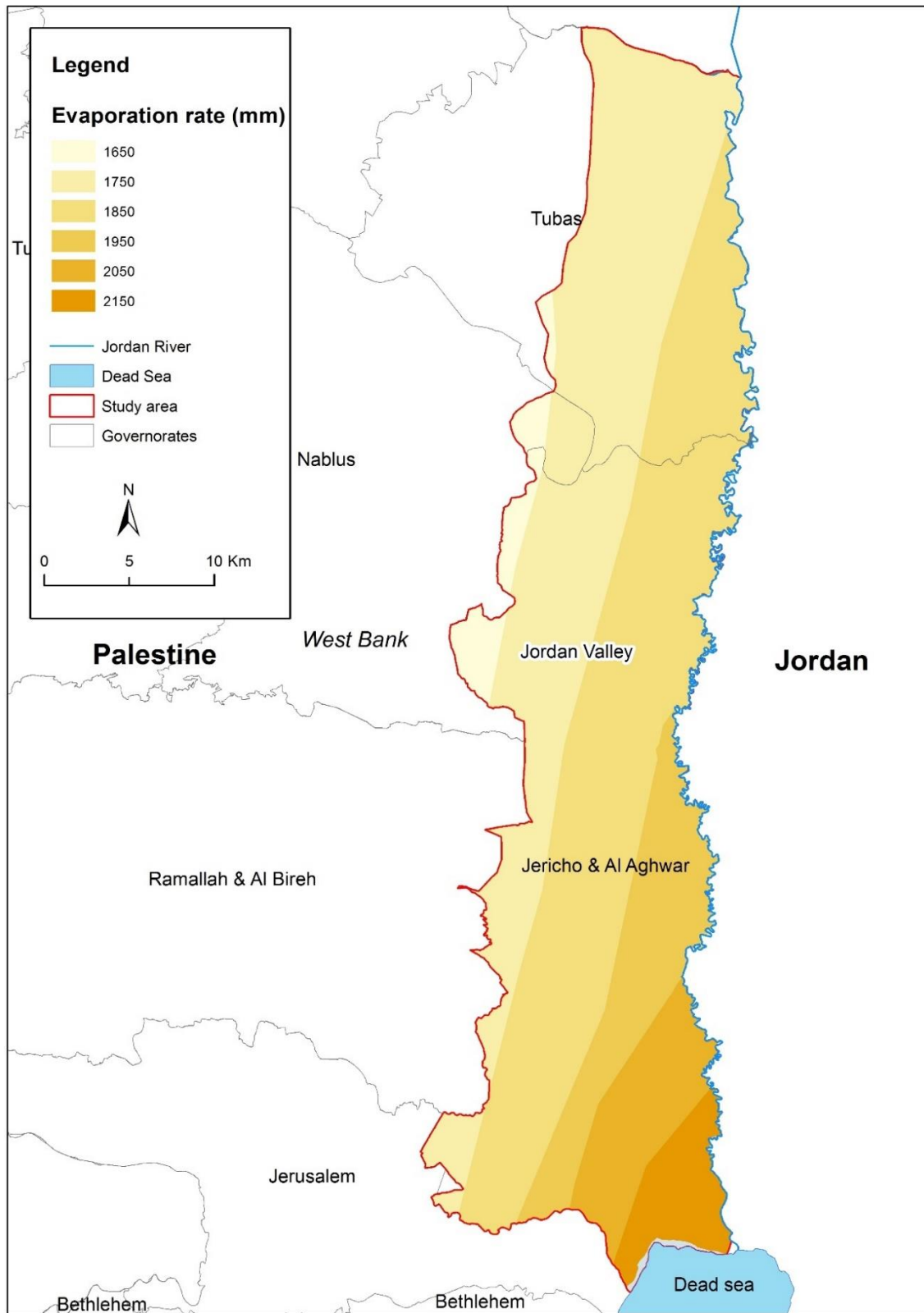
**Fig. 2-13: Rainfall in the Jordan Valley.**

- **Winds**

The average wind velocity in the Jordan Valley is approximately 3.27 m/s during the year. The wind direction during the same day changes from north-westerly at night to southerly during the morning hours at a speed of 3 m/s. The southern winds from the Dead Sea start at about 8:00 a.m. until 2:00 p.m. and changes gradually to northerly and northwesterly until it reaches its climax at 6:00 p.m. at a speed of 5 m/s. During Spring, the wind velocity is between 15 – 20 m/s. However, the average wind velocity during the whole year is 12 m/s. From the deserts of Arabia, the hot Khamaseen winds blow on the Jordan Valley, carrying dust and sand (“Climate data for the years 1988-2012,” n.d.).

- **Evaporation**

In the Jordan Valley, evaporation is very high because the temperatures are high, and the western winds that cool temperatures do not reach the Jordan Valley due to the mountain barriers to the west of the Valley. The evaporation degree ranges between 1650 mm at the bottom of the eastern slopes to 2150 mm the farthest south of the Jordan Valley. If we look at the evaporation rate in Fig. 2-14, we notice that the evaporation amounts increase as we move to the south and east as a result of higher temperature and lower sea-level.



**Fig. 2-14: Evaporation Rate in the Jordan Valley.**

- **Relative Humidity**

In the southern part of the Jordan Valley, which is represented by Jericho, the average of the relative humidity during the period from 1988 to 2012 is estimated at 51%. ("Climate data for the years 2009-2012 for the Bardala station," n.d.) The highest average was in winter when it reached 70% during the day and 85% during the night. In the Winter months, the averages of the relative humidity ranged between 51 and 67% ("Climate data for the years 2009-2012 for the Bardala station," n.d.). The relative humidity decreases as the temperature rises. In the northern area of the Jordan Valley, in Bardala, the average of the relative humidity during the period between 2009 and 2012 was approximately 55% ("Climate data for the years 2009-2012 for the Bardala station," n.d.).

The climate of the study area is extremely dry because of limited rainfall, high temperature, and high evaporation. Rainfall is limited during winter to spring and is scarce in summer. Therefore, most of the localities in the study area suffered extreme shortages of safe and reliable water supply for domestic and agricultural use during the Summer.

#### **2.2.4 Water resources**

The principal water resources available to Palestinians include groundwater, springs, wells and harvested rainwater. The river Jordan, which is used by the Jordanians and Israelis, is not a water resource for Palestinians in the West Bank.

Transboundary water resources shared between the Israeli occupation and the occupied Palestinian territory include the Coastal Aquifer that runs along the Palestinian coast and Gaza towards the Mediterranean Sea, the Mountain Aquifer which is located under the West Bank is a deep aquifer, in comparison to the coastal aquifer, and can only be tapped by deep drilling (Brooks & Trottier, 2012).

The Mountain Aquifer is the main groundwater source in the West Bank. This aquifer is divided into three sub-basins The Western Aquifer, the Eastern Aquifer, and the Northeastern Aquifer (Fig. 2-15). Around 80% of aquifer recharge occurs inside the West Bank. Israel abstracts (pumps) much higher quantities of groundwater than the Palestinians. Through its military occupation, Israel reserves for itself 88% of the well pumping from these three basins.

According to the World Bank, Israel abstracts about 80% of the 'estimated potential' of the Mountain Aquifer and continuously over-abstracts beyond sustainable yields, in some years by more than 50%.

This will cause irreversible long-term damage to the sustainability of this shared water resource (The International Bank for Reconstruction and Development/The World Bank, 2009).

The dominant water resources used in agriculture are provided by the Eastern Mountain Aquifer and supplies springs with water (EcoPeace/Friends of the Earth Middle East, Amman, Bethlehem, and Tel Aviv, 2007). The eastern basin supplies water to agricultural wells and springs (Rumman, 2010) 73% of the total local water resources in Palestine are obtained from groundwater wells and springs (Palestinian Water Authority, 2010).

Palestine has suffered during the last two decades from increasing water scarcity. This is particularly visible in the agricultural sector and in farming communities. These are heavily dependent on water as a primary irrigation source. Lack of water and investment has resulted in the destruction of the agricultural sector in Palestine (Palestinian Water Authority, 2010).



**Fig. 2-15: Basins in the west bank.**

- **Water sources in the Jordan valley**

Water source studies are considered an essential element for the construction of integrated planning, because of all social and economic issues, land used and land cover depends on water. In order to put effective and integrated urban plans to the Jordan Valley region, we must analyze the available water resources in some detail.

The Jordan Valley area is considered one of the natural water sources in the West Bank. It contains above ground water from the Jordan River basin, flood waters, and waters flowing into the Jordan River from west bank streams and underground water from the eastern section of the mountain aquifer. The amounts of these resources vary from one place to another, from one season to another during the year, and from year to year. Water sources are affected by factors of location, topography, geology and climate (Yacoubi & AbdulGhafoor, 2011).

- a) Groundwater in the Jordan valley**

Groundwater is the main source in the territory of the Jordan Valley, such as wells and springs where water flows from mountain slopes overlooking the Jordan Valley. The modern sediments water reservoir and Eocene water reservoir are considered the most important renewable groundwater reservoirs in the Jordan Valley territory. The amount of ground water in the two reservoirs depends on the amount of annual rainfall on the mountain heights in the eastern basin, which extends from the heights of Nablus, until the Hebron Heights; these two reservoirs are fed directly by run-off to the valleys; in addition to the groundwater from mountainous areas (Palestinian Water Authority, 2014).

- **The Eastern Aquifer:**

The eastern basin (Fig. 2-15) is considered one of the most important underground water basins, which extends along the eastern half of the West Bank; the area of the basin is about 2900 kilometres square. The topography of the basin is divided into three main sections, which are mountainous highlands, eastern slopes, Jordan Valley and the Dead Sea. Palestinians exploit 40% of its water, while the Israelis have exploited 60% of its water since 1967, although this basin is considered a Palestinian basin due to its extension within the borders of the West Bank (Yacoubi & AbdulGhafoor, 2011).

This basin consists of several underground reservoirs dating back to the Pleistocene epoch, Eocene, and Alcinomenaan.

The area covered by this basin is characterized by high degradation of elevation, Elevation ranges from 900 m above sea level in the highlands to 396 m below sea level in the Jordan Valley area. Most of the area of the eastern basin is located within the areas characterized by low rainfall in general, while the western part of it is located within areas which experience heavy rains (highlands of the West Bank) which are the source of groundwater recharge in the basin, and is estimated to be about 125-197 million metres cubic per year on a general average. The rock layers which compose this basin trends generally eastward, which determines the movement of groundwater in this direction (Palestinian Water Authority, 2010). The number of Palestinian wells in the eastern basin is 103 wells.

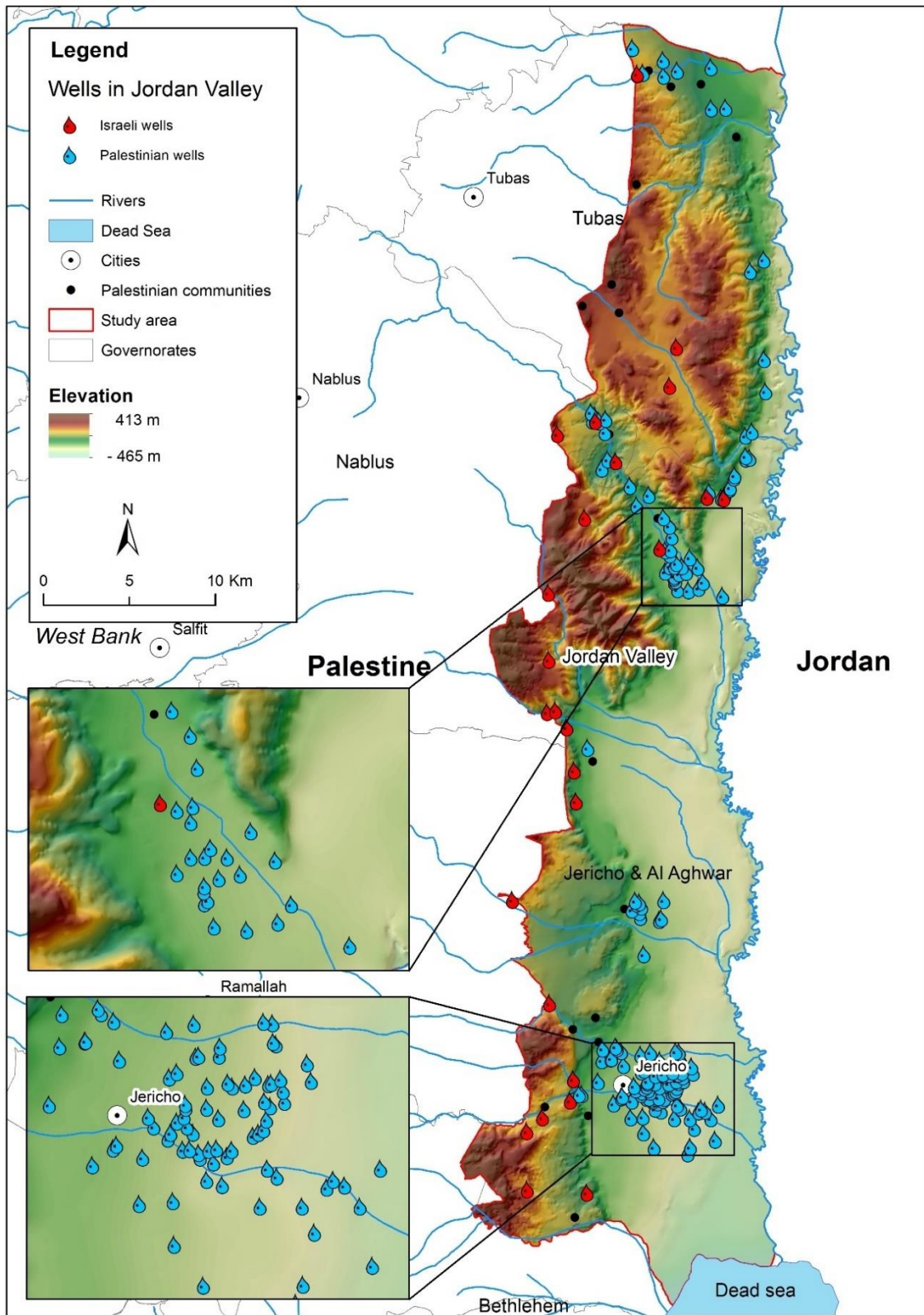
This basin contains several springs including springs in the Jordan River Basin. It is a group of springs which discharge heading east towards the Jordan Valley basin through the east valleys of the West Bank. Estimated at about 46 springs equivalent to 35% of the total number of springs, the annual average discharge is approximately 37 million cubic metres. The reason for the discharge increase for the spring group is because it's elevation is under the sea level and it belongs to the aquifers underground layers that are the furthest from the surface.

The most important springs of this group: Bardala, Fara, Fasayel, Aldyouk, Nu'ayma, Ain Sultan, Quilt, and others (Palestinian Water Authority, 2010).

- **Wells** The estimated number of macro-Palestinian Wells in the Jordan Valley territory is about 209 wells; only 89 wells are used by Palestinians (Fig. 2-16), due to:
  - Old wells: excavated in the early fifties.
  - Shallower depths: well depth of no more than 200 metres.
  - Low water levels, a high proportion of salt in the wells as a result of drought and the operational equipment has become out-dated.
  - Israeli occupation controls the region; leading to depriving the Palestinians being able to rehabilitate these wells.
  - Israel drilled several deep wells (of which 27 wells with high production capacity are in the area of the Jordan Valley). This situation prevents the feeding of the Palestinian wells, because the water flows to the great depths of the wells digged by Israeli (Palestinian Water Authority, 2014).



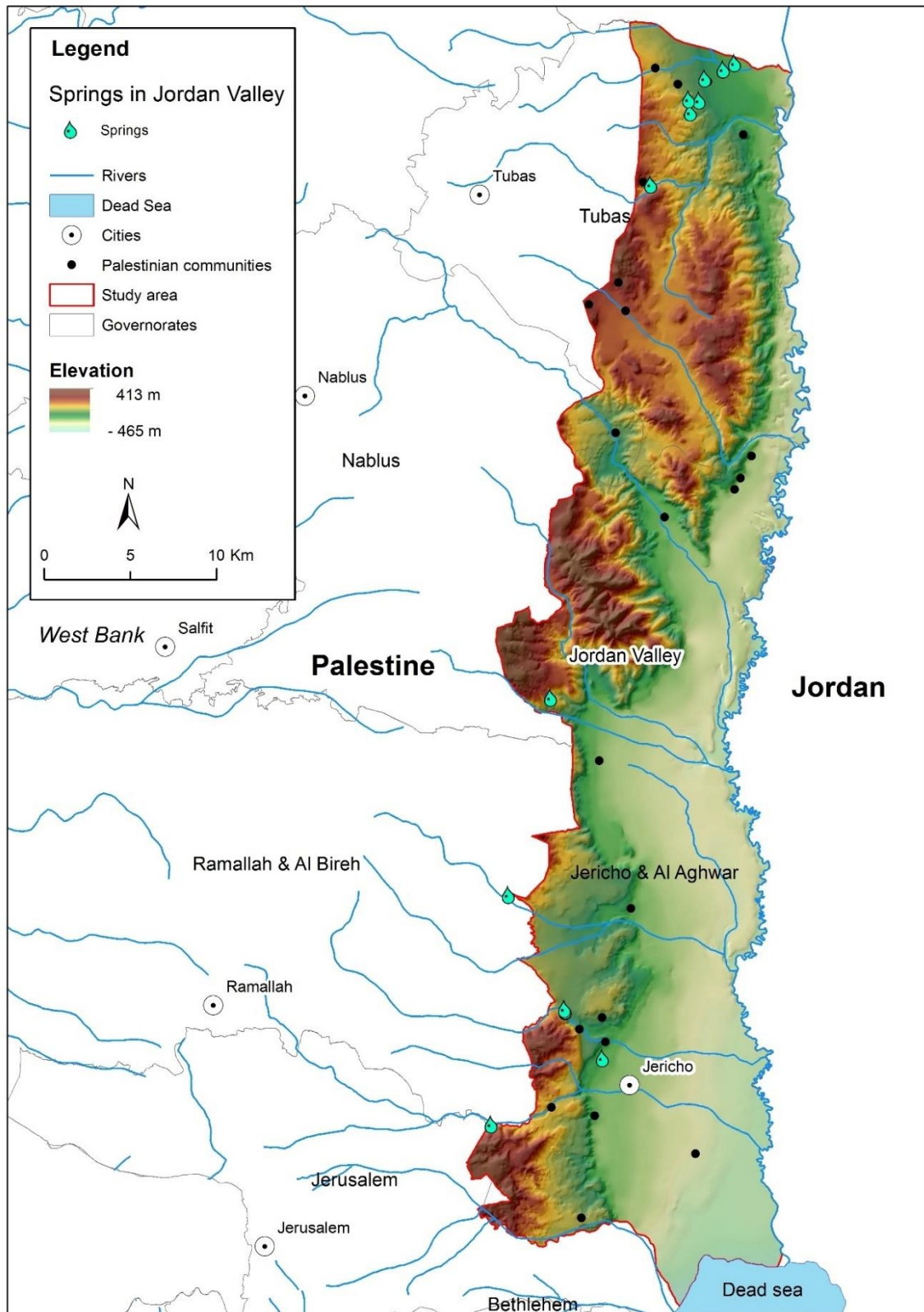
- Israel produces about 32 million cubic metres of water from these wells annually, most of which is designated for the settlements and a small portion of which is supplied to the Palestinian villages. Israel also supplies water for agricultural use in the settlements from the Tirtza artificial water reservoir in the central Jordan Valley as well as from treated waste water from the Israeli and Palestinian neighbourhoods of east Jerusalem and the Adumim settlements (B'Tselem, 2011b).



**Fig. 2-16: Wells in the Jordan valley.**

- **Springs**

Springs are the second largest water source and are mainly used for agricultural irrigation channels (Rumman, 2010). Springs are flowing in many areas; the number of major springs is 22 springs. Its water feeds from the mountain aquifers (Fig. 2-17), and the estimated overall rate of annual water flow of these springs is about 44 million m<sup>3</sup>/year. Water from these springs is used for agriculture and drinking purposes. There is a group of springs known as "springs Alvchkh" which has a discharge rate of between 80-100 million m<sup>3</sup>/year. The amounts of spring water are different from one season to another, depending on the amount of rainfall on the mountain layers which feed these springs. Springs have had a particular importance in the Jordan Valley. Due to the agricultural-based economy of many Jordan Valley communities, 87% of the total amount of spring water was consumed by agriculture, and only 13% for domestic consumption (Palestinian Water Authority, 2010).



**Fig. 2-17: Springs in the Jordan valley.**

Springs in the Jordan Valley have both decreased in discharge and quality. Along with old spring canals, the flow is expected to drop a further 25 -30% (Rumman, 2010).

Recent findings of the Palestinian Water Authority in the Water Supply Report (2010) warns of high levels of chloride concentration (from 25 to 1,000 mg/l) and high levels of salinity in the springs. Most of the affected springs are located in the Jericho district. Due to the excessive extraction from the mountain aquifer, the water table has declined and risks further intrusion of salt water (Palestinian Water Authority, 2010).

Agricultural wells are an important irrigation source today in the Jordan Valley and represent 39% of the total local resources. However, their number has decreased from 774 in 1967 to 328 in 2005, where only 250 are operational. The springs are decentralized and individually owned (Palestinian Water Authority, 2010).

Other possible environmental threats to ground water quality is wastewater dumping from Palestinian areas and Israeli settlements that are not connected to any sewage networks (Isaac,J., Gigliol, I., & Hilal,J., 2009).

There are 34 Israeli settlements established in the Jordan Valley with a population of 10512 settlers. Settlements are characterized by unsustainable water consumption. 100 litres per person per day is a sustainable level of water consumption, according to the World Health Organizations definition. Settlements in the Jordan Valley are using between 300 - 400 litres of water per person per day (OCHA) (Office for the Co-ordination of Humanitarian Affairs), 2012). This constitutes 660% of the difference between water availability and consumption between the Palestinian farmer and the Israeli settlers (Ma'an Development Centre, 2011).

Further, many springs and wells in the Jordan Valley have been taken over by settlers and settlement expansion (OCHA (Office for the Coordination of Humanitarian Affairs), 2012).

### **b) Surface water in the Jordan Valley:**

The surface water in Jordan valley region (Fig. 2-20) is represented by the water running in the valleys during winter. The total sum of the flowing water from the floods through the valleys in the West Bank is estimated at around 110 million cubic metres/year, where this water forms an important source if it used in a right and appropriate manner, such as building dams or establishing containers for collecting water.

- **Jordan River:**

Israel and Palestine share the Jordan River (Fig. 2-18) with three other riparian countries: Lebanon, Syria, and Jordan. Israel and Palestine also share ground water aquifer basins, three in the West Bank, and one in the Gaza strip extending along the Mediterranean coast.



**Fig. 2-18: Jordan River (Jordan Valley picture, n.d.)**

The headwaters of the Jordan River at an altitude of 2200 m above sea level (Hasbani, Dan, and Baniyas Rivers) lie in Lebanon, Israeli occupied areas and Syria. These join to form the Upper Jordan River, which flows into Lake Tiberias. After leaving Lake Tiberias, the lower Jordan River forms the

boundary between Palestinian territory, which was occupied by Israel in 1948, and Jordan, and then between the West Bank and Jordan (Jordan Valley) before flowing into the Dead Sea at an altitude about 350 metres below sea level (Fig. 2-20). The total natural flow of the Jordan River varies between 1,287 million cubic meters (MCM)/year and 1,671 MCM/Year. Israel draws water from the north-western portion of Lake Tiberias and transports it out of the Jordan River Basin through its National Water Carrier, where Israel is pumping about 500 million cubic metres of water from the river through this carrier to the coastal cities and the Negev desert. The Palestinian legal share of water from the Jordan River is about 257 million cubic meters annually, according to Johnson's plan. In spite of that Israel has denied Palestinians access to the entire Lower Jordan River since 1967 ("Jordan River Dispute," 1997).

After the Six Day War in that year (1967), Israel declared the West Bank land adjacent to the Jordan River a "closed military zone", to which Palestinians have been denied access, to the present day (Attili, 2004).

The total length of the river in a straight line is approximately 140 km; while the real length with the different meandering is about 350 km. estimated drainage area is about 43,500 km (Attili, 2004).

- **Valleys:**

From **Error! Not a valid bookmark self-reference.** it is clear that the annual flow rate of the valley's water in the Jordan valley region varies from one valley to another and we can see that the Al-Fara and Al-Qelt valleys (Fig. 2-19) contribute the highest flow rate of water 3-11 million cubic metres/year, where Al-Maleh valley has the lowest flow rate of water 1 million m<sup>3</sup>/year. The water of these valleys is often drawn from the springs that have different discharge values from one season to another and from one year to another according to the amount of rainfall.

**Table 2-1 - The most important valleys in the Jordan Valley region and the amount of flowing water**

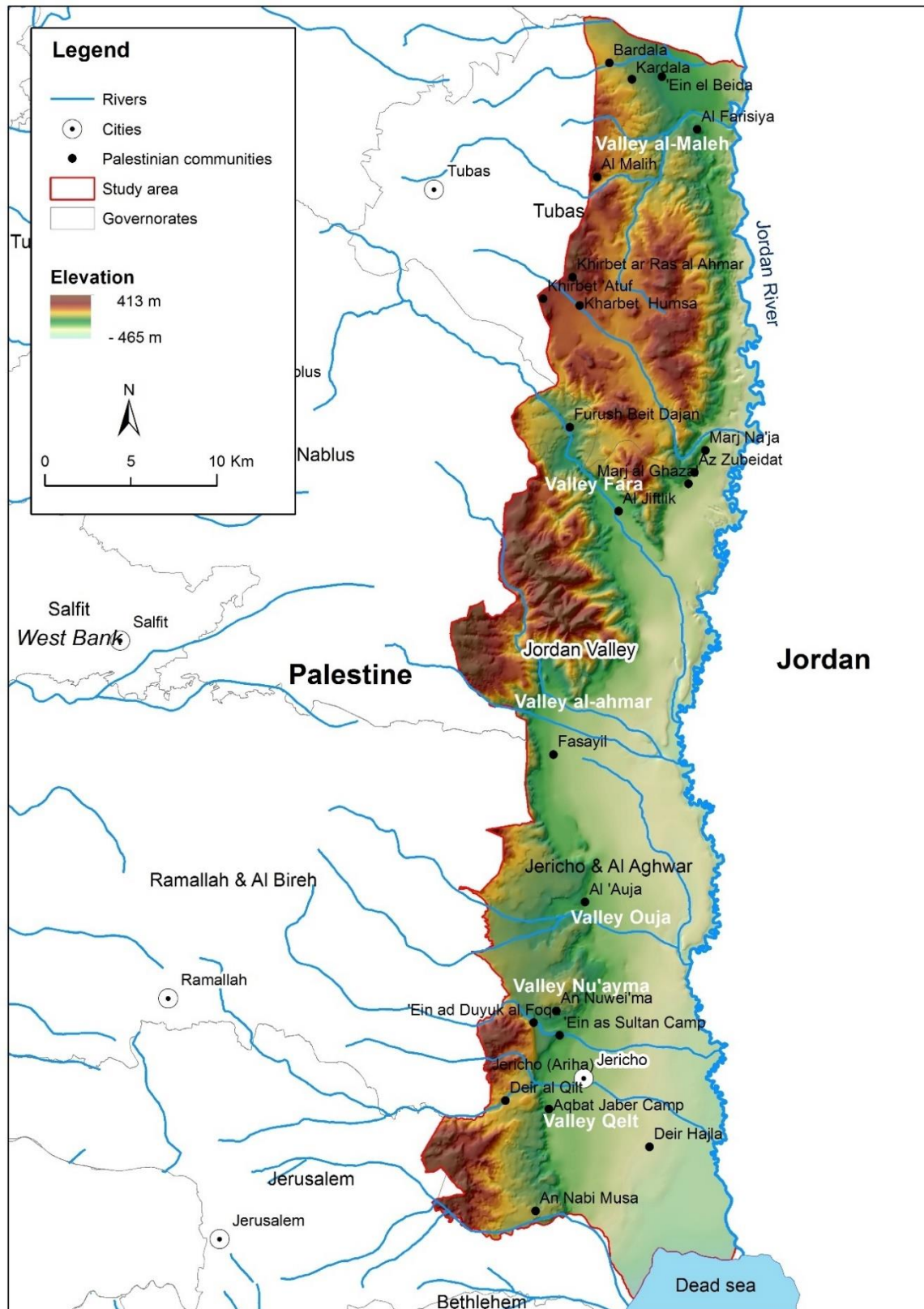
<b>Valley Name</b>	<b>Rate of annual flow (Million cubic metres)</b>
<b>Valley al-Maleh</b>	1.0
<b>Valley Nu'ayma</b>	1-2
<b>Valley Fara</b>	3.5-11
<b>Valley al-ahmar</b>	1-2
<b>Valley Ouja</b>	2-3
<b>Valley Qelt</b>	3-11

(Yacoubi & AbdulGhafoor, 2011)



**Fig. 2-19: Valley Qelt (Jericho and the Jordan Valley governorate, n.d.)**





**Fig. 2-20: Jordan River and valleys in the Jordan valley region.**

## 2.2.5 Soil

Soil is one of the three major natural resources, alongside air and water. It is one of the marvelous products of nature and without which there would be no life.

The soil is made up of three main components – minerals that come from rocks below or nearby, organic matter which is the remains of plants and animals that use the soil, water and the living organisms that reside in the soil. The proportion of each of these elements is important in determining the type of soil that is present. But other factors such as climate, vegetation, time, the surrounding terrain, and even human activities (e.g. farming, grazing, gardening etc.), are also important in influencing how soil is formed and the types of soil that occur in a particular landscape.

Soil can form from the rocks below or from rocks from a very long distance away - perhaps being carried by wind or water. The glaciers of the last ice age acted as giant bulldozers pushing truly huge amounts of soil along as they grew and dropping the soil as they melted (Shawawrah & Hallaq, 2012).

- **Types of soil present in the Jordan valley**

From Fig. 2-21 we note that the Jordan Valley area contains many types of soil, which are as follows:

- a) Terra Rossa: is a type of red clay soil produced by the weathering of limestone. When limestone suffers weathering, the clay contained in the rocks is left behind, along with any other non-soluble rock material. Under oxidizing conditions, when the soils are above the water table, iron oxide (rust) forms in the clay. This gives it a characteristic red to orange colour. Terra Rossa is typically found in regions with a Mediterranean climate. (Abed, 1999).

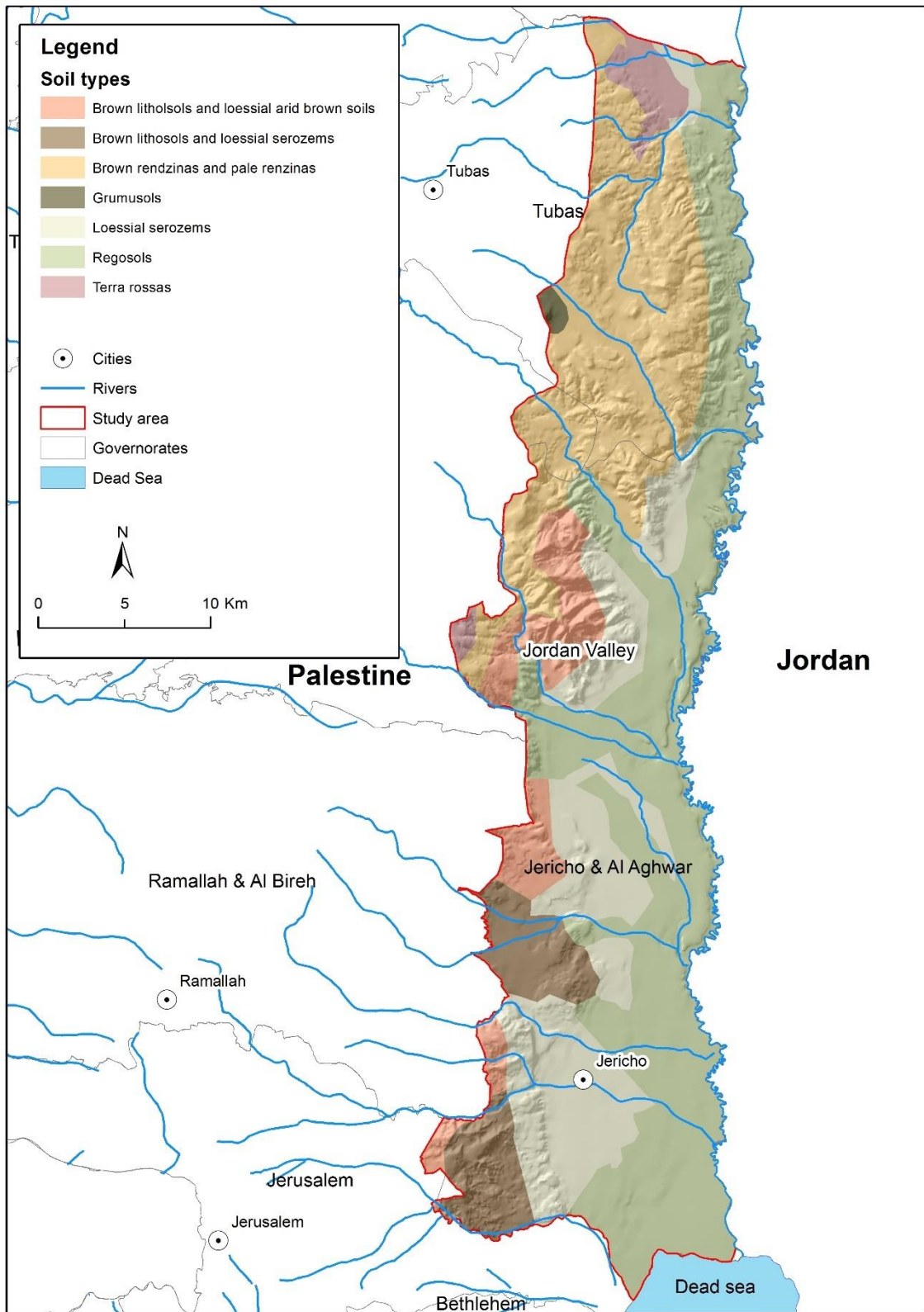
This soil is characterized by a set of characteristics which are:

- The colour of this soil is red to light brown and rich in mud.
- Thickness of Terra Rossa varies from one area to another, thick in the valleys and plains, thin on the slopes.
- Contains a high proportion of moisture and mineral substances, lime, and low organic matter. The oak forest grows in Terra Rossa soil, crops of wheat, grapes, olives, almonds and apples are planted in this kind of soil (Abed, 1999).

- b) Brown Lithosols and Loessial Serozems: This type of soil association is found on steep to moderate mountain slopes, in the areas of the southwest of Aqbat Jabber Camp and northwest of Nuwe'ma, covering an area of about 4,670 hectares. The soil was originally formed from limestone, chalk, dolomite and flint.

The major types of vegetation found in this soil are *Anabasis articulata* and *Zygophyllum*. The current land use is restricted to winter crops grown by Bedouins in some valleys (Dudeen, Lacirignola, Montanarella, Steduto, & Zdruli, 2001).

- c) Loessial Sernozems: This type of soil association dominates the areas of Nuwe'ma, north of Al-Auja and south of Aqbat Jaber camp covering an area of approximately 4,920 hectares. This soil is typical of that on a plateau and on moderate slopes. The soil parent materials are loessial sediments, gravel, and highly calcareous loamy sediments. Its major vegetation cover is an association of the *Hammada scoparia*. Most of the area covered by this soil is used for grazing and only part of it is dry-farmed. There are also some irrigated orchards (F Bender, 1974).
- d) Regosols: This type of soil association characterizes the eastern border of the Jordan valley region. It is found as badland along terrace escarpments in the Jordan valley, covering an area of approximately 8,880 hectares. The soil parent materials are sand, clay, and loess. The soil dominant vegetation covers are *Anabasis articulata*, *Salsola vermiculata*, and *salsola tetrandra*, and are used primarily for grazing (Al-shawawrah, 2003).
- e) Brown lithosols and loessial Arid Brown Soils: This type of soil association characterizes the western part and covers an area of approximately 2,410 hectares of the Jordan valley. These types of soil are mainly found on steep rocky and eroded slopes. Brown lithosols are found among the rocks, while Loessial arid brown soils are found on flat hilltops, plateau, and foot-slopes. The parent rocks of this soil association are chalk, marl, limestone, and conglomerates. Its major vegetation cover is *Artemisia herba-alba* (Dudeen et al., 2001).
- f) Brown Rendzinas and Pale Rendzinas: This type of soil association characterizes the Northwestern part of the Jordan valley. Rocky outcrops of these soils cover between 30-50%. Major vegetation cover includes *Pinus halepensis*, *Pistacia lentiscus*, *Pistacia palaestina*, *Quercus ithaburensis*, *Ceratonia siliqua* and *Ballotalia undulatae*. In such areas, cultivation of grapes and olives, field crops (wheat and barley), and grazing are the main land uses, especially in shallow and steep slopes areas (F Bender, 1974).



**Fig. 2-21: The Type of Soil in the Jordan Valley.**

- **Soil problems in the Jordan valley**

In the Jordan Valley, the main soil problem is soil salinity. The salinity is increasing with time due to several reasons: the nature of the soil parent material and its underlying sub-stratum composed of lacustrine deposits; the climate which motivates large amounts of evaporation leaving larger concentrations of salts in the soil.

Irrigation also leads to the creation of more saline soils. In certain cases, this leads to a transformation to a highly saline soil type, which is a major setback in the soil quality which is starting to appear in the Jordan Valley.

Salinity has a large negative impact on the quantity and quality of vegetation. The increased salinity of irrigation water is also contributing to this problem (Dudeen et al., 2001).

The another soil problem in the Jordan valley is soil erosion in the highlands. The lack of vegetation due to the high temperatures and low amount of precipitation accelerates the desertification process.

## **2.2.6 Vegetation in the Jordan valley and the factors affecting diversity of vegetation**

The distribution of vegetation is associated with natural factors such as climate, topography, and soil. These factors are considered the most important determinants of the diversity of natural vegetation and the differences of its density from one region to another.

Climate: climatic conditions have a direct impact on the formation of vegetation on the surface of the earth, and the diversity of vegetation from one region to another because the vegetarian regions are a reflection of the prevalent climate conditions.

Topography: The diversity of the topography of the study area, as was mentioned earlier, from the highlands, plains, valleys and severe depressions make for a unique diversity of plants.

Soil: As mentioned earlier, the diversity of soil types in the Jordan valley is leading to the difference in its ability to hold water, as well as the diversity of organic materials and minerals in it. We can notice the diversity of vegetation in the area of study, such as: forests and trees are growing in red soil (Terra Rossa) because it holds water since it is a heavy soil, while the mild porosity soil does not hold water so that the water leaks down to the bottom allowing herbs and shrubs to grow in it. While Rond Zina soil is suitable for the growth of weeds (Ennab, 1979).

- **Natural vegetation**

The natural vegetation in the Jordan valley is divided into two main groups as follows:

- a) Herbs and weeds**

They are spread over most of the Jordan valley territory because they do not need large amounts of water. They spread in the plains and mountainous areas (Fig. 2-22), either independently or together with other vegetation such as forests and trees.

The most widespread herbs found in the Jordan valley, east Jericho and north of the Dead Sea are Natish (*Sarcopoterium spinosa*), Ghaisalan (*Urginea maritima*), Zohhaif, Nafal, and there are some kinds of herbs in the Jordan Valley area that have waxy leaves that resist transpiration. They include Al-Bahmeh (*Stipa capensis*), Nafal, Handaquq, Al-khubaizah (*Malva praviflora*), and other herbs such as Athbeh, Sa'raneh, and Ajram. The grazing season is primarily in winter due to the warm climate. In the summer, farmers seek hilly areas where water and vegetation are more abundant and the weather is cooler (The Applied Research Institute – Jerusalem (ARIJ), 1994).



**Fig. 2-22: Herbs and weeds in Jordan Valley region.**

## b) Forest

In the Jordan Valley, there is a forest belonging to the Sudano Deccanian Enclaves climate, with humidity and high temperatures on the banks of rivers and valleys. The plants present in this region are *Zizyphus spina-christi*, *Lycium shawii* (Awsaj), *Acacia spp.* Just in the rift valley, these trees form forests or group of trees. Rainfall ranges from 200-100 mm/year, but the water flow from the Jordan River and springs have made the environment hot and wet on the banks of the river and at the oases around the springs. The soil is composed mainly of volcanic soil (Regosols), but the soil of the forest area is Alluvial and Brown's soil formed from deposits of all types of soil by water flowing from the river, springs and valleys (Abu Ayyash (Brigat) et al, 2007).

In the Jordan valley we can identify the following types of forests:

- **Jordan River Riparian Forest:** The soil on the banks of the river is a sedimentary mix and it is changing to volcanic after tens of metres away from the river bank. The vegetation in this forest consists of *Populus euphratica* (Poplar), *rotundus Cyperus*, *Cyperus papyrus longus*, *Phragmites australis* (Reeds), *Juncus arabicus*, trees of *Tamarisk Jordanica*, *Lycium europium* salty picking (*Atriplex halimus*), *Asparagus palaestinus*, *Prosopis farcta*, acol (*Alhagi maurorum*), *Zizyphus spina-christi*, *Palanites aegyptiaca*, *Salvadora Persica* (siwaak) (al-Junaidi, 1994).
- **Forests of the Dead Sea Beach:** Due to the presence of relatively freshwater from the spring Ain Al-Fashkha in the north west corner of the Dead Sea and mixing with the water of high salinity of the Dead Sea, a forest (natural reserve) has been formed and it consists of Algrkd plant (*N.retusa*) *T.tetragyna*, with the presence of shrubs dwarf such as *Prosopis* and Acol.
- **The Oasis Forests in the Jordan Valley:** (Jericho, Oujja, Jiftlik) do not have anything but a few scattered trees left among the cultivated fields or in the abandoned land as a result of logging, grazing and the expansion of agriculture. This forest is considered as rich in trees and shrubs, and the types of tree which are prevalent in this area are *Zizyphus spina-christi* (buckthorn), *Palanites aegyptiaca*. While the shrubs in this forest are: *Atriplex halimus*, *Salvadora persica*, *Calotropis procera* (Abu Ayyash (Brigat) et al, 2007).

### **2.2.7 Agricultural**

The Jordan Valley has historically been an ideal place for agricultural activities. This is due to the valley's all-year round good conditions and its rich soil and water resources, particularly fresh water from springs. These are the conditions that made the rural communities flourish in a lush landscape and long fields of citrus fruit.

This zone is the most important irrigated area in the West Bank. Hot summers and warm winters characterize the climate of this region. The availability of both springs and ground water makes this area most suitable for off-season vegetables and for semi-tropical tree plantations, including bananas and citrus fruits. All strains and varieties of date palms are still in existence. Citrus orchards with fruit having a special taste and early ripening season are remarkable in the Jordan Valley. Recently, early grape strains began to take their place as an economical cash crop. However, without access to water this region would be a desert (Isaac & Hrimat, 2007).

However, over the past two decades, the valley farmers have experienced the availability of spring water has greatly decreased. The main reasons for this is the political situation between Israel and Palestine that has left Palestine with an unequal share of natural resources and disempowerment for preventive action due to the strict permission system in the valley, weak agricultural institutions and climate change (large annual fluctuations, drought and increased maximum air temperatures), in combination with an explosive growth in the population. The only additional irrigation source for the Jordan valley farmers is the private wells that were dug during Jordanian rule, prior to 1967. However, due a deterioration in quality the well water is high in salinity and produces large net losses if used as irrigation source (The Applied Research Institute – Jerusalem (ARIJ), 1994).

The agricultural land in Jordan valley contains three main groups of plants: vegetables, which includes Tomatoes, Squash, Eggplant, Cucumber, Maize, Okra, Spinach, and others. Fruit trees, which includes Date, Banana, Lemon, Grape, Orange, etc. Field crops, which includes Wheat, Barley, Clover and others. The cultivated areas of the Jordan Valley region covers approximately 49.27 km<sup>2</sup> in 2008.



**Table 2-2 Cultivated Areas of Fruit Trees, Vegetables and Field Crops in the Jordan valley 2007/2008 km<sup>2</sup>**

<b>Fruit Trees</b>	Unbearing	Irrigated	3.12
		Rainfed	
	Bearing	Irrigated	3.78
		Rainfed	
<b>Total</b>			6.90
<b>Vegetables</b>	Protected Irrigated		1.86
	Open Irrigated		35.07
	Rainfed		
<b>Total</b>			36.93
<b>Field Crops</b>	Irrigated		5.44
	Rainfed		
<b>Total</b>			5.44

(Palestinian Central Bureau of Statistics, 2009a)

Planting Vegetables occupies a large cultivated area in the Jordan Valley, which reaches for 36.93 km<sup>2</sup>. Due to the limited rainfall combined with the hot weather, irrigated agriculture is dominant in the region.

- **Vegetables:**

From Table 2-2 we noted that the total area of cultivated vegetables in the Jordan Valley (Fig. 2-23, Fig. 2-24, Fig. 2-25) in 2007/2008 occupied an area of 36.93 km<sup>2</sup>. Most dominant werer squash and eggplant covering an area of 10.61km<sup>2</sup> and 5.91 km<sup>2</sup> respectively.



**Fig. 2-23: Area of production of vegetables and fruit trees**



**Fig. 2-24: Production of vegetables using surface tunnel technique**



**Fig. 2-25: Production of vegetables in greenhouses**

**Table 2-3 Area of Vegetables in Jordan valley by crop and type 2007/2008 Km<sup>2</sup>**

<b>Crop</b>	<b>Surface Tunnel</b>	<b>France Tunnel</b>	<b>Green House</b>	<b>Irrigated</b>	<b>Rainfed</b>	<b>Total Area</b>
<b>Squash</b>				10.61		10.61
<b>Eggplant</b>			0.004	5.91		5.914
<b>Maize</b>				5.13		5.13
<b>Tomato</b>		0.003	0.31	4.27		4.583
<b>Cucumber</b>		0.004	0.78	1.36		2.144
<b>Kidney bean (green)</b>	0.004		0.28	1.42		1.704
<b>Jew's Mallow</b>			0.030	0.87		0.90
<b>Paprika</b>	0.002		0.29	0.60		0.892
<b>Cauliflower</b>				0.88		0.88
<b>Broad Beans (green)</b>				0.81		0.81
<b>White cabbage</b>				0.80		0.80
<b>Okra</b>				0.57		0.57
<b>Snake cucumber</b>				0.48		0.48
<b>Pumpkin</b>				0.45		0.45
<b>Hot pepper</b>	0.002			0.43		0.432
<b>Water melon</b>				0.14		0.14
<b>Kidney bean (yellow)</b>				0.14		0.14
<b>Muskmelon</b>				0.09		0.09
<b>Gourd</b>				0.08		0.08
<b>Spinach</b>				0.05		0.05
<b>Others</b>			0.16			0.16
<b>Total</b>	<b>0.008</b>	<b>0.007</b>	<b>1.854</b>	<b>35.09</b>		<b>36.95</b>

(Palestinian Central Bureau of Statistics, 2009a)

- **Fruit trees**

The total cultivated area amounted to approximately 6.903 km<sup>2</sup> in 2007/2008. As we can see from Table 2-4, the total area of cultivated dates palms is the largest area of about 3.457 km<sup>2</sup>, and the second area cultivated with Banana trees reached 1.680 km<sup>2</sup> because the climate in the Jordan valley is suitable for these kinds of trees (Fig. 2-26, Fig. 2-27, Fig. 2-28).



**Fig. 2-26: Date trees**



**Fig. 2-27: Lemon trees**



**Fig. 2-28: Banana trees**

**Table 2-4 Area of Fruit Trees in the Jordan Valley by Crop and Type 2007/2008 km<sup>2</sup>**

Crop	Unbearing (Fruitless)		Bearing		Total Area km <sup>2</sup>
	Irrigated	Rainfed	Irrigated	Rainfed	
<b>Date</b>	2.166		1.291		3.457
<b>Banana</b>	0.400		1.280		1.680
<b>Lemon</b>	0.230		0.409		0.639
<b>Shamoty Orange</b>	0.100		0.224		0.324
<b>Grapes</b>			0.311		0.311
<b>Clementines</b>	0.045		0.045		0.090
<b>Navel Orange</b>	0.035		0.053		0.088
<b>Olive</b>			0.085		0.085
<b>Pomegranate</b>	0.080				0.080
<b>Mandarin</b>	0.023		0.026		0.049
<b>Poppy</b>	0.017		0.022		0.039
<b>Bomaly</b>	0.014		0.017		0.031
<b>Grapefruit</b>			0.010		0.010
<b>Valencia Orange</b>	0.005		0.003		0.008
<b>Balady Orange</b>			0.007		0.007
<b>Francawy Orange</b>	0.005				0.005
<b>Total km<sup>2</sup></b>	<b>3.120</b>		<b>3.783</b>		<b>6.903</b>

(Palestinian Central Bureau of Statistics, 2009a)

- **Field crops**

Table 2-5 shows that the total area of the cultivated field crops in 2007/2008 was about 5.438 Km<sup>2</sup>. Wheat occupies the largest area approximately 3.200 Km<sup>2</sup> from the cultivated field crop areas, while the dry onion is the smallest cultivated area with about 0.093 Km<sup>2</sup>.

**Table 2-5 Area of Field Crops in the Jordan Valley by Crop and Type 2007/2008 Km<sup>2</sup>**

Crop	Irrigated	Rainfed	Total Area km <sup>2</sup>
<b>Wheat</b>	3.200		3.200
<b>Barley</b>	0.990		0.990
<b>Clover</b>	0.730		0.730
<b>Potato</b>	0.316		0.316
<b>Sem</b>	0.109		0.109
<b>Dry onion</b>	0.093		0.093
<b>Total km<sup>2</sup></b>	<b>5.438</b>		<b>5.438</b>

(Palestinian Central Bureau of Statistics, 2009a)

## **2.3 Human Characteristics:**

### **2.3.1 Historical**

Since the pre-historic era, the Jordan Rift Valley area has been a passageway for many civilizations and a crossroads for the track of history. The influences of many different civilizations that lived in the area have been taken into the local traditions and formed into the unique culture of the Jordan Rift Valley area. Abundant historical and cultural remains left by the passage of many different civilizations and exchange of human activities in the region are nowadays internationally recognized as valuable cultural and historical heritages and regional tourism resources, having the common roots of the civilization. They are the attractive and valuable cultural assets of the Jordan Rift Valley area.

Also, Jericho city located in the south of the Jordan valley region considered the oldest city in the world, the city has a history extending back to the most ancient human habitations as indicated in the ancient archaeological remains, Tel es-Sultan, which are located in the northwest of the city. It was built by the accumulation of remains and ruins over many years of its habitation at a location where a dependable and prolific water source is available from local springs and dates back 10,000 years. Humans started to inhabit Tel es-Sultan about 8,000 B.C., which is the oldest history of human habitation in the world.

The Jordan valley region has many archaeological sites and features, such as caves, churches and springs, these sites are the result of the different eras of history, from the Pre-Pottery Neolithic to the Muslim period, through the Bronze Age, the Hyksos period, the Canaanite and the Roman periods, etc (Japan International Co-operation Agency (JICA), 2006).

A wide range of mosques, churches and other places of worship are present in Jericho and its surrounding area. Small religious complexes such as the Ancient synagogue, the monasteries of St George, the Convent of St John, the Baptismal site, the early Islamic architecture of Maqam Al-Nabi Musa.

### **2.3.2 Evolution of the administrative division**

Administratively the Jordan Valley was within many districts and brigades in successive periods of time as a result of its longitudinal extension as follows:

- **The administrative situation of the Jordan Valley during the British Mandate 1917-1948**

Like most of Palestine, the Jordan valley was ruled by the Othman Empire until 1918, when the British took control under the Kingdom Mandate for thirty years. During this period the south part of the Jordan Valley (Jericho part) was administratively linked to Jerusalem. The northern part of the Jordan Valley came under the area of Nablus and Tiberias.

In 1920, Palestine came under civil administration, where the southern part of the Jordan valley was in the Jerusalem district, the central part of the Jordan valley was in Samaria district and the northern part of the Jordan Valley was within the Galilee district (Al-Dabbagh, 1988).

In 1922 the administration division was changed to include four brigades, which were the Northern brigade, Samaria brigade, Jerusalem brigade and Southern brigade. The Jordan Valley was located within the boundaries of three brigades: Northern brigade, Samaria brigade, and Jerusalem brigade. All administrative divisions of Palestine were developed to serve the security needs and administrative needs of the British government of occupation (El Nahal, 1984).

In 1945, Palestine was divided into six brigades, with nineteen districts. Jericho district, in the southern part of the Jordan valley, was in the Jerusalem brigade, the brigade of Galilee included the districts of Basin and Tiberias and Samaria brigade included the Nablus district (Al Agha, 1993).

- **Administrative situation for the Jordan Valley during Jordanian administration (1948-1967)**

Previous administrative division of Palestine remained until 1948 when Israel occupied part of the Palestinian territories. After the armistice agreement with Jordan, in Rhodes in 1949, a significant part of the Jordan Valley came under Israeli occupation. The remaining part of the Jordan Valley, which is the object of this study, and the rest of the west bank was controlled by Jordanian administration in 1955.

During this period, the west bank was divided into three provincials: Jerusalem provincial, which contains Jericho, Ramallah and Bethlehem; Nablus provincial, which contains Tulkarm and Jenin; and the Provincial of Hebron.



According to division, the Jordan valley was located in two provincials: Jerusalem and Nablus (Zuayter, 1955).

- **The administrative status of the Jordan valley during the Israeli occupation (1967-1994)**

After Israel's occupation of the West Bank in 1967, several administrative procedures were undertaken to control the areas. The Zionist military governor issued a military order No. 2, which defined the powers of the Israeli army in the west bank. According to article three, all the powers of government, legislation, appointment and management which related to the area or its population entitled to the Zionist military governor and exercised by him or by the people who are appointed to that work (Shehadeh, Raja, & Jonathan, 1982). The Israeli authorities issued a military order to put the Jordan valley within one brigade, the Jericho brigade (Glmy, 1998).

Israel continued in the management of the occupied territories, including the Jordan Valley in this manner until 1981, when it issued a Military Order, No. 947, its objective was to change the name of the occupation to a more civilized name. Where its judgment is ostensibly based on the Jordanian law, which applied to the West Bank, but actually it applies the laws that serve the Israeli occupation (Glmy, 1998).

- **The administrative status for the Jordan Valley during the Palestinian National Authority in 1994**

The Civil Administration continued administering the occupied territories till 1993, when the Palestinian National Authority took over the management of civil affairs, after the Oslo agreement. The West Bank and Gaza Strip were divided into governorates; in the new division the Jordan Valley is located within the governorates of Jericho, Tubas, and Nablus (Palestinian Central Bureau of Statistics, 2006).

### **2.3.3 The political situation in the Jordan valley**

In 1967 Israel occupied the rest of the Palestinian territories, namely the west bank and Gaza strip. This war is known as an-Naksah. The result of an-naksah was the displacement of tens of thousands

of Palestinians from the West Bank, including the destruction of entire villages, and the opening of settlements in East Jerusalem and in the West Bank.

- **Oslo agreement 1995**

The second Oslo agreement, in 1995, has split the West Bank into three areas, each of them with different arrangements and different forces of security and administration, and represented in Fig. 2-29 as follows:

**Area A:** Includes all major population centres, is controlled by Palestinian security and is administratively complete. It has an area of about 18% of the area of the West Bank, amounting to about 5,802 square kilometers.

**Area B:** The adjacent towns and villages to the cities are subject to Palestinians in terms of civilian control but subjected to Israelis in terms of security control. These towns and villages form 21% of the area of the West Bank. This situation does not give the Palestinian Authority the right to practice its duties in those areas, which leads to the imbalance in the integration of the Palestinian Authority's structure and to dividing it into categories and isolating it in cantons. These cantons have a controlled access that depends on the security situation and the mood of the Israelis.

**Area C:** Includes only the adjacent areas and non-intermittent in the West Bank, is under full Israeli control, administratively and for security, and constitutes about 61% of the West Bank area.

In the year 1994, the Palestinian authority assumed its responsibilities in the West Bank and Gaza due to the first Oslo agreement (Newman, 1995).



**Fig. 2-29: Oslo agreement**

According to Oslo agreement, the Jordan valley area is divided into three sections, which are: A, B and C. Areas A and B represent about 8.4% of the total area of the Jordan Valley, while area C is subjected to the control of Israeli occupation, which forbids the Palestinians from building in it and using it in any possible way.

Most of the land in area C include agricultural land and open areas, fertile and rich in natural water sources, which constitute the major source of income for residents of villages in the Jordan Valley. Table 2-6 shows the classifications of land in the Jordan Valley area, according to the Oslo agreement.

**Table 2-6 The Classifications of Land in the Jordan Valley Area, According to the Oslo Agreement of 1995**

<b>Classification</b>	<b>Area (km<sup>2</sup>)</b>	<b>The percentage of the total area of the Jordan Valley area</b>
<b>Area(A)</b>	66.9	7.95
<b>Area (B)</b>	3.8	0.46
<b>Area (C)</b>	770.2	91.59
<b>Total</b>	<b>840.9</b>	<b>100</b>

(Isaac & Bannoura, 2010) adapted by the researcher

- **Closed military area**

The closed military zones declared by the Israeli forces in the Jordan valley extend over 400 km<sup>2</sup>, 18% of the occupied West Bank. The area includes open fire zones, military training sites, minefields located at the eastern side of Road 90, behind a 20 m wide fence built along the Jordan River after 1967.

Access to this land is forbidden to the Palestinian citizens (PLO Negotiations Affairs Department, 2011). The closed military zones include part of the most fertile lands in the West Bank, limiting significantly the available areas for Palestinian farming and herding.

In addition to that, more than 91% of the Jordan valley region belongs to area C that is subjected to complete Israeli control, which means imposing severe restrictions on the Palestinian actions, such as restrictions on constructions, infrastructure rehabilitation, agricultural production and resources management (Isaac & Bannoura, 2010).

- **The Israeli occupation policies in the Jordan Valley**

Israel has used various means to take control of most of the land in the area, as follows:

Thousands of square metres were taken from Palestinian refugees and used to build the first settlements there, beginning in 1968 and extending throughout the 1970s. This is in violation of a military order. By legal manipulation, Israel has enlarged the inventory of “state land” in the area, such that 53.4 per cent of the area, four times greater than pre-1967, is now deemed state land.

Israel has declared 45.7 per cent of the area military firing zones, although they are situated next to main traffic arteries, alongside settlements, built-up areas and farmland, or include land of settlements that are under cultivation. Israel has closed some 20 percent of the land by declaring them nature reserves, although only a small section of them has been developed and made suitable for visitors. Two-thirds of the nature reserves areas are also areas of military firing zones (B'Tselem, 2011a).

Israel has seized lands in the northern Jordan Valley for the Separation Barrier and has placed 64 landmine fields near the route of the Jordan River. The army itself confirms that the landmines are no longer required for security purposes.

Using these means, Israel has taken control of 77.5 percent of the land and has prevented Palestinians from building on or using the land or remaining there. Twelve percent of the area has been allocated for settlements, including the entire northern shore of the Dead Sea. Israel's policy has cut up the Palestinian spatial sphere and isolated Palestinian communities in the area. In the last years, the Civil Administration has repeatedly demolished structures in the Bedouin community's areas, although some of them were established before 1967 (B'Tselem, 2011a).

Israel forbids the Palestinians from using most of the land in the Jordan valley and the northern Dead Sea for various pretexts, such as 48.7% of the area – partly located within the boundaries of thirty settlements – has been declared as “state land” (more than half of which was declared as under Jordanian ruling). 46.1% of the area has been declared as a closed military zone that includes: the Municipal land of the settlements and 11 firing zones. Israel has designated 26 natural reserves that encompass about 20% of the area, and it has planted landmines on one percent of the land. The vast majority of the remaining land is under the jurisdiction of the settlements regional councils. The total sum, after counting the overlapping between areas, 85.2% of Jordan valley's area and northern Dead Sea area is off-limits for the Palestinians; they can't exist or build in it, and they can't even take their livestock herds to feed in it (B'Tselem, 2011a).

The Jordan valley region suffers restrictions of movement imposed by the Israeli Army on Palestinian civilians. Mainly checkpoints and several other obstacles are used for the control and blockage of the

road network: cubical cement roadblocks, earth mounds, manned checkpoints and agricultural gates, tunnels, secondary roads iron gates. The restrictions on movement seriously impair Palestinian life, since most of the educational facilities and medical clinics that are supposed to serve the local residents are situated outside the area (Japan International Cooperation Agency (JICA), 2006).

Israel still operates four checkpoints in the Jordan Valley – Tayasir, Hamra, Ma'ale Efrayim, and Yitav, despite the security calm in the area. At these checkpoints, only Palestinian-owned vehicles that Israel recognizes as belonging to residents of the area are allowed to pass.

Israel has worked on transforming the three barriers Bardala, Hamra, and Tayaseer into international crossings, which is a part of a plan that isolates the Jordan Valley from its Palestinian surroundings, which leads to having it controlled by the Israeli occupation (Japan International Cooperation Agency (JICA), 2006).

- **The Israeli occupation Projects in west bank**

There are many projects and schemes that Israeli officials have been preparing to ensure continued occupation control of the Jordan Valley, most notably:

- a) A plan prepared by the Israeli security forces, and published in Israeli newspapers on March 7, 2006, which see the utmost importance in the control of strategic points on the mountain heights and the belt in the Jordan Valley stretching from the north of the Dead Sea, and until the northern Jordan Valley and must be wide enough to provide "active defense. The plan of the Israeli occupation forces is summarized by considering Jordan valley as a security barrier in front of the eastern side, in a way to get the west bank surrounded by two barriers, the first one is this security barrier from the eastern side and the second one is the apartheid wall from the western side. This plan has also shown the Israeli occupation's ambition to rebuild the Jordan valley by establishing industrial and agricultural projects that are linked to the Israeli economy, it also showed their ambition to control the water basins and the geographical separation between the Palestinians living in the West Bank and the Palestinians living in Jordan who would form a demographic depth for any possible Palestinian entity, according to the plan authors (Palestinian Jordan Valley Conference, 1998).

- b) Allon project: (Fig. 2-30) A project prepared by the Israeli Labor Minister Yigal Allon in 1970 which is primarily intended to narrow the range of options available for any solution or compromise regarding the sovereignty of the land. This project aims to apply the policy of *fait accompli* by seizing the land and executing a colonial settlement process along the Jordan Valley from Basin valley until Hebron with a length of 115 km and a width of 20 km. And in order to ensure the success of his project, he has requested to avoid combining of Palestinian areas with high population density (Isaac & Bannoura, 2010).
- c) Dorbul's scheme in 1978: It states that the Palestinian land must be seized for colonizing between and around the Arab population centers in order to prevent the establishment of a Palestinian state in it, where it would be difficult for the Arab minority to form a regional connection and a political unity in case it was divided and scattered by the Israeli settlements. And according to Dorbul's scheme 12 to 15 Israeli settlements are built each year (Isaac & Bannoura, 2010).
- d) Gush Emunim project: This project relied on two parallel lines; the first line was to establish a massive number of settlement blocs in the Palestinian-populated areas, as is the case in the city of Hebron and the city of Jerusalem. The second line was adopted to establish a large number of small and scattered settlements on the largest possible area of land as are the case in the Jordan Valley (Palestinian Jordan Valley Conference, 1998).
- e) Sharon project: (Fig. 2-31) Sharon has adopted the invitation of establishing two main chains of settlements during the past twenty years in a way that the first one is situated along the coastal plane, and the second starts from the Golan Heights in the north till Sharm el-sheikh, including establishing colonial settlements in the Jordan Valley and creating connections by the settlements between both of the chains (Isaac & Bannoura, 2010).



**Fig. 2-30 Alon plan (Isaac et al, 2010, op.cit)**





**Fig. 2-31 Sharon plan**

- f) Netanyahu project: The project was based on considering that the Jordan River would be the eastern border of the State of Israel. This will be a permanent border between the State of Israel and the Jordan kingdom. Considering that the vital interests of the State of Israel in the West Bank and the Jordan Valley specifically will form the basis of any permanent agreement with the Palestinians (Palestinian Jordan Valley Conference, 1998).
- g) Red lines project (The army's map for strategic benefits): which is a plan that was revealed in 1997 and it's primarily related to what Israel considers as red lines, especially regarding the groundwater resources. This plan states that it's not possible for Israel to retreat to these areas for the presence of groundwater in it, in addition to red lines that prevent from retreating for security and colonial considerations (Isaac & Bannoura, 2010).

- **Settlements in the Jordan valley:**

The first colonization wave hit the Jordan Valley in 1968 when Israel built three colonial settlements: Mehola in the north, Argaman in the center and Kalia in the south. It reflected the Alon Plan, which was developed in July 1967 by former Labor Party leader Yeg'al Alon to offer solutions to help Israel overcome "demographic danger" by building colonial settlements in the West Bank, particularly in areas with little Palestinian presence. Mehola colonial settlement was the first of such effort in the Jordan valley to support the Alon Plan. It was built on lands which were confiscated from the Palestinian villages of Bardala and Ein Al Beida in order to create military bases and state land (B'Tselem, 2002; S. D. Hamada, Vieira, & Ghodieh, 2015).

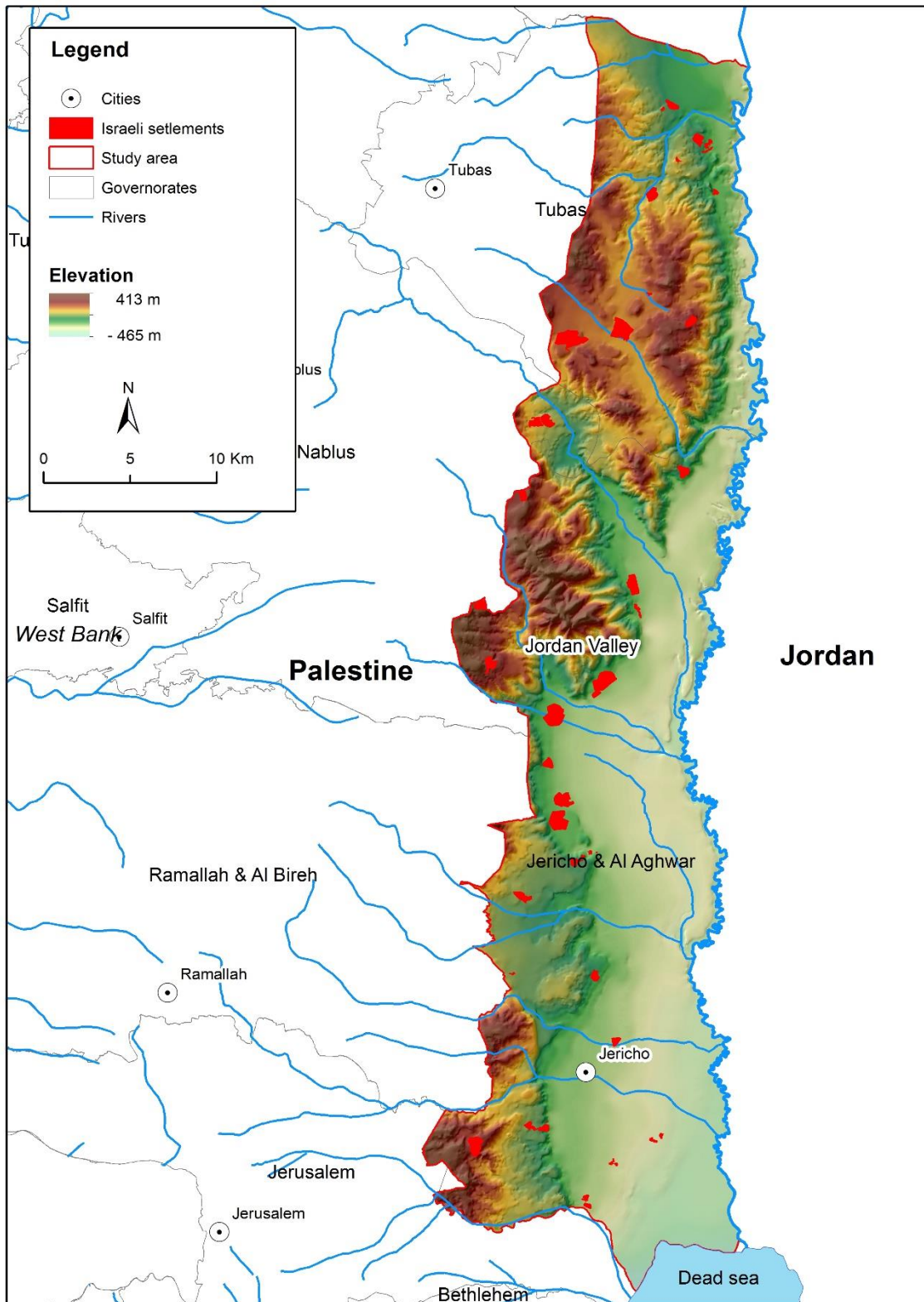
Among the first Israeli settlements to be built in the State of Palestine, were those in the Jordan Valley (Fig. 2-32). In fact, in the decade following the 1967 war, 21 Israeli settlements were built in the Jordan Valley. Currently, there are 35 settlements in the Jordan Valley, constituting some 20% of all settlements in the State of Palestine, with a built-up area of approximately 15 km<sup>2</sup>. In general, the settlements are isolated from one another and are spread out over a vast area. These settlements depend mainly on agriculture, with the exception of Ma'ale Efrayim, which is an urban settlement (B'Tselem, 2002).

The Israeli occupation methods in the acquisition of Jordan valley land in order to establish settlements do not differ from the rest of the occupied Palestinian territories. From the outset, the

occupation authorities conducted a comprehensive survey of the Palestinian Jordan Valley, where they found that the possibility of confiscation of land under the pretext that it is a state property was a difficult process and useless. Because the agricultural land which contains water is difficult to be seized.

Moshe Dayan issued the decision to seize the Absentee Property, but those lands were not sufficient to meet the aspirations of the settlement movements. Therefore, the Israeli occupation has confiscated the widest possible area of the Jordan Valley for the military training areas, transformed later to civilian settlements (Isaac & Bannoura, 2010).

Despite the success of Israel establishment of 35 settlements in the Jordan Valley, these settlements failed to attract large numbers of settlers to the region. In 1981 the number of settlers in the Jordan valley was about 4,000 settlers. The number rose to 4115 settlers in 1992, where this number increased after the signing of the Oslo Agreement to 7,500 settlers in 2005, and the number reached 10512 in 2009 (Table 2-7). The most important reasons for the construction of Israeli colonial settlements in the Jordan Valley are firstly agricultural land, secondly, the availability of water sources (B'Tselem, 2002, 2011a; The Applied Research Institute – Jerusalem (ARIJ), 2012f).



**Fig. 2-32 Israeli colonial settlements in the Jordan valley**

**Table 2-7 Israeli colonial settlement in the Jordan valley (establishment year, population and type of community)**

No	Colonial Settlement	Area (km <sup>2</sup> )	Year established	Population 2009	Type of community
1	Mechola	1.759	1968	366	Agriculture (Moshav)
2	Argaman	1.147	1968	166	Agriculture (Moshav)
3	Qalya	0.868	1968	300	Farm (Kibbutz)
5	Massu'a	2.268	1969	136	Agriculture (Moshav)
6	Gilgal	1.097	1969	172	Farm (Kibbutz)
7	Peza'el (Fatsa'el)	1.438	1970	205	Agriculture (Moshav)
8	Gittit	1.058	1970	259	Cooperative Village
9	Yitav	0.526	1970	118	Agriculture (Moshav)
10	Mitzpe Shalem	0.440	1971	164	Farm (Kibbutz)
11	Hamra	1.532	1971	91	Agriculture (Moshav)
12	Beka'ot	2.353	1972	160	Agriculture (Moshav)
13	Mekhora	0.925	1973	122	Agriculture (Moshav)
14	Na'aran (Niran)	0.422	1975	54	Farm (Kibbutz)
15	Ro'i	1.573	1976	150	Agriculture (Moshav)
16	Netiv Hagedud	1.227	1976	175	Agriculture (Moshav)
17	Kochave hashar	1.593	1977	1619	Outpost
18	Rimmonim	0.343	1977	616	Small community Town
19	Almog	0.481	1977	153	Farm (Kibbutz)
20	Tomer	1.031	1977	233	Agriculture (Moshav)
21	Mizpe yaricho	1.112	1978	1754	Torah community
22	Ma'ale Efrayim	1.370	1978	1270	Local council
23	Shadmot Mechola	1.291	1979	493	Agriculture (Moshav)
24	Bet Ha'Arava	0.488	1980	95	Farm (Kibbutz)
25	Hemdat	0.317	1980	176	Religious village
26	Vered Yericho	0.645	1980	194	Village
27	Yafit	1.436	1980	107	Agriculture (Moshav)
28	En Hogla (Mehane Nevo)	*	1982	148	*
29	Naama (No'omi)	4.942	1982	102	Agriculture (Moshav)
30	Elisha	*	1983	753	*
31	Bitronot	0.128	1984	*	*
32	Rotem	0.051	1984	20	Religious village
33	Maskiyyot	0.047	1986	50	*
34	Ma'ale Efraim Pre-Military Academy	*	2000	30 students and faculty	Outpost
35	Giv'at Sal'it	*	2002	61	Outpost
<b>Total</b>		<b>33.908</b>		<b>10512</b>	

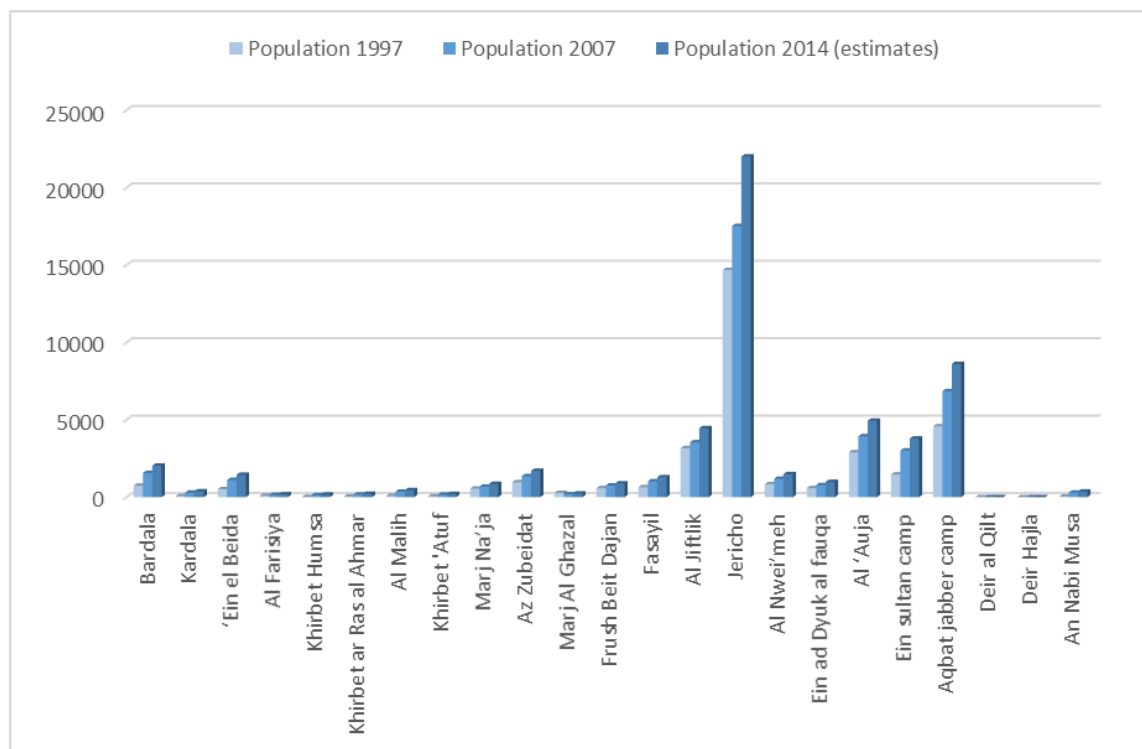
\* No information because of Israeli occupation (B'Tselem, 2011a; Isaac & Bannoura, 2010; PLO Negotiations Affairs Department, 2011; The Applied Research Institute – Jerusalem (ARIJ), 2012f) adapted by researcher.

As we can see from Table 2-7 Israeli colonial settlements in the Jordan Valley followed three stages: from 1967 to 1970, eight colonial settlements were established along the main highway; from 1971

to 1974, four colonial settlements were built along the Valley's western border; and, from 1975 till 2002, 22 colonial settlements sprouted across the region. Since 1990, colonial settlement building has slowed due to political concerns, though the population continued to grow, especially in the religious colonial settlements of Mehola, Hemdat, and Rotem.

### 2.3.4 Population

The Jordan Valley region was exposed to population changes primarily due to wars and political situations prevailing in the region. In the period between 1948 and 1967, it was about 80 thousand inhabitants lived in the Jordan Valley, spread between Jericho city, 'Auja village and three Palestinian refugee camps Nu'ayma camp, Ein sultan camp, and Aqbat jabber camp, and some small communities. The majority of the populations who live in the Jordan valley are about 86% of the refugees who have been displaced from their homes in Basin and Galilee regions.



**Fig. 2-33 The population in the Jordan valley localities 1997, 2007, 2014**

In 1967, Israel occupied the rest of the Palestinian territories, including the Jordan Valley, where the population was forced to emigrate again to the East Bank of the River Jordan (kingdom of Jordan). As a result of Israeli occupation in 1967, the most population from Nu'ayma camp and 80% of the population from Aqbat jabber camp was evacuated (The Applied Research Institute (ARIJ), 2001).

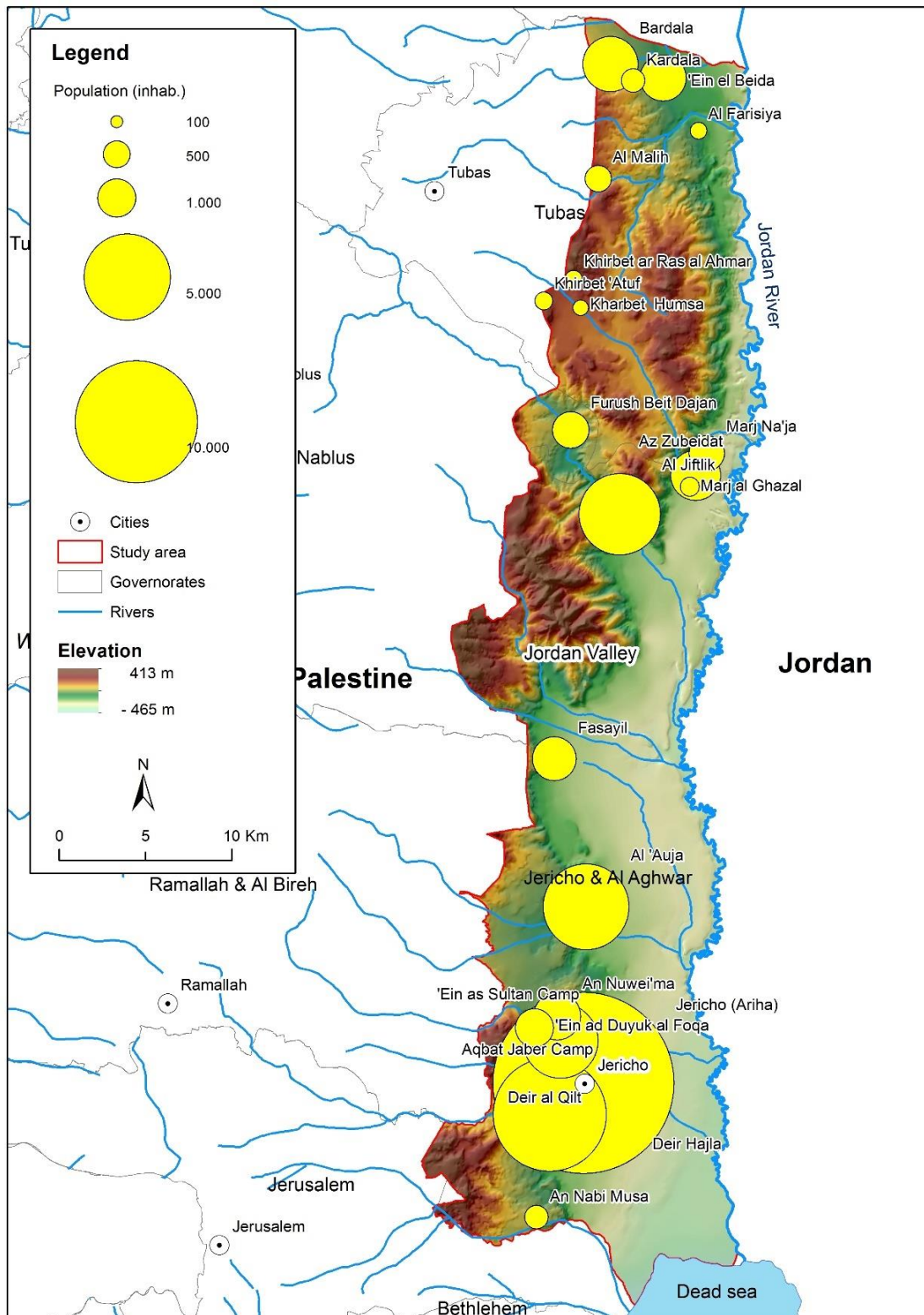
According to Palestinian Central Bureau of Statistics in the General Census of Population and Housing in 2007, the total population of the Jordan Valley was about 45100 inhabitants. From Table 2-8 the Jericho city has the highest total of the population in the Jordan valley region, then Aqbat jabber camp (Fig. 2-33, Fig. 2-34). The total of population estimates in 2014 is 56,764 inhabitants (Palestinian Central Bureau of Statistics, 2008, 2009a, 2009b).

**Table 2-8 The population in the Jordan valley localities 1997, 2007, 2014**

<b>NO<sup>a</sup></b>	<b>Locality</b>	<b>Governorate</b>	<b>Population 1997</b>	<b>Population 2007</b>	<b>Estimates numbers of population 2014</b>
<b>1</b>	Bardala	Tubas	746	1569	2040
<b>2</b>	Kardala	Tubas	73	294	383
<b>3</b>	'Ein el Beida	Tubas	523	1114	1449
<b>4</b>	Al Farisiya	Tubas	103	145	188
<b>5</b>	Kharbet Humsa	Tubas	17	127	166
<b>6</b>	Khirbet ar Ras al Ahmar	Tubas	46	171	223
<b>7</b>	Al Malih	Tubas	84	355	461
<b>8</b>	Khirbet 'Atuf	Tubas	63	164	213
<b>9</b>	Marj Na'ja	Jericho	554	683	858
<b>10</b>	Az Zubeidat	Jericho	968	1357	1704
<b>11</b>	Marj Al Ghazal	Jericho	276	193	243
<b>12</b>	Frush Beit Dajan	Nablus	585	758	893
<b>13</b>	Fasayil	Jericho	648	1029	1293
<b>14</b>	Al Jiftlik	Jericho	3177	3546	4455
<b>15</b>	Jericho	Jericho	14674	17515	22006
<b>16</b>	An Nuwei'ma	Jericho	840	1188	1493
<b>17</b>	'Ein ad Duyuk al foqa	Jericho	588	783	985
<b>18</b>	Al 'Auja	Jericho	2894	3934	4942
<b>19</b>	'Ein as sultan camp	Jericho	1469	3017	3790
<b>20</b>	Aqbat jabber camp	Jericho	4581	6851	8608
<b>21</b>	Deir al Qilt	Jericho	*	4	*
<b>22</b>	Deir Hajla	Jericho	*	8	*
<b>23</b>	An Nabi Musa	Jericho	52	295	371
	<b>Total</b>		<b>32961</b>	<b>45100</b>	<b>56764</b>

Sources (Palestinian Central Bureau of Statistics, 2008, 2009a, 2009b). Adapted by researcher.

\*: no data available.



**Fig. 2-34 Populations in the Palestinian communities in the Jordan valley**



### **2.3.5 The communities:**

- **Al 'Auja**

The Auja village is located at the north of Jericho in the Jordan Valley, West Bank (Fig. 2-35). Al 'Auja is bordered by the Jordan River to the east, Fasayil village to the north, Ramallah Governorate to the west, and An Nuwei'ma town to the south and is famous in Palestinian society due to the nearby Auja Spring.

The establishment of the town dates back 200 years with its residents descending from indigenous Bedouin populations who lived in the area a long time ago (The Applied Research Institute – Jerusalem (ARIJ), 2012a).

According to the Palestinian Central Bureau of Statistics (PCBS), the total population of Al 'Auja in 2007 was 3934 residents, of whom 1965 were male and 1969, female (Palestinian Central Bureau of Statistics, 2009a).

The Israeli settlements Gilgal, Niran, Nativ HaGdud and Yitav were built on lands which were confiscated from the Palestinian village of Al 'Auja. Moreover, Israeli confiscations have continued, resulting in the seizure of more lands of Al 'Auja, leading to the loss of many areas for Israeli purposes, including the establishment of an Israeli Military Base over an area of 2.152km<sup>2</sup> in order to protect the Israeli settlements existing over Al 'Auja lands and neighboring regions (The Applied Research Institute – Jerusalem (ARIJ), 2012a).

- **'Ein as Sultan camp:**

'Ein as Sultan is a Palestinian camp in Jordan valley located (horizontally) 2.5km north of Jericho City. 'Ein as Sultan is bordered by Jericho city to the east and south, Al Nuwei'ma village to the north, and Ad Duyuk village to the west. 'Ein as Sultan camp's name comes in relation to 'Ein as Sultan Spring which is located in the camp. The establishment of the camp dates back to 1948 and its resident's origin can be traced to Jaffa, Ar Ramla city, Bir as Sabi' and their surrounding villages, in addition to Gaza city (The Applied Research Institute – Jerusalem (ARIJ), 2012d).

According to the Palestinian Central Bureau of Statistics (PCBS), the total population of 'Ein as Sultan in 2007 was 3017, of whom 1520 were male and 1497, female (Palestinian Central Bureau of Statistics, 2009a).

- **Az Zubeidat**

The village of Az Zubeidat is located in the Jordan Valley Jericho governorate. It is bordered by the Jordan River to the east, Marj Na'ja village to the north, Tubas city to the west, and Marj al Ghazal village to the south. It dates back to the year 1948: Az zubeidat residents are originally indigenous Bedouin from Bir as-Sabe' area. More than 90% of the labor force work is in the agriculture sector. The village is divided into areas "B" and "C", according to the Oslo agreements. Only 0.036 km<sup>2</sup> (1% of the total village area) were classified as area "B" while approximately 4.087km<sup>2</sup> (99% of the total village area) are classified as area C, where Israel retains full control over security and administration related to the territory (The Applied Research Institute – Jerusalem (ARIJ), 2012c).

Thousands of meters square have been confiscated for the establishment and development of the Israeli settlement of Argaman and the Israeli bypass road no. 90. Argaman was established in 1970 with the population of 165 settlers. This illegal settlement has caused severe environmental problems in the village, through wastewater leakages into the water basins. This causes groundwater and spring pollution, which results in the contamination of the Palestinian Az Zubeidat well, due to its water being mixed with wastewater flowing from the settlement (The Applied Research Institute – Jerusalem (ARIJ), 2012c).

According to the Palestinian Central Bureau of Statistics (PCBS), the total population of Az Zubeidat in 2007 was 1357, of whom 696 were male and 661, female (Palestinian Central Bureau of Statistics, 2009a).

- **Fasayil**

Fasayel village is located in the Jordan Valley Jericho governorate, it is bordered by the Jordan River to the east, Al Jiftlik village to the north, Al Mughayyir village in Ramallah Governorate to the west, and Al 'Auja town to the south. It's classified as Area C under the Oslo Accords, which the Israeli occupation authorities later classified as 'State Land'. The Fasayel Bedouins are predominantly refugees from 1948 or descendants of those refugees, originally from Ein Gedi. Following the 1967 Israeli occupation, many of its residents were forced to emigrate from the Jordan Valley to Jordan, and its current residents are shepherds (The Applied Research Institute – Jerusalem (ARIJ), 2012e).

The Israeli occupation has confiscated approximately 3.363km<sup>2</sup> of Fasayel privately owned land (7.2% of the village total area) for the establishment of four Israeli settlements: Tomer, Gilgal, Pezael

and Netiv Hegdud, as well as the bypass roads no.90 and no. 505, which connects these settlements with other settlements close by. Moreover, 0.067km<sup>2</sup> was confiscated to establish the Israeli military base to guard the Israeli illegal settlements in the area (The Applied Research Institute – Jerusalem (ARIJ), 2012e).

In the last few years Fasayel village, like other villages in the Jordan Valley, has been systematically targeted by the Israeli occupation forces, which are pressuring the residents to leave their land. The Israeli occupation forces distributed military demolition orders to local residents and then stormed the village and demolished their homes and sheep barns. Israel is continuing with its plan to ethnically cleanse Fasayel village, along with the rest of the Palestinian villages and communities in the Jordan Valley, in order to pursue its settlement enterprise, i.e. colonization of the area (The Applied Research Institute – Jerusalem (ARIJ), 2012e).

According to the Palestinian Central Bureau of Statistics (PCBS), the total population of Fasayil in 2007 was 1029, of whom 516 were male and 513 female (Palestinian Central Bureau of Statistics, 2009a).

- **Jericho**

Jericho is a city located near the Jordan River in the West Bank. It is the administrative seat of the Jericho Governorate .The city has been held under Jordan from 1949 to 1967, and was occupied by Israeli occupation since 1967; administrative control was handed over to the Palestinian Authority in 1994 (Japan International Cooperation Agency (JICA), 2006; Palestinian Central Bureau of Statistics, 2009a).

Jericho is the only city in Jordan valley; it is believed to be one of the oldest inhabited cities in the world (Gates, 2003). It is located in the southern Jordan valley. Jericho is bordered by the Jordan River to the east, A Nuwei'ma town and 'Ein as Sultan camp to the north, 'Ein ad Duyuk al Foqa town to the west, and Aqbat Jaber camp and An Nabi Musa to the south.

Demographics have varied widely depending on the dominant ethnic group and rule in the region over the past three thousand years. In a 1945 land and population survey by Sami Hadawi, 3010 inhabitants are the figure given for Jericho, of which 94% (2840) were Arab and 6% (170) were Jews (Hadawi, 1970).

In the first census carried out by the Palestinian Central Bureau of Statistics (PCBS), in 1997, Jericho's population was 14674. Palestinian refugees constituted a significant 43.6% of the residents or 6393 people (Palestinian Central Bureau of Statistics (PCBS), 1998).

According to the Palestinian Central Bureau of Statistics (PCBS), the total population of Jericho in 2007 was 17515; of whom 8731 were male and 8784, female (Palestinian Central Bureau of Statistics, 2009a).

- **Al Jiftlik**

It is a Palestinian village situated in the Jordan Valley a few kilometers west of the Jordan River and the border with Jordan in the West Bank, located 33 kilometers north of Jericho. Nearby Palestinian localities include Az-Zubaidat to the northeast, Furush Beit Dajan to the northwest, Beit Furik to the west, Aqraba, Majdal Bani Fadil and Duma to the southwest and Fasayil to the south (Palestinian Central Bureau of Statistics, 2009a).

The establishment of the village goes back to ancient time, and its resident's origin goes back to Al Masa'id tribe and Tammun village in Tubas Governorate (The Applied Research Institute – Jerusalem (ARIJ), 2012b). The West Bank was occupied by Israel during the Six-Day War in 1967 and in the aftermath of the conflict over 800 homes in al-Jiftlik were razed by the Israeli army and its 6,000 inhabitants were ordered to leave. Most of al-Jiftlik's inhabitants, however, returned to the village. After the 1993 Oslo Accords between the Israel and the Palestine Liberation Organization (PLO), the village was designated as part of Area C. This makes it subject to full Israeli military and civil administration (The Applied Research Institute – Jerusalem (ARIJ), 2012b).

According to the Palestinian Central Bureau of Statistics (PCBS), al-Jiftlik had a population of 3,546 in the 2007 census (Palestinian Central Bureau of Statistics, 2009a).

- **Aqbat Jaber camp**

It is a Palestinian refugee camp situated in the Jordan Valley of the eastern West Bank, three kilometers southwest of Jericho. Aqbat Jaber camp was established in 1948 on 1.688km<sup>2</sup> of arid land near the Dead Sea. Before the Israeli occupation in 1967, the number of registered refugees was 30,000, making Aqbat Jaber the biggest camp in the West Bank. The original inhabitants came from nearly 300 villages north of Haifa, as well as the Gaza and Hebron areas (United Nations Relief, 2005).

Today, according to the Palestinian Central Bureau of Statistics (PCBS), estimates the number of population 2014 Aqabat Jaber has 8608 inhabitants (Palestinian Central Bureau of Statistics, 2009a).

- **'Ein ad Duyuk al Foqa**

It is a Palestinian village situated in Jordan valley in the eastern West Bank, located 3 kilometers northwest of Jericho. 'Ein ad Duyuk al Foqa is bordered by the Jordan River to the east, Ramallah to the west, An Nuwei'ma to the north and Jericho city to the south. According to the Palestinian Central Bureau of Statistics, 'Ein ad Duyuk al Foqa had a population about 783 inhabitants in the year of 2007 (Palestinian Central Bureau of Statistics, 2009a).

- **An Nuwei'ma**

An nuwei'ma is a village located in the southern Jordan Valley, in the West Bank. It is bordered by 'Ein ad Duyuk al Foqa to the south, al auja to the north, and Jordan River to the east. According to the Palestinian Central Bureau of Statistics (PCBS), Al nuwei'ma had a population about 1188 inhabitants in the year of 2007 (Palestinian Central Bureau of Statistics, 2009a).

- **Deir al Qilt, Deir Hajla and An Nabi Musa**

These small towns located in the southern part of Jordan valley in Jericho governorate, had a population of about 307 in the year of 2007 (Palestinian Central Bureau of Statistics, 2009a).

- **Bardala**

It's a village in the northern Jordan Valley, lies in the northeast of Tubas. The Israeli settlement of Mehola was built on lands which were confiscated from the Palestinian village of Bardala; it's classified as Area C under the Oslo Accords. The residents of Bardala originally came from nearby Tubas to exploit its cultivable and grazing land (The Applied Research Institute – Jerusalem (ARIJ), 2006a).

In 1961, Bardala had a population of 367 inhabitants, which decreased to 271 in 1982 due to emigration. The population nearly doubled to 457, five years later. The entire population of Bardala comprises 3.3% of the governorate's population (The Applied Research Institute – Jerusalem (ARIJ), 2006a). According to census in 1997, by the Palestinian Central Bureau of Statistics (PCBS), the town's residents numbered 1,148, of which 566 were males and 582 were females. In the 2007 census by the PCBS, Bardala had a population of 1,637 (Palestinian Central Bureau of Statistics, 2008).

- **Kardala**

Kardala is a small village located in the eastern foothills of the northern Jordan Valley on a fertile plain of land, located about 13 kilometers northeast of Tubas, adjacent to Bardala in the west and Ein al-Beida in the east. It's classified as Area C under the Oslo Accords. It is situated at a low elevation of -99 meters below sea level (The Applied Research Institute – Jerusalem (ARIJ), 2006b). It had a population of 294 inhabitants in 2007. The Israeli settlement of Mehola was built on lands which were confiscated from the Palestinian village of kardala (Palestinian Central Bureau of Statistics, 2008).

- **'Ein el Beida**

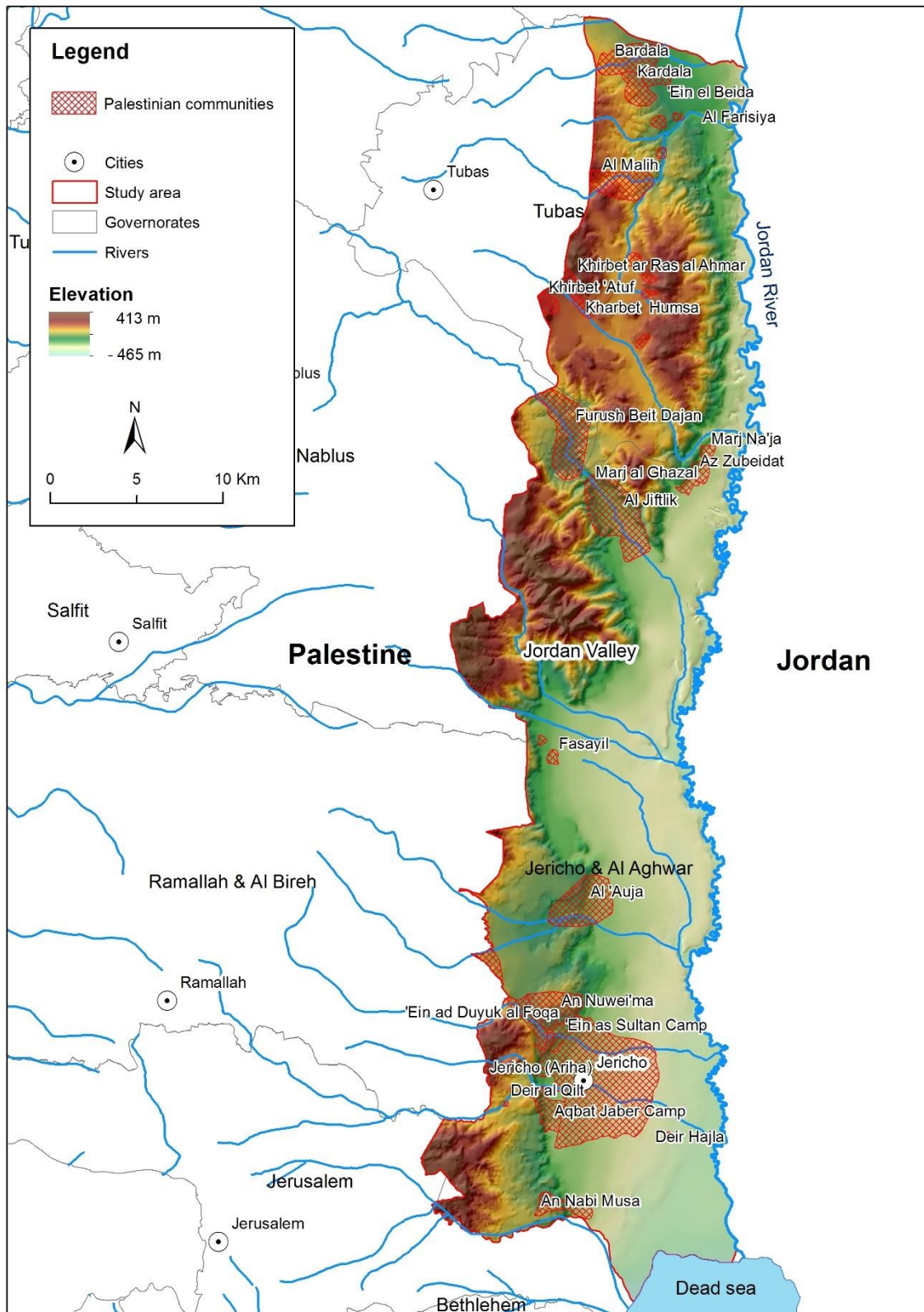
Ein el Beida is situated in a plain area on the eastern foothill of the Jordan Valley, surrounded by hills and mountains. It is located 15 kilometers northeast of Tubas, bordered by the Jordan River to the east, Bardala to the west, the Green Line to the north and the Israeli settlement of Mehola to the south, and classified as Area C under the Oslo Accords. The town's elevation is 166 meters below sea level (The Applied Research Institute – Jerusalem (ARIJ), 2006).

The village has been inhabited by its current population since 1952 when some of the lands owners moved from Tubas city to work on their lands and cultivating and harvesting crops and due to the abundance of water available and the fertility of the land. They also began dwelling in the area (The Applied Research Institute – Jerusalem (ARIJ), 2006).

Ein el Beida's population in 1961 was 573, increasing to 791 in 1997. According to a census by the Palestinian Central Bureau of Statistics (PCBS) in that year, 398 were males and 393 were females (Palestinian Central Bureau of Statistics, 1997).

- **Al Malih, Al Farisiya, Kharbet Humsa, Khirbet ar Ras al Ahmar, Khirbet 'Atuf**

These small Bedouin communities are located to the north of the Jordan Valley in tubas governorate and had a population of 962 inhabitants in 2007 (Palestinian Central Bureau of Statistics (Palestinian Central Bureau of Statistics, 2008).



**Fig. 2-35 Palestinian communities in the Jordan Valley.**





## **CHAPTER 3: Land Use in the Jordan Valley Region**

### **3.1 Introduction**

The study of land uses is considered one of the most important studies in numerous fields including the putting forward of environmental policies, development, and proposing regulations that organize the processes of the exploitation of land and its natural resources. In order to promote the development and urban evolution in the Palestinian region of the Jordan Valley, the land uses in the region must first be studied and a spatial geographical database must be constructed so that they can be relied on in the process of the regional planning not only in the present study but also by the decision makers and development policy makers in Palestine.

In order to investigate the land uses in the study area, we used the remote sensing and the geographic information systems (GIS) that are considered among the basic media of surveying and controlling the land resources, identifying their distribution and features, and preparing plans and programs to achieve development. In addition, they constitute a vital source of data that provide information effectively and efficiently in a way that cannot be provided by traditional methods. That is witnessed nowadays at the age of information that provides huge quantities of data needs effective tools for processing. The true, accurate, and correct piece of information which is based on scientific analysis shall lead to the optimal and sustainable use of the land resources.

Using GIS and RS to study land use are tools aimed to analysis the land use for better understanding the functioning of land use to support land management and planning.

The importance of this Chapter is revealed in its provision of information and maps related to land uses and ground cover in the area of the study for the purposes of planning the region of the Jordan Valley in a sustainable way and the optimal management of the land resources; and consequently, achieving the development and socio-economical welfare.

This Chapter aims to classify the land uses and ground cover in the Palestinian region of the Jordan Valley by exploiting the remote sensing; digital processing of the available space imaging; using the GIS in data input, storing, processing, analysis, and output data; and exhibiting the role of the natural and human factors in formulating the image of such categories in the study area.

### **3.2 Objectives of Land Uses**

The objective of land uses is to impose a range of control on the development of towns or regions related to vertical or horizontal expansion, in addition to imposing a range of coordination between their existence and performance on the one hand and the neighboring regions on the other. In addition, it aims at making the towns or regions more capable of achieving their role as sites of stability and in harmony with development which is targeted by the development plans among the regions. Consequently, it makes changes and improvements in order to reach balance among the various uses of land. The optimal usage of land starts from a reality imposed by both the land characteristics and housing at the same time. Another influence is also imposed by the relationship between the towns with other towns within the economically integrated region.

The urban planning is a scientific discipline that contains numerous specializations; it is a mixture of both science and literature. It should be noted that the optimal land planning is absent in the shadow of private interests and the presence of benefitting groups based on their nearness to or distance from the centers of decision-making and the planning authorities whose interests may match with the interests of decision-making authorities. (Soil Resources, Management and Conservation Service, 1993 FAO).

Since Palestine in general and the region of the Jordan Valley, in particular, are under the Israeli occupation which controls the majority of the lands in the region, the Israeli authorities have been attempting to exploit the largest possible areas of lands and resources in favor of the colonial settlements without taking any care of planning the optimal uses of such lands and resources for the purposes of depriving the righteous Palestinians from benefitting from their lands and resources.

Furthermore, the randomness and lack of attention to careful planning by the successive Palestinian governments for a long period of time have resulted in the absence of optimal uses of the Palestinian lands in ways that may serve the best interests of the inhabitants and protect the lands from colonization. It should be emphasized that putting forward and implementing such plans for urban planning on the real ground shall result in implanting the Palestinian identity and protect the targeted lands from the dangers of the Israeli occupation.

### **3.3 The Factors that Affect the Land Uses**

The land uses are affected by several factors, such as:

#### **3.3.1 The Political Factors**

The political factors involve the nature of the state, the type of prevailing regime, the array of policies that are adopted by the governing system in order to manage the land and provide services, the types of authorities and forces, and the regulations that are proposed to control it.

Since the prevailing political system in the country affects in general the lives of the population including the policies of land using in the country, the region of the Jordan Valley has been affected just like other Palestinian cities by the current political status, i.e. the Israeli occupation, which has tremendously affected the prevailing land uses in the Palestinian territories. The planning departments in the Palestinian territories was managed by the Israeli Civil Administration which was the actual controller of changing the master plans in the territories. It has been approving the master plans of the colonial settlements and issuing the required licenses to construct new ones. In contrast, it has been placing obstacles for hindering approvals of master plans and issuance of building licenses for the Palestinian citizens (Senan, 1993).

In addition, the Israeli occupation authorities have been confiscating and controlling the lands and the natural resources in favor of the Jewish colonial settlements and depriving the Palestinian legitimate landowners of making use of such resources for achieving progress, development, and provision of the decent life for the Palestinian concentrations. Moreover, the Israeli occupation authorities have been attempting constantly to paralyze and devastate the infrastructures in the sectors of health, education, energy and waters (Jarbawi & Abdulhadi, 1990).

#### **3.3.2 The Economic Factors**

The economic factors involve the array of the local and regional forces that are interactive with each other to form the present shape of the land, its market, the development process in it, and its value. It is also a function of use that makes the land productive.

In addition, the economic factors affect the use of land. From the economic point of view, the Israeli occupation has obviously affected the adopted policy of land use through control and restrictions which, in turn, delayed the development of local government (Khamaisi, 1996).

In the agricultural sector, the area of farming land decreased immediately after the occupation that attempted to control the largest possible areas of land through confiscation and colonization expansion that eventually led to the so-called economic dependence on the occupation (Sayeh, 2015).

In the industrial sector, the Zionist economic policy worked to devastate the industrial sector in the Palestinian territories that led to the following consequences:

- 1) Deterioration in the industrial sector contributing to the gross domestic product (GDP).
- 2) Structural transformation in the industries of the occupied territories to locate industries that are integrated with, and dependent on, the Zionist economy instead of the established industrial establishments.
- 3) Reinforcement and dedication of the craft type of industrial establishments in the occupied territories.
- 4) Deterioration in the productivity of the industrial establishments in a catastrophic way due to the closure of the traditional markets for the products of the occupied territories.
- 5) Continuous decline in the local capacities for savings, and in turn, the investment capacities (Malhees, 1985).

### **3.3.3 The Social Factors**

The community is the product of continuous, changing processes. In the commercial centres that are located downtown, there are main activities in the centres and subordinate activities outside them. There is also localization of services and populations and, at the same time, pervasion of them. In addition, there are non-homogeneous activities inside the cities such as the presence of high-level neighbourhoods surrounded by a different area. Furthermore, there are main activities that leave their locations whereas other activities replace them (Lambin & Geist, 2006).

The social factors mean the material, class, special, and professional aspects of urban life which lead to the structuring of the community through some effective, successive processes that influence the use of lands, such as:

- Centralization: immigration of populations and activities to the city.
- Decentralization: immigration of populations and activities from the city.
- Penetration and replacement: penetration or permeation of a population group or activity to replace another.
- Control: the presence and control of a social or an economic activity in a certain geographical area of the city.
- Progression: The gradual importance of the geographical areas that perform a certain activity from the more important to the less important.
- Population increase of pastoral groups relative to immigrations.
- Increasing disputes over land and the decrease of absolute exploitation rights of their use.
- Collective proprietorship and use of land (agricultural, pastoral) (Soil Resources, Management and Conservation Service, 1993, n. FAO).

### **3.3.4 The Natural Factors**

The most important natural factors that influence and determine the types of land use are the topographical factors, climate, and soil. Since the early times, the urban activities have inclined to the plain sites that are near to the transportation links for easy access to all usage. The soil factor means the composition and structure that determine the nature of land use. For example, farming needs fertile soil, whereas building areas need soil with a strong composition capable of endurance. Consequently, the optimal use is determined in order to match with the topographical factors including slopes, direction of slopes, elevation above sea level, and soil factors (Bajocco, Ceccarelli, Smiraglia, Salvati, & Ricotta, 2016).

### **3.4 Classification of Land Use in the Jordan Valley Region by Using the Remote Sensing and the Geographic Information Systems (GIS)**

The technologies of remote sensing and GIS were used to interpret and classify the land usage and land cover in the study area. Before starting to investigate the land uses in the study region, it is important to look into the global systems that are used in land classification in order to identify their mechanisms in classification and survey, and to determine which systems might be used and applied in Palestine for the purposes of preparing maps for the various land uses.

The following sections describe the most important systems of the types of land usage that have been developed and applied in several regions of the world.

### **3.4.1 The British Survey Classification System**

This system was used in the British Land Uses Survey in 1930.

- The arable lands are coloured brown and include: farmed lands, commercial gardens, barren lands and the lands left to rest.
- The permanent grasslands and meadows are coloured light green. These lands are reserved for organized grazing.
- Coarse rangelands are coloured yellow. These areas include wetlands and marshes.
- Forests are coloured dark green. These areas include conical, deciduous and mixed forests and forestry lands.
- Home gardens are coloured purple. These areas include home gardens that produce vegetables and fruit.
- The fruit gardens and orchards are coloured light purple.
- The greenhouses are coloured medium green.
- The non-agricultural lands are coloured red. These areas include built-up lands, areas of mines and cemeteries.

In 1960, a new classification was adopted in the process of the land uses survey in Britain that contained thirteen different usages. This classification is similar to its predecessor except that it increased the number of land usage types (Al-Angari, 1986).

### **3.4.2 The US Geological Survey System (USGS)**

The USGS, which was prepared by Anderson et al, is considered the most widely used and applied land use classification system in the USA and outside of it. This classification system consists of four levels of use. The third and fourth levels are left open for adding further detailed branches that might be required by the study.

The land use and land cover classification system presented in Table 3-1 include only the more generalized first and second levels. The system satisfies the three major attributes of the classification:

(1) it gives names to categories by simply using accepted terminology; (2) it enables information to be transmitted, and (3) it allows inductive generalizations to be made.

**Table 3-1 The US Geological Survey System (USGS) Levels One and Two**

<b>Level 1</b>	<b>Level 2</b>
<b>1 Urban or Built-up Land</b>	11 Residential
	12 Commercial and services
	13 Industrial.
	14 Transport, Communications and Utilities
	15 Industrial and Commercial Complexes
	16 Mixed Urban or Built-up Land.
	17 Other Urban or Built-up Land
<b>2 Agricultural Land</b>	12 Cropland and Pasture.
	22 Orchards, Groves, Vineyards, Nurseries, and Ornamental Horticultural Areas
	23 Confined Feeding Operations
	24 Other agricultural land
<b>3 Rangeland</b>	31 Herbaceous Rangeland
	32 Shrub and Brush Rangeland
	33 Mixed Rangeland
<b>4 Forest Land</b>	41 Deciduous Forest Land
	42 Evergreen Forest Land
	43 Mixed Forest Land
<b>5 Water</b>	51 Streams and Canals
	52 Lakes
	53 Reservoirs
	54 Bays and Estuaries
<b>6 Wetland</b>	61 Forested Wetland
	62 Nonforested Wetland
<b>7 Barren Land</b>	71 Dry Salt Flats.
	72 Beaches
	73 Sandy Areas other than Beaches
	74 Bare Exposed Rock
	75 Strip Mines Quarries, and Gravel Pits
	76 Transitional Areas
77 Mixed Barren Land	
<b>8 Tundra</b>	81 Shrub and Brush Tundra
	82 Herbaceous Tundra
	83 Bare Ground Tundra
	84 Wet Tundra
	85 Mixed Tundra
<b>9 Perennial Snow or Ice</b>	91 Perennial Snowfields
	92 Glaciers

(Anderson, 1976)

### 3.4.3 The CORINE Land Cover (CLC) nomenclature

The CORINE Land Cover is a vector map with a scale of 1:100 000, a minimum cartographic unit (MCU) of 25 ha and a geometric accuracy better than 100 m. It maps homogeneous landscape patterns, i.e. more than 75% of the pattern has the characteristics of a given class from the nomenclature. This nomenclature is a 3-level hierarchical classification system and has 44 classes at the third and most detailed level (Table 3-2).

**Table 3-2 The CORINE Land Cover (CLC) Nomenclature Levels 1, 2, and 3**

Level 1	Level 2	Level 3
<b>1 Artificial surfaces</b>	11 Urban fabric	111 Continuous urban fabric
		112 Discontinuous urban fabric
	12 Industrial, commercial and transport units	121 Industrial or commercial units
		122 Road and rail networks and associated land
		123 Port areas
		124 Airports
	13 Mine, dump and construction sites	131 Mineral extraction sites
		132 Dump sites
		133 Construction sites
	14 Artificial, non-agricultural vegetated areas	141 Green urban areas
		142 Sport and leisure facilities
	<b>2 Agricultural areas</b>	21 Arable land
212 Permanently irrigated land		
213 Rice fields		
22 Permanent crops		221 Vineyards
		222 Fruit trees and berry plantations
		223 Olive groves
23 Pastures		231 Pastures
24 Heterogeneous agricultural areas		241 Annual crops associated with permanent crops
		242 Complex cultivation patterns
		243 Land principally occupied by agriculture, with significant areas of natural vegetation
	244 Agro-forestry areas	
<b>3 Forest and semi natural areas</b>	31 Forests	311 Broad-leaved forest
		312 Coniferous forest
		313 Mixed forest
	32 Scrub and/or herbaceous vegetation associations	321 Natural grasslands
		322 Moors and heathland
		323 Sclerophyllous vegetation
		324 Transitional woodland-shrub
	33 Open spaces with little or no vegetation	331 Beaches, dunes, sands
		332 Bare rocks



		333 Sparsely vegetated areas
		334 Burnt areas
		335 Glaciers and perpetual snow
<b>4 Wetlands</b>	41 Inland wetlands	411 Inland marshes
		412 Peat bogs
	42 Maritime wetlands	421 Salt marshes
		422 Salines
		423 Intertidal flats
<b>5 Water bodies</b>	51 Inland waters	511 Water courses
		512 Water bodies
	52 Marine waters	521 Coastal lagoons
		522 Estuaries
		523 Sea and ocean

(Lillesand, Kiefer, & Chipman, 2015)

#### **3.4.4 The Palestinian land use classification system**

The Palestinian Central Bureau of Statistics (PCBS) worked on establishing a unified classification system for Palestinian land uses, in collaboration with institutions and ministries that are relevant to the subject, in order to facilitate the exchange of data between these institutions, as well as to facilitate international comparability studies for the land uses between Palestinian territory and neighbouring countries.

In order to develop the classification system for Palestinian land use the PSBC have been relying on the system of Economic Commission for Europe (ECE). Because this system is valid for the methods that are used to identify land usage in Palestine, such as administrative records, and analysis of aerial photographs and satellite images, also the majority of classes which are contained in the ECE system applicable to use in the Palestinian territories.

The Palestinian land use classification system (Table 3-3) was developed in proportion to the situation in the Palestinian territories and is without prejudice to the requirements of the application system ECE to classify land use and to add items related to those land used by the Israeli occupation.

**Table 3-3 The Palestinian Land Use and Land Cover Classification System**

<b>Level 1</b>	<b>Level 2</b>
<b>1. Agricultural area</b>	1.1 Arable land
	1.2 Permanent crops
	1.3 Pastures
	1.4 Other agricultural land
	1.5 Fallow land
<b>2. Forests</b>	
<b>3. Built-up area (excluding scattered of farms buildings)</b>	3.1 Residential
	3.2 Industrial land (excluding land classified in 3.3 below)
	3.3 Quarries, mines and drilling.
	3.4 Commercial land
	3.5 Public services (except for transport and communication units and technical units)
	3.6 Land used for mixed purposes
	3.7 Transport and Communications
	3.8 Technical units
	3.9 Recreational and open land
<b>4. Wetland</b>	
<b>5. Dry open land with special vegetation</b>	
<b>6. Open land without vegetation or with sparsely vegetation.</b>	
<b>7. Water</b>	7.1 Inland waters
	7.2 Tidewater
<b>8. Occupied territories</b>	8.1 Confiscation areas
	8.2 Israeli colonial settlements
	8.3 Agricultural land utilized by the Israeli occupation
	8.4 Israeli military land (close military land)

(Palestinian Central Bureau of Statistics, 2000)

### **3.5 The Study of Land Usage in the Region of the Jordan Valley**

Nowadays, the world is witnessing a huge scientific revolution in various fields in general and in the information field in particular. The study and planning of any region or city depends basically on the availability of sufficient and complete information about such a region or city. When such information is available, foundations for strategies and development plans can be put forward in order to develop regions and cities on correct, scientific bases. However, the real problem that faced not only the researcher in the present study, but also the development decision-makers is their inability to obtain

the spatial information that displays the reality which provides the basis for a sound decision to solve a problem or future planning. This is related to a number of reasons, including the following:

The unavailable or obsolete information discredits it in some cases. In addition, the land scene, which is the arena of interactions between human beings and nature, is subject to continuous changes in time factor, making the traditional methods for displaying the information that represents the land scene, such as maps, insufficient to assimilate the resulting changes. Therefore, the changes in the land cover need continuous observation. The field survey does not keep up with all the resulting changes; therefore, it has become essential to consider the use of modern spatial technologies such as the geographical information system and remote sensing in the process of obtaining classification, and analysis of information, in order to develop an urban pivot in the region of the Jordan Valley based on sound scientific foundations that represent the reality and that are applicable in the region.

In order to investigate the development of land uses in the region of the Jordan Valley, the researcher attempted to obtain information and statistics relating to old time periods of the study area. Unfortunately, it was not possible to obtain them because Palestine was under the control of various occupation forces that led to a disregard and dispersement of the land use studies that led to the scarcity of available data and statistics. Furthermore, many statistics and data have been lost. In addition, the administrative boundaries of the Jordan valley region were changed during the various time periods, as previously discussed in Chapter 2 of this thesis.

In a second stage of obtaining data related to and uses of land covers in the region of the Jordan Valley, the researcher was able to get space images of the land satellite for various years:

- Land sat 5 MSS 30-6-1973
- Land sate 5 MSS 21-6-1985
- Land sat 1-5 MSS 24-6-1989 (USGS, 2015).

Following this, the researcher entered the space images into Arcmap10.2 and mixed the composite ray beams by mixing the 2, 4, 3 ray beams. Then, some improvements were made to the images in order to display the information in a more accurate and lucid way.

However, the spatial distinction between the old land satellite pictures was limited; therefore, when they were classified, the differences among the classes were not large enough. Considerable overlaps were displayed among many lands covers. Consequently, the researcher was not able to obtain

accurate data that could be relied on in the study of the development of land usage in the region of the Jordan Valley.

In order to investigate the land uses more accurately, the researcher decided to rely on the aerial photographs, due to their high spatial accuracy. They could show the differences between the categories and give a more accurate classification of land uses with a minimum overlap ratio. The structural details in the aerial photographs often help in distinguishing among the details of various land covers more easily, such as the details of vegetation that appear in the form of intermittent patterns such as forests and various agricultural crops, which cannot be relatively distinguished easily by the multi-spectral pictures of the satellites in comparison with the aerial pictures. Moreover, the relatively weak eye sensitivity makes it difficult to identify the gray gradients and bevels, leading to the reliance on the changes in the gradients of gray or the so-called spectral discrimination accuracy that the sensor has to distinguish the land covers (Swain & Shirley, 1978).

### **3.5.1 Classification of Aerial Photographs**

The aerial photographs were classified by studying the digital data that are manifested by the various landmark patterns based on their spectrum reflections and transmissions. The multi-spectrum data are used in the classification process because the spectrum pattern determines the classification of each cell. This technology is considered to be one of the best techniques used in transforming aerial photographic data into information.

There are two techniques that are used to classify the multi-spectrum aerial photographs: (1) the Supervised Classification, and (2) the Unsupervised Classification. The first technique requires the availability of land measurements and signature to the reflection coefficient in certain areas in the aerial photograph that represent the classification categories. On the other hand, the Unsupervised Classification is based first on classifying the data of the aerial photographs by assembling them into natural spectrum groups, i.e. the clusters, which are found in the scene on the basis of the similarities of the digital number (DN). The classes that result from this method are called the "Spectral Classes". In this way, we obtain a sample of the whole scene. Then the aerial photograph analyst determines the identity of the land cover for these spectral classes by comparing the classified data of the aerial photograph to reference land data (Lillesand et al., 2015).

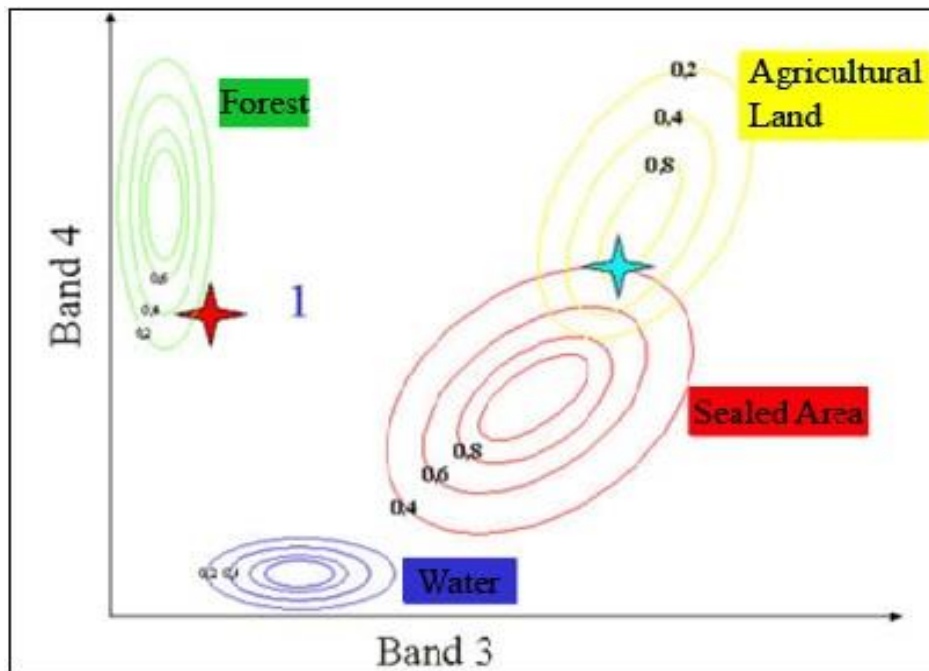
The methodology adopted in studying the land uses in the region of the Jordan Valley are shown in (Fig. 3-2).

The method of classifying the aerial photographs of the Jordan Valley region is based on the technique of merging more than one classification technique at the same time. The aerial photograph is classified by using the Unsupervised Classification in order to identify the groups in the photograph based on their spectral features. Then, it is compared to topographic maps and Google Earth photographs in order to identify those classes. The reason for using the Unsupervised Classification to classify the photograph is to identify the features of the spectral classes in order to prepare for the Supervised Classification for the purpose of facilitating the selection of training areas and so that they will be of high resolution when they are classified.

It is useful to carry out the visual analysis of the aerial photographs before beginning the process of training area signature and carrying out the Supervised Classification process by studying the sensing properties because the visual analysis of the aerial photograph helps to better understand the spatial and spectral details of the geographic areas in the photograph, which helps in the process of selecting the patterns of land cover in the area. Through observation of the photograph and comparing it with other photographs of the study area, it becomes easier to determine some of the usage patterns in this photograph, particularly the relatively fixed use patterns that have specific spectral properties such as the building areas, the evergreen forests, and the rocky areas.

Following this, the researcher administered the ENVI-5 software in order to determine the training areas for land uses in the Jordan Valley region. Then she used the Maximum Likelihood Classifier as a method for the Supervised Classification. The reason for using this method of classification is that the maximum likelihood is considered the most accurate and common classification method since it is based on the “mean factor” and the “covariance matrix” in the training classes. The cell proliferation around the mean factor shows the density of continuous probabilities as shown in Fig. 3-1.

The Maximum Likelihood Classification is a statistical decision criterion to assist in the classification of overlapping signatures; pixels are assigned to the class of highest probability. (Pouncey, Swanson, & Hart, 1999 Erdas Inc).

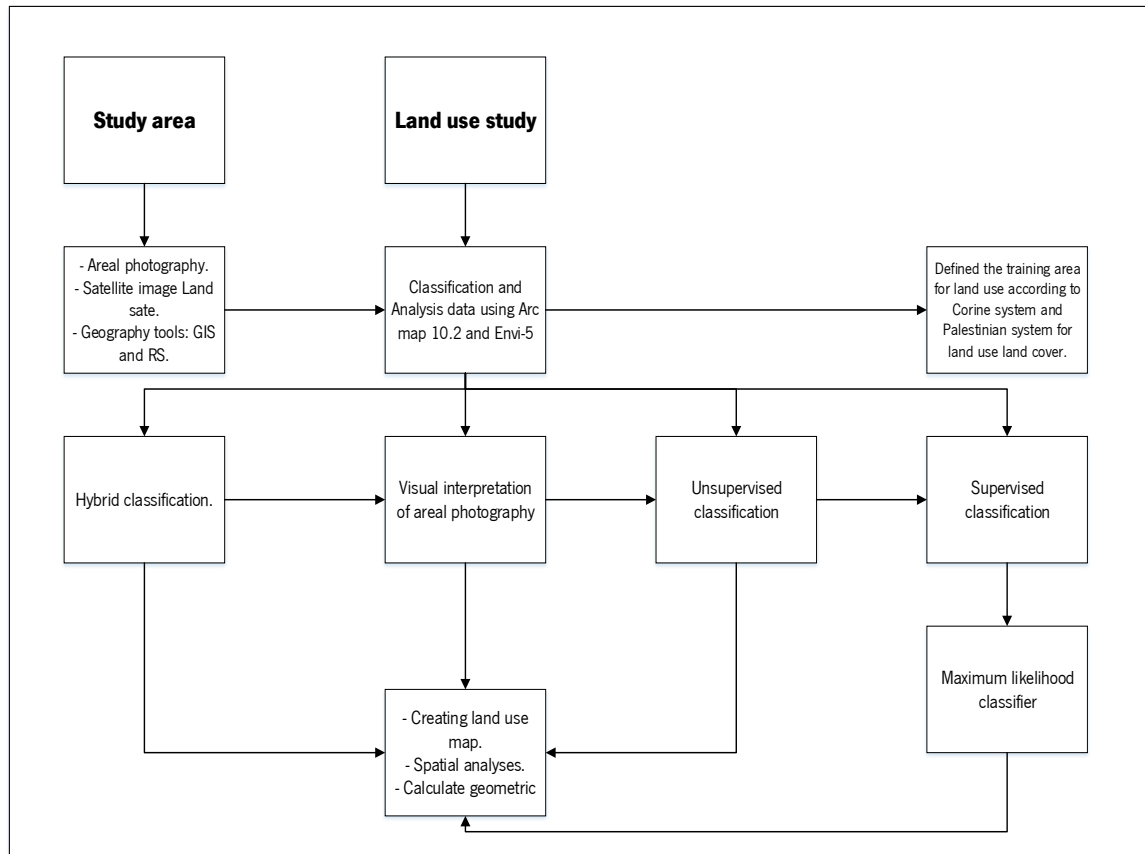


**Fig. 3-1: Maximum likelihood classification principle Naumann, 2008 (as cited in seos, n.d.).**

The land uses study is carried out by determining the main categories that are found in the study area through depending on the CORINE System and the Palestinian System for Land Usage and Land Cover. Through integration of the digital interpretation method by using the digital processing software of the photographs ENVI, and the visual interpretation by using the ArcMap 10.2 program and the accessory software in order to obtain the classes of land usage and land cover in the study area, so that the research outcomes can be used as inputs for urban planning in the Jordan Valley region. Researchers and decision-makers can benefit from the present study of land usage in the Jordan Valley region to supply alternatives for land use, select the optimal and sustainable uses for the land in the future research and subsequent plans.

In order to obtain a map that represents the land covers in the study area, we used an aerial photograph from 2009 (The Palestinian Ministry of Planning) that was classified by determining the areas of every cover by area polygons using the ENVI-5 program. Then their topological relations were constructed in order to obtain a properties table that included areas for each class, then stored in a shapefile for easy retrieval within the ArcMap program so that a database could be constructed and then analyzed. Then, we designed a map for the land use in the study area (Fig. 3-3). By using the ArcGIS program, layers were created; fields and attributes were added; data were numbered; areas of land use types were calculated, categories of land uses were coded and classified; information was

extracted, and then the layout was created. Following this, the geographic analysis and overlay analysis were implemented.

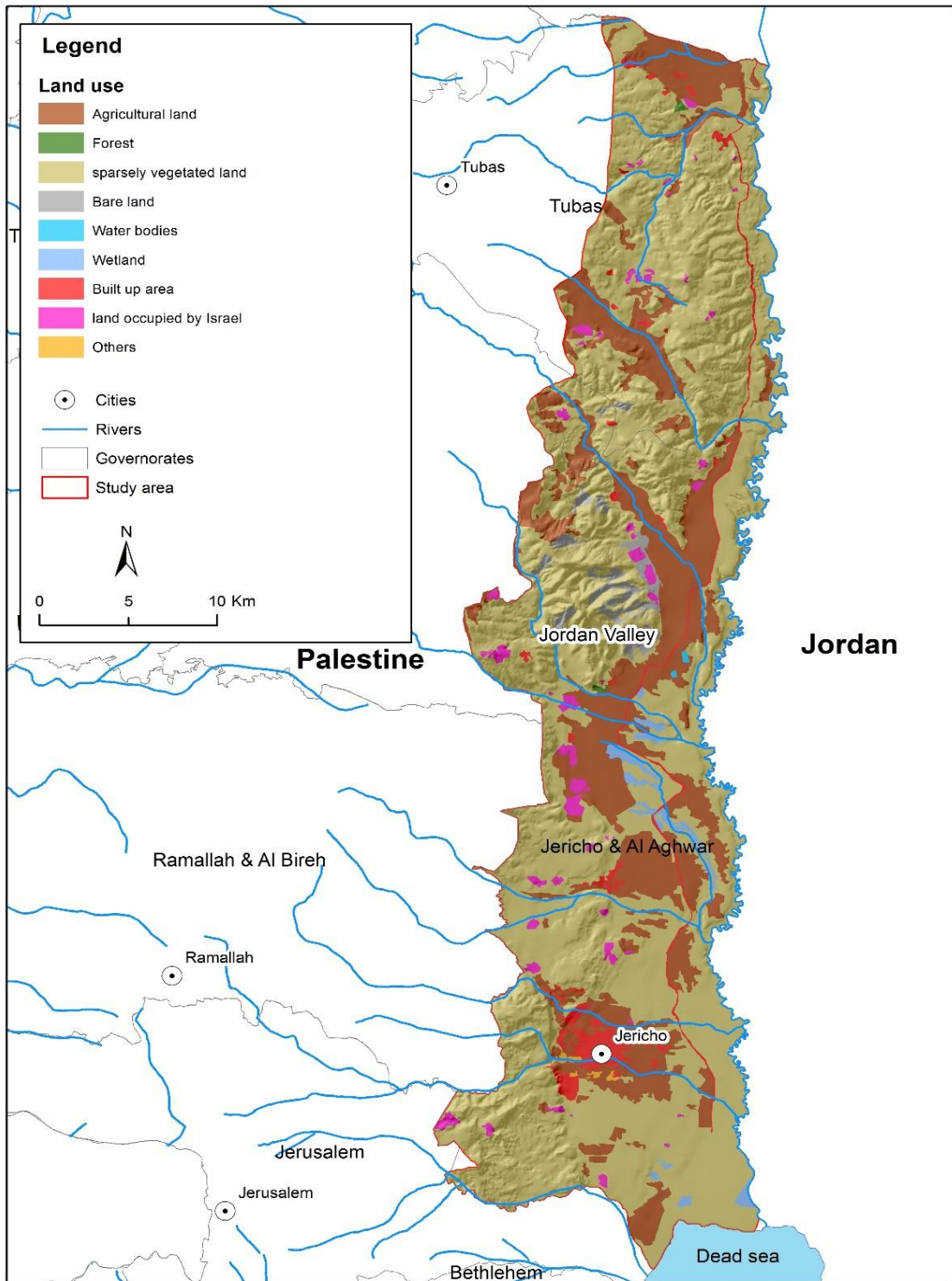


**Fig. 3-2: The methodology adopted in studying the land uses in the region of the Jordan Valley**

### 3.5.2 Land Uses in the Jordan Valley

- **Area of types of land uses in the study area**

The study area can be classified into nine types of land uses; such as 1) agricultural land; 2) built-up area; 3) Sparsely vegetated land; 4) Land occupied by Israel; 5) Wetland; 6) Water bodies; 7) Bare land; 8) Forest; 9) Others.



**Fig. 3-3: Map of land use in the Jordan Valley Region, the area of every use is calculated**

After carrying out the classification process of the aerial photograph, the statistics of its categories were extracted. Then, the ratio that each type involves relative to the total area (842.45 km<sup>2</sup>) was identified. Table 3-4 shows the areas of these types.

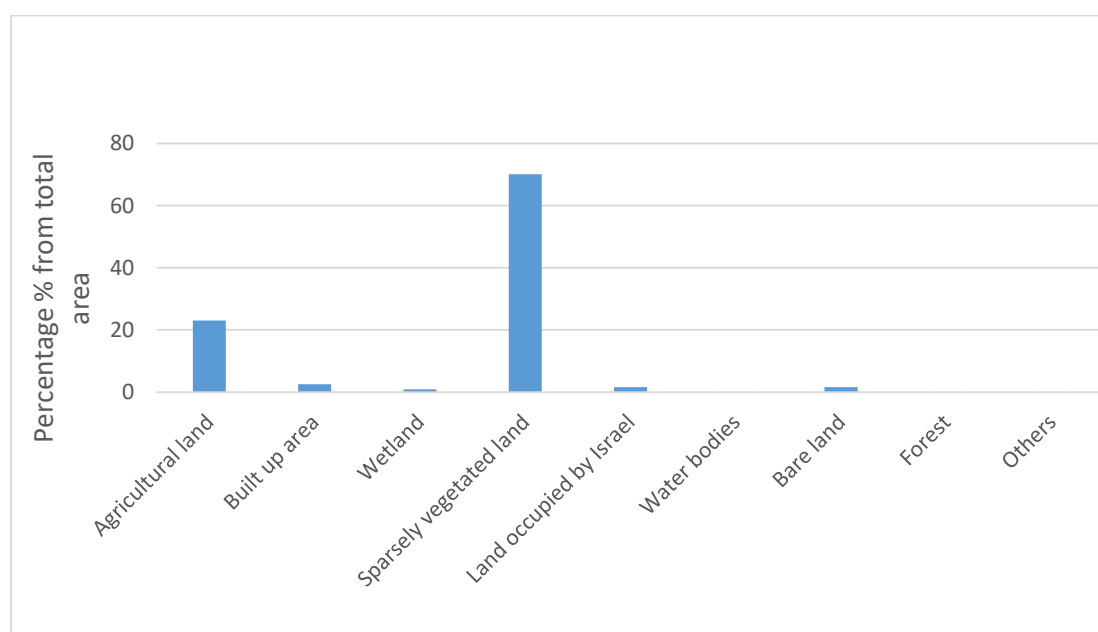


On the other hand, over 70% of the study area is categorized as sparsely vegetated land which includes rangeland for Bedouins in natural grassland or unused area.

Detailed accounts of these land use classes of the study area are described in the following section.

**Table 3-4 The land use area in the Jordan valley region (Km<sup>2</sup>)**

Number	Land use	Area km <sup>2</sup>	Percentage% From land use	Political classification	Area km <sup>2</sup>
1	Agricultural land	193.09	23	A	26.47
				B	1.43
				C	165.19
2	Built up area	21.81	2.59	A	10.98
				B	0.84
				C	9.99
3	Wetland	7.87	0.93	C	7.87
4	Sparsely vegetated land	590.40	70.11	A	28.34
				B	0.56
				C	561.50
5	Land occupied by Israel	13.67	1.62	C	13.67
6	Water bodies	0.37	0.004	C	0.37
7	Bare land	13.68	1.62	C	13.68
8	Forest	0.58	0.07	C	0.58
9	Others	0.98	0.12	A	0.68
				C	0.3
<b>Total</b>		<b>842.45</b>	<b>100</b>		<b>842.45</b>



**Fig. 3-4: The percentage of land use area in the Jordan valley from the total area.**

From Table 3-4 and Fig. 3-4, we can see that the water bodies occupy the lowest percentage of land use in the Jordan Valley region within the arid and semi-arid climate areas.

Following this, the researcher linked the types of land uses with the land divisions in the study area according to A, B and C of the Oslo agreements in order to know in which area those uses are located.

### **1) Agricultural Land**

The Jordan Valley region is considered as an area of significant agricultural importance because of its climate that makes it a natural agricultural greenhouse that can be exploited for agriculture throughout the year, in addition to its fertile soil and abundant water in its basin which is considered one of the most important water basins in Palestine.

The natural conditions make its agricultural crops vary significantly. In this respect, various kinds of vegetables such as tomatoes, cucumbers, peppers, aubergines, and many others are grown in the area. In addition, tropical fruit trees such as bananas and palm trees and the Mediterranean trees such as citrus fruits and grapes are grown extensively in the area. Furthermore, the Jordan Valley area is significantly important in rain-irrigated fields producing wheat, parsley, sesame seeds, and anise.

Table 3-4 and Fig. 3-4 show that the agricultural lands form a low percentage of about 23% of the total area. These areas spread in the plains. Their growth is dependent upon large flat areas because the slope soil is less dense; therefore, it affects the growth and maturity of the crops. In addition, the field crops are spread in the rain-fed areas, whereas the vegetables are mostly irrigated. The spatial distribution of vegetables in the study area is affected by some environmental factors such as the kind of soil, climate, degree of slope, and availability of water resources.

It can be seen from Fig. 3-3, that the land usage map in the Jordan Valley region, shows that the agricultural areas are concentrated in specific areas of the Jordan Valley such as the Tubas highland area where is expected to have relatively abundant rainfall and scattered in the lower Jordan River Rift Valley where it has conveyed stable irrigation water from wells and springs, such as Bardala, Kardala, and Ein el Beida.

The middle and southern Jordan valley receive marginal rainfall; have poorer soils and higher temperatures and therefore higher evaporations. These areas are unsuitable for rain-fed agriculture, the Bedouin nomadic communities used to rear their goats and sheep flocks there.

The agricultural lands are also located in the plains of Jericho, Jiftlik, Fasayel, Az zubaidat, Auja, Marj al Ghazal and Marj Na'ja, where greenhouse vegetables, which depend on modern irrigation techniques such as drop and sprinklers irrigation, spread.

The majority of the agricultural lands in the Jordan Valley region are under the control of the Israeli occupation. As it can be seen in Table 3-4, more than 165 square kilometres of the agricultural lands are located within the C Area which is under the control of the occupation. The Israeli occupation imposes measures by posting military checkpoints at the main entrances to the region that connect the towns and villages of the region together, or with neighbouring cities of the Jordan Valley region, for the purpose of separating the agricultural lands and hindering the Palestinian farmers from the possibility of reaching their lands in order to cultivate and take care of them. In addition, the Palestinian farmers are prevented from transporting and marketing their agricultural crops. These measures are intended to harass the Palestinian citizens and forcing them to leave their lands, to weaken the Palestinian agriculture, and eventually devastating it.

## **2) Built Up Area**

Table 3-4 and Fig. 3-3 show that the built up areas in the Jordan Valley region constitute a humble area, approximately 21.81 square kilometres because they are located in specific areas such as the plains and the areas that are located among the highlands such as villages, refugee camps and small residential communities. As shown in the previous chapter, these locations are spread in the lands that are classified as Area A which is under the control of the Palestinian Authority. Israel separates these residential communities from each other by setting up colonial settlements and closed military areas for the purpose of weakening the Palestinian communities and preventing their future expansion and urban development.

It should be noted that the Palestinian communities are characterized by random construction patterns because the majority of those concentrations are located in the land that is under the control of the Israeli occupation which prevents the Palestinian citizens from building on their lands; and consequently, they are forced to build without obtaining building licenses.

## **3) Sparsely Vegetated Lands**

As it can be seen from the table, the sparsely vegetated lands constitute about 70% of the total area of the study region, including natural grasslands and sparsely vegetated areas. The Jordan Valley region

in general, and the eastern slopes of the Palestinian highlands that overlook the Jordan Valley are considered natural grazing areas for the livestock in the West Bank. As shown in the previous chapter, the Jordan Valley region contains numerous natural varieties of flora.

The majority of these lands are under Israeli occupation, i.e. approximately 561 square kilometers, as Table 3-4 shows. The Israeli occupation carried out various measures that have resulted in devastating this natural vegetation and prevented the Palestinian farmers from using the natural pastures for livestock grazing. Such measures include, for example, announcing large areas as closed military areas, military bases and camps, and fire-shooting areas for training, that have resulted in burning and devastating huge areas of these lands as a result of military training in the area.

#### **4) Lands Occupied by Israel**

These areas include the Israeli colonial settlements and Israeli military camps. Since the Israeli occupation of the Jordan Valley, it has been setting up colonial settlements in the Jordan Valley. As shown in the previous chapter, the number of colonial settlements has reached 35 (Table 2-7). Furthermore, it has constructed military camps for the Israeli army, announcing them as closed military areas where the Palestinian citizens are not allowed to carry out any agricultural, urban or any other activities. It has established 97 military sites there. In addition, it has implanted hundreds of kilometres of agricultural land with land mines. In these military camps, the military training of the Israeli occupation army is carried out in the areas that constitute the life arteries for the Palestinian concentrations such as the villages of El Farsia, Yerza, Hamsa, and Al Ras El Ahmar in the Tubas Governorate, in addition to Lefjam and Taweel basins in the Central Aghwar. The military training affects not only the lives of the Palestinian citizens, but also the natural pastures in the area where these pastures have been turned into military barracks and large areas of grazing lands have been incinerated.

#### **5) Wetlands, including salt marshes and salinas**

Fig. 3-3 shows that the wetlands spread in the area located between the east of Fasayel to the north east of El Auja, constituting a small portion of the Jordan Valley region.

## **6) Water Bodies**

The water bodies constitute a very small portion of the Jordan Valley region because the climate of this region is dry and semi-dry, resulting in decreasing the area of its water bodies, as was explained in the previous chapter (Fig. 2-10).

## **7) Bare Land**

This covers a very small area in the Jordan Valley region from the west to the southern west of Fasayel, as shown in grey in (Fig. 3-3).

## **8) Forest**

The forest constitutes a very small area in the north part of the Jordan valley.



## **CHAPTER 4: Planning in the Middle East and Planning in Palestine**

### **4.1 Planning in the Middle East**

Planners and specialists of urban and regional development in developing countries have been approaching the urban planning studies at regional levels independently in a way that suits the nature of such countries. In these ways, they have been dealing with issues such as the distribution factors and the role of heavy industries in making up economic regions, and planning the physical or natural planning in rural areas. In addition, they have been studying the foundations and principles that have led to the rapid development and emergence of some regions in countries. For example, the discovery of natural resources such as oil and natural gas in the United Arab Emirates and Saudi Arabia led to huge urban development in a short period of time.

For example, the accumulation of the surplus income resulting from oil sales in the Kingdom of Saudi Arabia, that have been increasing steadily since 1970, made the Saudi government take the wise decision to exploit such surpluses in order to develop the natural and human resources in a five-year plan for economic and social development. Up to the year 2004, seven plans have been implemented (Al-Habees, 2007).

In order to develop all the sectors in Saudi Arabia, it was decided to choose the comprehensive planning method including its economic, social and organizational dimensions and its two parts: the directional and referential. More relative importance was given to the referential part in a way that matches the steady increase of the contributions of the private sector in the economic and social development, causing faster development of the various sectors of the national economy which was suffering, at the beginning of planning in the kingdom, from obvious dominance of the oil sector as the only source of income and wealth. In addition, the national economy was suffering from a lack of diversification in the production structure, fragile institutional and administrative structures, weak infrastructure, and scarce preparations of the qualified national human resources. This situation has changed radically at present. The Saudi economy has improved dramatically to a great extent that it now enjoys remarkable diversity in its economic foundation and income resources; the basic infrastructures and public services have been completed including the educational and health facilities; human resources have been developed; the national economy has been rehabilitated to deal smoothly, flexibly and effectively with all of the variables at the local, regional and global levels, particularly, the

World Trade Organization, which the Kingdom of Saudi Arabia is almost certainly about to join (Al-Habees, 2007).

However, the accelerating urban development in several developing countries has resulted in economic, social, health, security, and other problems. Slums, which lack the basic services such as electricity, clean drinking water, and sanitation networks, have spread in many areas. In addition, environmental health has been deteriorating in such slums and shantytowns.

The accelerating urban development that several Arab cities have witnessed during the second half of the twentieth century constitutes heavy pressures on the potentials and resources that are assigned to the urban centres, making their structural organizations and service facilities unable to satisfy the needs of the population. This case can be seen in the states of the Middle East, including Egypt, Morocco, Tunisia, Algeria, and other countries.

In order to overcome such problems, more work should be exerted to achieve more research and careful studies of such situations, and to benefit as much as possible from the best experiences and practices through identifying the way of dealing with the lessons learned, so that we can reach the required situations that enable us to obtain local and regional studies and research that provide the necessary solutions to the present questions and problems, and put forward the expected perceptions and visions for the urbanization of the Arab region in the future. In this respect, the researcher has discussed some of the planning experiences of Arab states.

As for the planning status in Palestine, it is completely different from the rest of the states in the Middle East. Such difference is eminent since Palestine has been under occupation by Israel since 1948 until the present time. The objective of the occupation is to place challenges and difficulties in front of preparing and implementing development plans in reality. On the other hand, the occupation has been granting numerous advantages and facilities to the Jewish settlers, which will be discussed in the following sections of this thesis.

#### **4.2 Regional Planning: Jordan's Experience**

Jordan is one of the developing countries that suffered from the consequences of colonial domination and control that led to the deteriorating living conditions of the population, in addition to distortion of the economic structures and the fragmentation of the productive sectors. Therefore, the



Jordanian government realized the importance of development and planning projects for progress and development and the elimination of the state of backwardness and weakness. To achieve those objectives, it has worked to put forward regional development plans to meet the prevailing conditions, and in order to reach certain goals and results.

The idea of regional planning in Jordan goes back to 1966, when the UN expert, Victor Lawrence, divided Jordan into six development regions (Ghunaim, 2008). The province of Hebron-Jerusalem-Ramallah, the province of Nablus-Tulkarm, the province of Amman-Zarqa, the province of the Jordan Valley, the province of Irbid-Jerash-Mafraq, and the province of Al-Hasa-Ma'an-Aqaba.

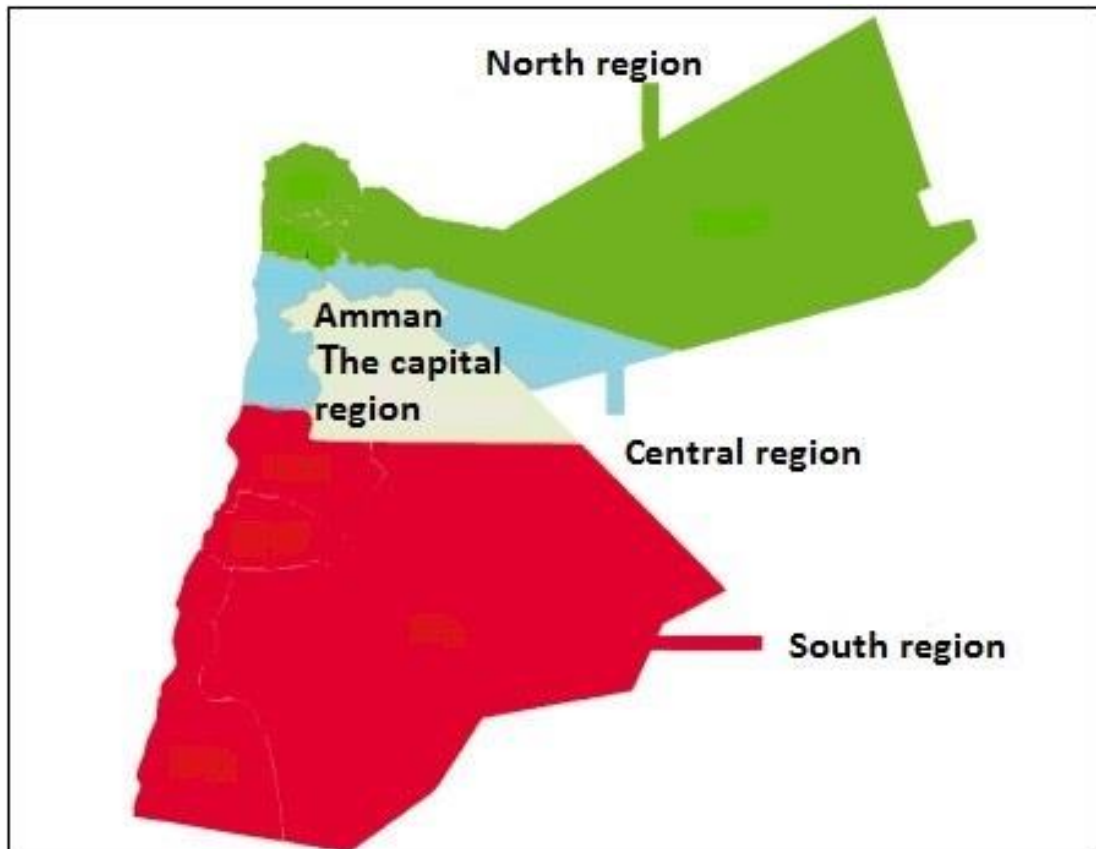
Following the 1967 war and the Israeli occupation of the territories of the West Bank, the Ministry of Municipalities divided the East Bank (Jordan) into six development regions: The North Region which includes Irbid, Mafraq, Ajloun, Jerash; the Jordan Valley Region; Amman-Balqa Region; Karak Region; Northern Badia Region; and the South Region (Ma'an and Aqaba) (Ghunaim, 2008).

Consequently, Jordan now has semi-independent planning organizations the Jordan Valley Authority, the Authority of Aqaba Region, the Authority of Petra Region, and the Greater Amman Municipality. These authorities enjoy financial, administrative and legislative powers and an independence that enables them to implement their plans. Several integrated regional plans were put forward and accomplished in Jordan, including:

- The Plan of Amman-Balqa Region in 1977,
- The Plan of Irbid-Mafraq Region in 1978,
- The Plan of Kerak-Tafeela Region in 1988-1990 (Al-Tal, 1981).

Those plans took into account the holistic regional planning for optimal utilization of available resources. The studies were prepared with the participation of local technical staff, in co-operation with all the economic, social, public and private sectors, and by stimulating the related community participation. These studies have been associated with the realities of the regions in order to address the disparities and differences in the social and economic development rates among the regions of the country, and among the sub-regions of the same region. In addition, their contents and results aimed to achieve the objectives of regional planning within the framework of the general policy of the nation-state plans, and provide equal and balanced opportunities for the development of regions, according to the available resources (Al-Tal, 1981).

In 1996, the Jordanian cabinet passed a decision to re-divide the Hashemite Kingdom of Jordan to three main regions for regional development planning (Fig. 4-1): The Northern Region, the Central Region, and the Southern Region.



**Fig. 4-1: The main Jordanian regions for development 1996 (Al-Ashraf & Matouk, 2006)**

Since 2000, concentration has been focused on the spatial dimension of the special development territories: Aqaba Special Economic Zone, then Irbid Special Development Zone, and Ma'an Special Development Zone (Al-Ashraf & Matouk, 2006).

- **Methodology used in the preparation of regional studies**

The study is divided into three main stages:

Stage 1: Evaluation of the *de facto* status through data collection and preparation of base maps that cover the limits of the study areas, where each province was approached separately for easy dealing

with data and information sources. Co-ordination was made with relevant ministries and institutions, each according to its competence.

Stage 2: Data collection completed in order to engage in specialized studies in the fields of agriculture (soil classification), geological and water studies to co-operate with other parties with respect to the vital projects planned. This is done through analyzing and matching the information, data, and needs of the initial perception of the plans of land use at the scale 1/25000 in order to match them with property maps that have been prepared in this period.

Stage 3: The final plans for land use prepared for the study territories, the proposed development projects will be identified, and the regulations of the various uses will be put forward (Al-Ashraf & Matouk, 2006).

- **Participating Parties**

The regional studies, at all their levels, will be prepared in co-ordination with relevant ministries and institutions, each according to their competence (agriculture, tourism, environment, industry, etc.) (Al-Ashraf & Matouk, 2006).

- **The legal basis for regional planning**

The Temporary Law to regulate the cities and buildings in Jordan number (79) of 1966 provides for the preparation of master plans according to regional reconstruction after conducting the following studies:

- Performing a natural survey and a social survey needed to achieve the objectives of the organization of cities and villages.
- Preparing the structural organization of cities, villages, and communities, master plans and identifying land usage according to the master plans for the regional reconstruction.
- Up-dating the master plans whenever necessary (Hashemite Kingdom of Jordan, 1966).

The law also stipulates how to set up regional master plans and publish them in the Official Gazette, as well as the ratification, objection to them and putting them into practice (Hashemite Kingdom of Jordan, 1966).

Jordan is still adopting this law, with some modifications, such as the head of the Supreme Council of the Organization is the Minister of Municipalities rather than the Interior Minister, and the requirement to obtain the permission of the Ministry of Works.

Article (12) of the Planning Act of 1971 requires that all ministries and government institutions shall set up a planning body to be linked to the under-secretary of the ministry or the chairman of a government institution. These entities shall have the following tasks:

- To conduct studies and surveys which are necessary to determine the guidelines for national development.
- To conduct high co-ordination between development projects and programmes in terms of planning and implementation.
- To design appropriate systems for process monitoring and evaluation. Each ministry or establishment shall enjoy the right to make changes that are deemed necessary to set up the necessary planning boards but they shall take into consideration the necessity to contain representatives of ministries and departments that comprise each ministry or institution (Ghunaim, 2008).

Article 13-A of the Planning Act of 1971 recommends that the ministries and government establishments shall set up planning committees whose tasks shall include (M. Y. Khamis, 1999):

1. To deepen and develop the concept of community participation, with a focus on the spirit of teamwork in the ministry or institution.
2. To contribute to the preparation and implementation of various development programmes and projects.
3. To take part in full supervision at all follow-up work related to the implementation of projects and programmes contained in the development plans.
4. To study any issues or problems that may face any of the steps of preparation or follow-up implementation of development projects and programmes.

The Regional planning in Jordan has faced several obstacles that were represented in (Ghunaim, 2008).

1. Unequal distribution of natural resources among the regions.
2. Unequal distribution of available agricultural data among the regions.
3. The concentration of the population in a region relative to others.
4. Regional differences in the national income.
5. The government industries are concentrated in the South Region.

- **The Plan of the Jordan Valley Region**

During the three years that followed the 1967 war, the Jordan Valley suffered from concentrated bombardments by the enemy that was intended to displace the inhabitants of the valley. This was achieved, after the Jordan River had been converted, and its water almost dried up.

By 1970, most of the population of the valley had migrated because their homes had been destroyed, and their farms had dried up. In addition, the bombardments in the valley prevented them from practicing any activity in it (Al-Habees, 2007).

At the beginning of the seventies, a regional development plan was set up for the development of the Jordan Valley, which is the area that extends between the Yarmouk River in the north, and the northern Dead Sea in the south, in order to bring life and activity to the valley, after most of its population had left their homes and farms, which were destroyed by the Israelis during the three years that followed the Six-Day War 1967 (Al-Tal, 1981).

The method that was used in the preparation of the plan was very simple due to the lack of information that had to be collected and analyzed for the population. The plan was based on a field study in which workers in various economic sectors, especially agriculture and water were interviewed. They were asked questions in order to obtain answers that might help in the preparation of the plan. Then the answers were studied. That was the case for the social, urban and infrastructure studies, making the task for the planners who set up plans to provide residential units, schools, water, electricity, roads, and public utilities in an integrated development plan that was demonstrated in the

first development conference, which was held in Amman in 1972, and won the admiration of the international delegations that participated in that conference (Al-Habees, 2007).

The idea of the Jordan Valley plan is summed up in knowing the amount of water available for irrigation and the land area that can be irrigated with the available water. The land was divided into indivisible agricultural units with a minimum area of (30) thousand square metres. Then, it was necessary to know the manpower, necessary to reclaim the land and investment. Then it was awarded manpower needed to work in the service sector, the number of the population that can be absorbed in the Jordan Valley. Consequently, a plan was set up to establish the houses and services necessary for the population, and agricultural development plan, and the subsequent problems (Al-Habees, 2007).

To implement this plan, a recommendation was proposed to establish an independent body by jurisdiction that takes all the powers of the ministries and departments in the Jordan Valley and takes it on to review the plan and implementation. This was done, by setting up the Jordan Valley Corporation, and then the Jordan Valley Authority. Following this, the plan implementation began (Al-Habees, 2007).

The plan succeeded, and many of its projects were carried out. In addition, the powers of the Jordan Valley Authority were expanded to cover the southern valley or Wadi Arava, which extended from the south of the Dead Sea to the Gulf of Aqaba. Thousands of housing units were constructed in a large number of villages in the Jordan Valley. Modern schools, roads, irrigation systems whether by sprinkler or drip irrigation were also constructed. In addition, drinking water pipes, electricity networks and a lot of public utilities were also constructed (Table 4-1) (Al-Habees, 2007).

Consequently, life and activity returned to the Jordan Valley which came back to provide not only Jordan, but also the neighbouring Arab countries, with agricultural products in the seasons when it is rare to obtain such crops.

**Table 4-1 Development indicators resulting from the plans of growth and development in the Jordan valley 1973/2005**

<b>Indicator</b>	<b>1973</b>	<b>2005</b>
<b>Population</b>	64000	333000
<b>Municipal and village councils</b>	3	49
<b>Government centers</b>	1	18
<b>Number of school students</b>	12000	60000
<b>Units of residential land that have been distributed</b>	*	35925
<b>Units of residential buildings that have been distributed.</b>	*	2198
<b>Health centers</b>	2	48
<b>Maternal and child centers</b>	2	15
<b>Hospitals</b>	2	6
<b>Reclaimed land irrigable km2</b>	137	360
<b>Banks</b>	1	20
<b>Agricultural roads</b>	60km	8000km
<b>The delivery of drinking water services</b>	10% from population	98% from population
<b>Electricity services</b>	10% from population	98% from population
<b>Shopping centers</b>	*	5
<b>Factories</b>	*	9

(Al-Habees, 2007). \*: no data available.

### **4.3 Planning in Egypt**

- **Introduction**

In 1958, the urban development strategy started in the Egyptian cities by setting up general plans for the main cities that were used by the engineering departments. Then, in the late 1960s, urban planning started to progress by establishing the Cosmopolitan Cairo Planning Authority that included Cairo and the surrounding population concentrations. In 1971, the first planning of Cosmopolitan Cairo started to come to light in a clearer picture by determining land use, roads networks, and buildings organization. However, it did not come to the level of detailed planning. In 1982, the urban planning act was approved. During that period, the Cosmopolitan Cairo Planning Authority was changed to become the Public Authority for Urban Planning as the responsible organization for preparing the master plans of the Egyptian cities and the regional plans which are at the same time the responsibility of the Planning Ministry (Amer, 2014; Ibrahim, 2000).

In 1996, it was decided to set up an urban strategy at the national level by preparing an urban map of Egypt until 2017. The plan was prepared in co-operation with the Ministry of Planning and the armed forces. The map came out in the form of plans and reports but lacked implementation mechanisms including acts, laws, regulations and policies (Ibrahim, 2000).

- **Regional and Urban Planning in Egypt**

The General Authority of Urban Planning and its branches in the regions is the responsible party for drawing the general policy of urban planning and setting up urban development plans and programmes at the national and regional levels and master plans. In addition, it also took over the responsibility of verifying the implementation of such plans.

Urban planning in Egypt went through several stages during which the thoughts and level of planning performance have developed. These stages can be classified as follows:

- The stage of planning Cosmopolitan Cairo from 1965 to 1973: This stage started by setting up the Supreme Committee for Planning Cosmopolitan Cairo by the presidential decree number 2102 in 1965 and setting up the Planning and Implemental Board for Cosmopolitan Cairo whose responsibilities were confined to putting forward the master plan for Cosmopolitan Cairo and whose limits were determined for the first time in 1966 (Amer, 2014).
- The national perspective of planning from 1973 to 1982: this stage was started by the presidential decree number 1093 in 1973 by setting up the General Authority of Urban Planning that took over the responsibility of preparing urban plans for all the cities, towns, and villages of the republic according to the time plans and the priorities that were set up based on the changes that took place after the 1973 October war (Ibrahim, 2000).
- The stage of setting up the mechanisms of urban planning from 1982 to 1990: this stage started by proposing the urban planning legislations by enacting the Urban Planning Act No. 3 for the year 1982 and its Executive Regulations. In this stage, the Authority became the state body that took over the responsibility of drawing the general policy of urban planning and preparing the plans and programmes of urban development at the level of the republic. Consequently, it was transformed from a consultative body to another responsible for approving



plans that are prepared by local circles, spreading the thoughts of urban planning, and organizing training programmes for its staff (Ibrahim, 2000).

- The stage of decentralization and regional planning from 1990 to 1994: During that period, the Authority paid attention to the national problems by adopting the methodology of national and regional planning as its style for the first time while concentrating on the regional planning method as a basic entrance and a frame for setting up general plans. To emphasize the principle of decentralization in planning for urban development, the Authority completed the establishment of the regional urban planning centres for the regions of Cosmopolitan Cairo, the Delta, Asyut, the Southern Upper and Northern Upper, in addition to the Centre of the Suez Canal District which was previously established in 1986 (Ibrahim, 2000).
- The stage from 1994 till now (the mechanism of plan implementation): In this stage, the Authority has been interested in adopting the idea of comprehensive urban planning programmes including partnerships, filling resources, and capabilities development as mechanisms for implementing the urban plans and overcoming the obstacles that face the local departments during the various implementation stages. The Authority also became more interested during this stage in exchanging ideas and experiences, discussion of planning experiences through holding and organizing meetings, conferences, and seminars at the local, Arab, and global levels (Amer, 2014).

In order to keep up with the rapid accelerating global changes, the Authority is seeking to develop approaching urban planning by concentrating on the urban development management, filling the resources, developing the capabilities, and maximizing the role of the communities during the stages of planning and implementation, and adopting the most up to date technological methods in the fields of information technology, etc.

- **The urban planning and development strategy in Egypt**

The urban planning strategies emphasize two main axes:

- 1) The axis of developing the desert areas:

This axis includes the establishment of new cities and the development of remote areas, such as the comprehensive development strategy for the Sinai desert, the regional plan for developing the north western coast, the urban development plan for the Red Sea Governorate,

the strategic plan to develop the urban communities in southern Egypt, and the comprehensive development strategy for the district of the Upper region (Amer, 2014).

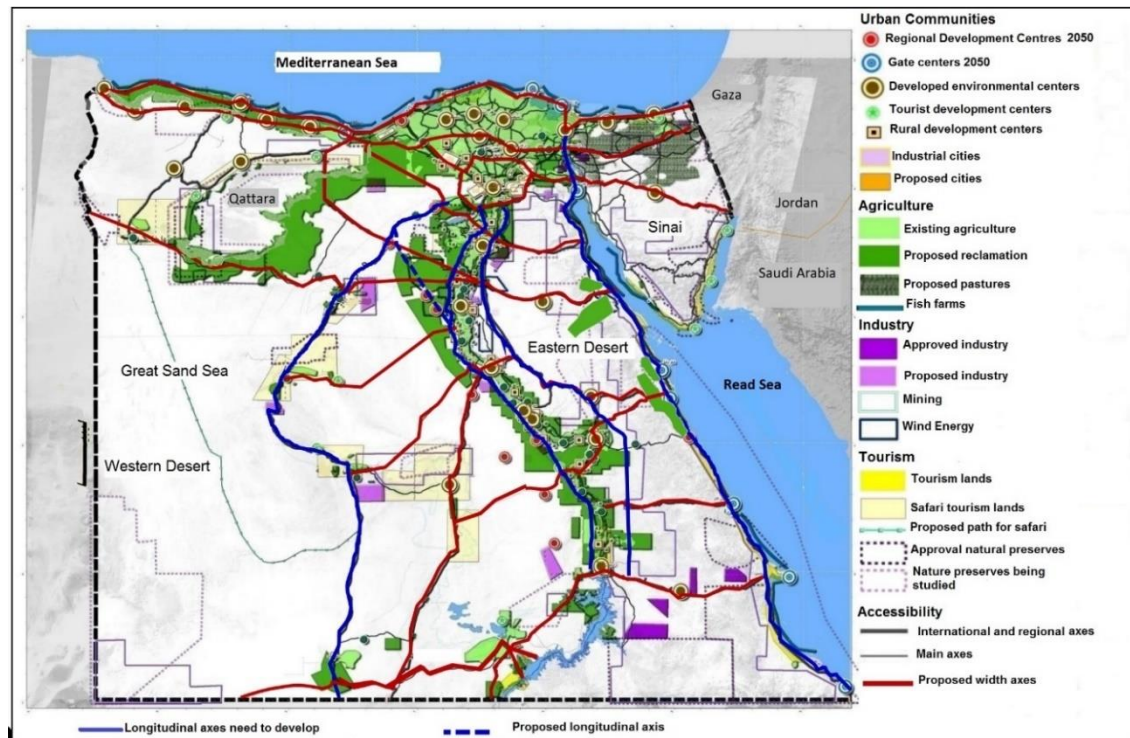
2) The axis of developing the urban structure within various levels of planning:

The urban development at the national level was achieved by producing the urban development plan for the Arab Republic of Egypt until 2017.

Fig. 4-2 shows the strategic plan of Egypt. Strategic development plans have been put forward on a national level for a number of planning sectors including urban communities, agriculture, industry, and tourism. New planning axes were suggested (The Ministry of Housing and Urban Development, 2013).

The objectives of the national plan for urban development are:

- To accommodate the expected increase in population within the next 40 years, by achieving the demographic balance in line with the absorptive capacity of each region.
- To achieve equitable distribution and balanced elements of development at the provincial level.
- To achieve social justice, reduce disparities in the distribution of resources and wealth between regions, and reduce poverty.
- To provide employment opportunities in the proposed areas for development and to achieve the life quality of the citizens (The Ministry of Housing and Urban Development, 2013).



**Fig. 4-2: Strategic plan for urban development in Egypt (The Ministry of Housing and Urban Development, 2013)**

The second level of urban development is the regional level where Egypt is divided into seven development regions, as shown in Fig. 4-3. Plans have been set up according to the data of the development map, basic reconstruction, and spatial data of each region. The methodology of taking an interest in investigating the present status of the regions has been adopted by using studies in various specializations such as natural and environmental studies, studying the mineral and water resources, population, urban, economic studies, services and infrastructures, transportation and communication networks at the regional level. Following this, findings will be concluded by the various development sectors. The geographic information systems were also adopted in order to carry out analyses to reach a clear vision for the future expectations and determine the areas of urban development (Amer, 2014; The Ministry of Housing and Urban Development, 2013).



**Fig. 4-3: The development regions in Egypt (Amer, 2014)**

The third level is the structural level where master plans were set up for urban concentrations. Twenty-two new cities were planned and implemented on the most up to date planning systems such as the cities of Sadat, New Arab Tower, New Salheya, Dumiat, New Cairo, New Asyut, and many others (Amer, 2014).

By studying some planning experiences in the Middle East, we can see that the changes and social, economic, and social events in the twentieth century, particularly following the Second World War, led to the importance of implementing national and regional planning all over the world in general and in the developing countries in particular. Various regional problems came to light among the countries and among the various regions in the same country. The developing countries are still suffering from economic, social and natural problems resulting from not adopting regional planning. The problem becomes more complicated because these countries are under the control of continuously changing political regimes.

Since the regional planning policy is one of the most important policies that has been adopted by both the developed and developing countries, the states of the Middle East have started to adopt it. The developing countries should benefit from the planning experiences in the developed countries, but they have to move towards development at a higher rate than that followed by the developed countries at the beginning in order to join up with the countries so that the gap between them and other countries does not increase.

Among the most important economic and urban growth factors required to overcome the problems of the Middle East countries in the planning stages are co-operation, exchange of experiences and studies and planning experience among the countries located in the economic, social and developmental growth of converging in the degree of growth. This can be done by linking the planning process between the neighbouring countries that have common elements. Since linking the process tends to shorten the time and resources and unify the efforts of experts which lead to pushing the planning process forward in these countries.

#### **4.4 Planning in Palestine**

- **The evolution of planning and regulations applicable to planning in Palestine**

In investigating the development of urban and regional planning in Palestine, it should be noted that such planning has been affected historically by the consecutive events that have been taking place in the country.

- **Planning in Palestine during the era of the Ottoman rule**

During the second half of the nineteenth century, the Ottoman Empire Municipality Administration Act (111) of 1871 stated that municipality boards should be set up at the centres of governors and sub-governors. The 1877 Municipality Act is considered the legal and regulatory foundation of the municipality board's structures and the function of municipalities during the Ottoman era. By enacting this Act, the Ottoman government attempted to decrease the role of local entities, limit their authorities, and constrain them in limited service functions. In addition, the system of building licensing regulations in cities was endorsed. Furthermore, rules for land acquisition for the purpose of constructing roads and regional planning were put forward (Abdel-Hamid, 2005; Ishtayeh & Abbas, 2004; Ministry of Local Government, 2003).

After the end of the Ottoman rule and World War I, Palestine was divided into twenty-two municipal councils: Acre, Haifa, Shafa Amer, Safad, Nazareth, Tiberias, Beesan, Jenin, Tulkarem, Nablus, Ramallah, Jerusalem, Lod, Ramla, Jaffa, Beit Jala, Bethlehem, Hebron, Beersheba, Majdal, Gaza, and Khan Younes (Abdel-Hamid, 2005; Khamaisi, 1995; Ministry of Local Government, 2003).

- **Planning in Palestine during the British Mandate**

Towards the end of 1917, the British forces occupied Palestine. The Ottoman Municipality Act of 1877 was still in force until 1921 when a new system for local boards was adopted. Each local board consisted of a group of villages or colonies where an officer was appointed by the military administration rather than by election (Abdel-Hamid, 2005).

In 1922, the British Mandate instrument was imposed within the administrative, economic and political control of Palestine. The establishment of a national homeland for the Jews was accelerated through increasing the Israeli colonies boards, while at the same time, imposing severe restrictions on expanding the Arab municipalities and local boards. Furthermore, the British Mandate approved the urban planning regulations applicable in the cities of Britain to be enforced in the cities of Palestine. Master plans and regulatory structures were prepared for the Palestinian cities such as Jerusalem, Haifa, Jaffa, Nablus, Beersheba, and Gaza. Construction blueprints, building licenses, and road constructions were approved at the central and local levels (Khamaisi, 1995).

In 1934, the 1877 Ottoman law was abolished, and a new municipality law came into force. The new law granted the High Commissioner absolute power to dissolve municipalities and change their boundaries. During the British Mandate period, two new municipalities, Tel Aviv (Tel Elrabee) and Betakh Teqva (Mulabess) were added to the municipalities that had been in existence during the Ottoman era, and thus increasing the number to twenty-four municipalities, whereas the number of local boards was thirty-eight.

In 1936, the 1932 British urban planning act was changed to a new law which was approved in Palestine so that it became the legal foundation for setting up planning establishments. In this system, the regional planning was added to planning levels. By the city planning directive of 1936, Palestine was divided into six regions. Presided over by Henry Kendall, regional master plans were started in 1937. In 1942, the planning had come to include three levels: the local committees in towns, the regional committees that were responsible for planning and approving regional plans, and the central level that included urban planning consultants (Khamaisi, 2006).

In 1948, when the British Mandate came to an end, Palestine was partitioned into three parts: Israel which was created in the largest part that took over about 70% of the area of Palestine; the West Bank which was annexed to Jordan; while the third part, the Gaza Strip, was placed under the Egyptian administration (Khamaisi, 2006).

That political and administrative partition contributed significantly to a partial modification of the contents of the urban planning and its establishments, although it maintained its spirit and entity. The structures of the planning establishments in Palestine were put forward by states and communities that were different from Palestine in their cultural, social, structural, political and administrative aspects which were forced on the Palestinian community without taking in consideration its culture, thoughts, and requirements.

- **Planning in Palestine under the Jordanian administration**

During the Jordanian administration, the law No. 31 of 1955, which was not much different from the 1936 order, was adopted for town and village planning and construction. Subsequently, the law for planning and building No. 79 of 1966 was adopted, entrusting the Kingdom of Jordan with full planning authority for the West Bank (Hashemite Kingdom of Jordan, 1966) The British system from 1936 remained in force in Gaza with some changes on it (Abdel-Hamid, 2005).

The Jordanian Planning Law for Cities, Villages and Buildings No. 79, adopted in 1966, defines three types of outline plan in the West Bank: a regional master plan, a general local master plan, and a detailed plan. Those plans were supposed to be prepared and approved by an institutional system reflecting each level, the Supreme Planning Council, the district planning committees and the local planning committees, respectively. For the purposes of law, the village councils and municipalities function as local planning boards. The law also established various provisions related to the process of consultation with all the relevant bodies when preparing the master plans, the publication of these plans and deposition for public review, the hearing of objections. (Hashemite Kingdom of Jordan, 1966). The Jordanian period brought no noticeable development in the field of planning and construction, perhaps due to the limited development of Palestinian society as a result of the massive immigration of Palestinians from their villages and towns. Moreover, the development of the East Bank of Jordan took the priority rather than the West Bank. Awareness of the importance of planning was poor, among both the public and the authorities. The State did not develop any regional plans, nor master provincial plans. As a result, the plans that were established under the British Mandate

remained operational, a fact exploited by the Israeli authorities after occupation, when deciding building permits (Khamaisi, 1994, 1995).

The Jordanian authorities did nothing to amend the planning system established by the British Mandate. They only devised master plans for some towns and supervised construction. They did not prepare plans for villages, except in a few cases such as El Taiba, near Ramallah. The Jordanian master plans for some of the towns in the West Bank disregarded demographic development and needs as well as the future economic and social requirements of the population. They were established along the same lines as under the British Mandate and further restricted urban development in the towns. They also failed to assign sufficient land for public buildings and economic activities, thus limiting economic and industrial developments in towns. Moreover, the planned network of roads disregarded future needs and the increasing number of vehicles, thereby encouraging a network of roads incompatible with the needs of the population. This has resulted in the traffic crises plaguing Palestinian town centres today, despite their relatively small size and the relatively low standard of living (Jarbawi & Abdulhadi, 1990; Khamaisi, 1995).

In the Gaza Strip, the Egyptian administration issued the 1955 Act, approving the enforcement of the Palestinian existing laws prior to 1948. That meant the continuation of enacting the Municipalities Law of 1934 and the law of the villages' administration of the year 1944. The local councils during the Egyptian administration stage were restricted to maintaining the municipalities of Gaza, Khan Younes and three village councils.

- **Planning during the Israeli Occupation**

The importance of any planning system must determine the size, location, and zoning of each unit of land (housing, industry, commerce, public institutions, road, open public area, and the like) to benefit the local population. Nevertheless, the Israeli planning system in Palestine utilized its power to advance the political interests of the Israeli government in power rather than to benefit the local population in Palestine.

The official planning for land use and the permit procedures in the West Bank were the main tools used by Israeli authorities to take over land in the occupied Palestinian territories. In the Israeli policies and of the Military Orders (MO) issued on this subject, the Israeli authorities started to exercise their control over buildings and development in the West Bank by issuing M.O. No.393 in 1970. This order gave the military governor the right to prohibit, halt or impose restrictions on building (B'Tselem, 2002).



Israel changed the Jordanian planning law by means of Military Order No. 418, issued in 1971 and later amended it several more times over the years. This order introduced far-reaching changes in the planning system in the West Bank and the Gaza Strip. These changes reflected almost exclusively the interests of the Israeli administration and the settlers while minimizing Palestinian representation on the planning committees and Palestinian influence in planning matters (Khamaisi, 1994, 1995).

One of the principal changes that Israel made to the Jordanian law was that the Arab planning committees (local, district, and regional) were abolished and all responsibilities for planning were given to the Israeli Higher Planning Council, appointed by the military governor, and formed of Israeli officials under his command. Accordingly, most of the Jordanian and Palestinian officials were replaced by Israelis, most of whom were Israeli occupation army officials or representatives of the settlers, later establishing six regional and village committees in the West Bank and two in Gaza (Khamaisi, 1994).

The main result of this change was that the Israeli military authorities, and later their "Civil Administration" took over all responsibilities of the planning system in Palestine, which had a decisive effect on the map of the West Bank in Palestine. Like other mechanisms established in the Occupied Territories, the planning system operates along two separate tracks – one for Jews and the other for Palestinians. While the system works vigorously to establish and expand settlements, it also acts diligently to prevent the expansion of Palestinian towns and villages (Khamaisi, 2006).

According to the plans prepared by the Israeli authorities and their implication on the Palestinians ability to use their land, the Israeli regional and road plans restrict land use not only outside the towns and villages boundaries but also within their boundaries (Shehadeh, 1988).

These regulations comprised a mixture of Ottoman, British, and Jordanian laws modified by Israeli military enactments. The 1966 Jordanian laws were not up-dated during the occupation and therefore did not have the safety and health codes required for modern life and new development. The planning laws imposed by Military Orders focused almost exclusively on the security and political objectives of the occupation. The absence of any national legal system and jurisdiction meant that the only enforceable laws were those either passed or selected by the authorities (Coon, 1992).

Over the years, the main tool used by Israel to restrict building by the Palestinian population outside the borders of the municipalities was simply to exclude them from the planning. The Israeli administration has refrained from preparing up-dated regional outline plans for the West Bank. As a result, until the transfer of authority to the Palestinian Authority (and to this day, in Area C), two regional

plans prepared in the 1940s by the British Mandate continue to apply – one in the north of the West Bank and the other in the south (Khamaisi, 2006).

In 1994, the number of local committees was about 141 including municipalities and village councils. The long period of time that has elapsed while Palestine has been under occupation has had direct effects on the planning process and its establishments that were established during the transitional period in 1995.

The beginning of the Palestinian participation in the process of preparing master plans started in the mid-1980s when local master plans were set up for some Palestinian cities, towns, and villages. Although those plans satisfied a part of Palestinians' needs, most of them were not approved by the Israeli occupation authorities that had taken control of the power of decision-making relating to those plans. At the local level, special plans were put forward between 1985 and 1993.

In 1994, the civil jurisdictions were transferred to the Palestinian Authority according to the signed agreements. In 1995, the second Oslo Agreement that was signed partitioned the occupied Palestinian territories into three zones, called A, B, and C, which were clarified in a former chapter in this study. By taking over control of the A and B zones, the Palestinian Authority divided Palestine into sixteen regions, called governorates, including eleven governorates in the West Bank and five in the Gaza Strip. Meanwhile, the Palestinian Authority issued laws and regulations based on the previous laws. In addition, it set up organization and building entities. Based on the Jordanian law, the Palestinian Authority adopted three levels for the planning entities: The Supreme Organization Board, the District Committees in the Governorates, and the local committees in cities, towns, and villages. These entities are dual in the West Bank and the Gaza Strip since the Palestinian lands are partitioned by the C Zone which separates the West Bank from the Gaza Strip, leading to geographical discontinuity between them that hinders preparing regional or district plans for the governorates (Khamaisi, 1995, 2006).

The planning process under the Israeli occupation followed procedures that deferred from regional to local planning. For regional planning, it had to be prepared and approved by the Higher Planning Council. The HPC or a private consultant should prepare master plans for areas that do not belong to any municipality. As for municipal areas, the plans had to be prepared by the city council or a private consultant.

City master plans should initially be approved by the city council and eventually approved by the HPC. Local planning as well as industrial, public buildings and housing projects should be approved

by HPC. Municipalities are entitled to issue license housing for individual and commercial buildings within its boundaries. The HPC role is to approve national and regional planning, which is prepared by ministries, namely the Ministry of Planning and International Co-operation. For sub-regional planning (Governorate level), planning has to be prepared by the Ministry of Local Government and approved by the Central Committees. As far as local planning is concerned, preparation is made by private developers and approved by municipalities and villages councils.

Although these entities exist, there are various obstacles, due to the political instability situation, which hindered their work. So far the real political power lies in the hands of the Israeli occupation authorities. National and regional planning were affected accordingly, and at the municipality level, the city expansion could not be performed without the approval of the Israeli occupation authority.

The Palestinian municipalities have granted the authorities of planning, organization, and licensing buildings in co-operation with the Central Committee for Organization and Building and the Higher Organization Board. The municipalities either started or continued to prepare their master plans. The Central Committee for Organization and Building started to prepare master plans for the villages that have not had master plans, or for those villages whose master plans were prepared during the occupation period but did not satisfy the needs of the village.

The Ministry of Local Government in the Palestinian National Authority took over the responsibility for master urban planning at the local level. In this respect, the Ministry achieved the following:

- Preparing and approving a number of regulations relating to planning and organizational work: The Building Regulation for the Local Boards in 1996 for the areas located within the approved organizational boundaries in cities, towns, and villages; the Building Regulation and Organization Act for the lands that are located outside of the organization boundaries for the year 1996.
- Approving both the Joint Service Boards Act and the Regional Planning Committees Act for the purpose of raising the levels of services provided for the citizens, reducing costs, and promoting group work in the local communities that consist of small populations (Ministry of Local Government, 2003). The number of joint service boards reached forty-nine including thirty-five in the West Bank and four in the Gaza Strip.

In order to raise the service levels in the rural sector of Palestine and build the self-capacities, the Ministry worked in complete partnership with the UNDP to carry out the Local Rural Development Programme, depending on the community partnerships to identify the needs, determine the priorities of the development projects, participating in planning and implementation, reaching out to the marginalized areas that were the poorest and most deprived regions which were mostly surrounded by Israeli settlements. The villages were grouped in larger groups that were called regional planning areas. The regional planning committees were set up, consisting of representatives of the local boards of the partial region in addition to a representative from the Ministry of Local Government in the area. The number of these committees reached fourteen including twelve in the West Bank and two in the Gaza Strip (Ministry of Local Government, 2003).

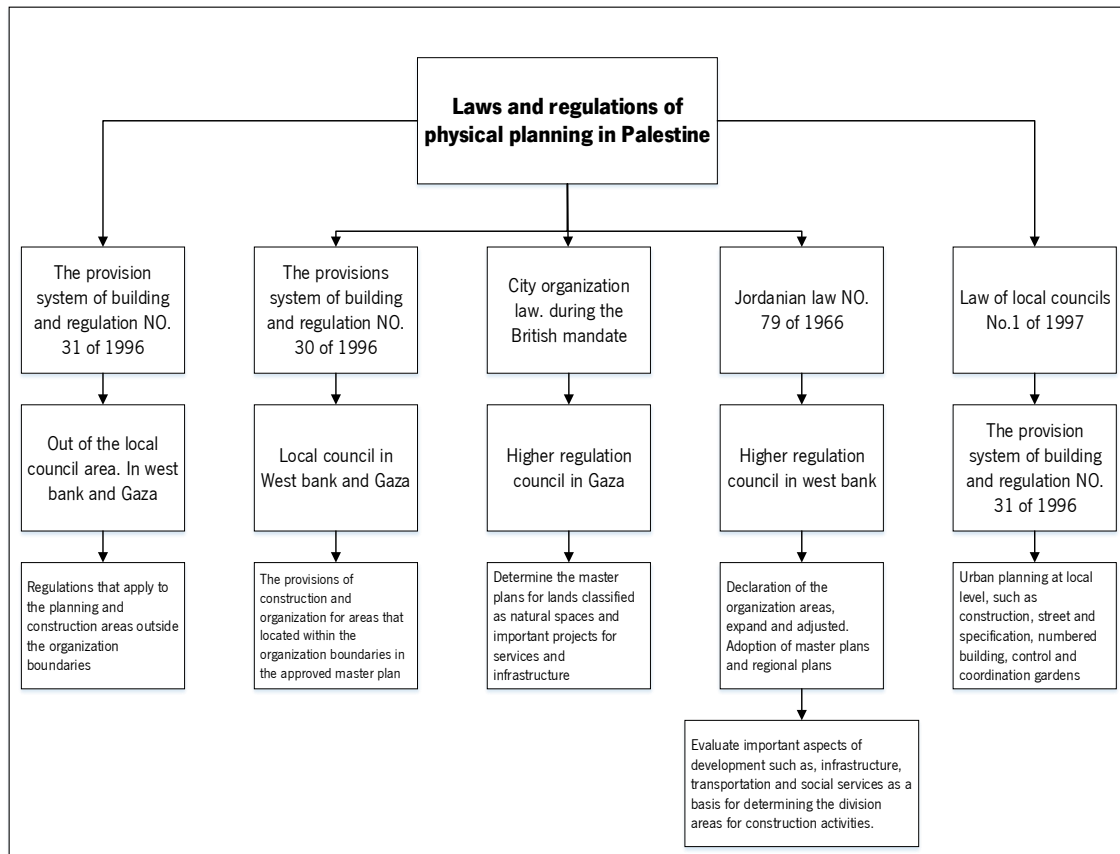
At the national level, the Ministry of Planning and International Co-operation (MOPIC) assumes the responsibility for putting forward strategies for the national planning, in addition to preparing a regional plan for the governorates of both the West Bank and the Gaza Strip with the support and participation of Norwegian consultants. The plan was issued at the end of 1998 (Ministry of Planning and International Co-operation (MOPIC), 1998). Furthermore, the MOPIC assumes the responsibility for making various plans on several levels and for different purposes, such as the Emergency Natural Resource Protection plan (ENRPP) and the Physical Guideline Plan for Ramallah - Albeera and Jericho. The MOPIC recognized that it was no longer sensible to carry out a further review of the old local Master Plans. Instead, a new comprehensive development – planning project is required in view of the political changes in Palestine, principally in terms of demographic composition and economic structures (Ministry of Planning and International Cooperation (MOPIC), 2000).

After the year 2000, Israel re-occupied the territories of the West Bank and the Gaza Strip which were under the supremacy of the Palestinian Authority. By doing that, it has imposed a new reality on land, by building and expanding the Israeli colonial settlements, constructing the racial discrimination wall that separates the West Bank and the Palestinian territories that were occupied in 1948. This new *de facto*, which forces obstacles in hindering planning, has had a significant effect on planning in Palestine.

In 2004, the number of the local entities became 510 local councils that included all the population concentrations in the West Bank and the Gaza Strip including municipalities, village councils and project committees in the minor communities (Khamaisi, 2006).

- **Laws and regulations of physical planning in Palestine**

Through Fig. 4-4, which shows the laws and regulations of physical planning in Palestine, we note that some of the planning and building laws which are applied in the West Bank and Gaza are old laws that need to be modified to fit with reality and the future.



**Fig. 4-4: Laws and regulations of physical planning in Palestine.**

Jordanian law No. 79 for planning and building of 1966 is still applied in the West Bank and the British Law No. 28 of 1936 for city organization is still applied in Gaza, the provisions of these laws provide for organization areas and adoption of master plans, regional plans and sectoral plans such as classification, infrastructure, forests, natural areas.... etc.

In 1996 the Palestinian authority approved the law for building and regulation No. 30 which relates to planning and building within the boundaries of the approved master plan and the law NoO. 31 for planning and building outside the boundaries of the approved master plan.

In 1997 the Palestinian authority approved the law for local government No. 1 identified through its powers of local authorities in terms of cities planning, construction, landscape and streets (Ministry of Local Government, 2010).

- **Urban and regional plans in the Jordan valley region**
- **Introduction**

Planning is an essential tool which is used to develop the location. In order to make planning more efficient, it is important to guarantee that the plans are applicable so that they can be implemented in reality. However, the process of implementation is related to an array of elements such as land and natural resources. In Palestine and since the arrival of the Palestinian Authority, the Palestinians have put forward many plans in order to build up the institutions of the Palestinian government. However, some of the plans faced difficulties in their implementation because of the Israeli occupation of both the Palestinian land and the natural resources. Therefore, the Palestinian National Authority resorted to co-operation with foreign countries such as the members of the European Union and Japan among others, who prepared the plans with the institutions of the Palestinian National Authority that are concerned with planning. Such international establishments finance the plans and supervise their implementation. They may also apply for licenses from the Israeli occupation authorities in order to implement the plans in case these plans are prepared for lands that are under the control of the Israeli occupation.

The plans that are put forward for the study area will be discussed below:

In order to organize and develop the urban population concentrations, to determine the optimal use of land, and to develop and up-date the service facilities in the Palestinian population concentrations, the Palestinian National Authority has prepared and implemented several plans and master plans for many Palestinian villages, towns, and cities at the local planning level. However, the regional planning remained limited, leading to the absence of the optimal and sustainable exploitation of the Palestinian resources. Consequently, the planning process in Palestine has failed and the comprehensive economic and social development at the regional level has not been not achieved.

In order to overcome these hurdles, the Palestinian National Authority started, in 2008, to adopt strategic development planning at both the regional level (the governorates level) and the local level (cities and towns), based on the governorates strategic planning guide and the strategic planning guide

for Palestinian towns and cities. This kind of planning attempts to achieve the highest optimal and sustainable exploitation of resources to achieve both social justice and economic growth, by putting forward proper and objective solutions for economic, social, and environmental problems at the governorate level. This process is carried out in a partnership environment with all the related parties. It is important to adopt the strategic planning technique and keep up with developing scientific techniques by the Palestinian local authorities that attempt to provide the citizens with public services, establish infrastructures, and develop the population concentrations.

At the beginning, we studied and analyzed the plans that were put forward for the study area in order to determine the strengths and weaknesses, and then to learn which points have been implemented and which have not. The researcher has come to know that several plans and master plans have been prepared for the population concentrations in the Jordan Valley regions. Some of these plans and master plans are discussed below.

### **1. Economic Development of the Jordan Valley Plan (AIX Group book) 2009 (Arnon & Bamy, 2010)**

The economic development of the Jordan valley plan is part of the economic dimensions of a two-state agreement between Palestine and Israel. This study was made by the Aix group, this group is a working group of Palestinian, Israeli and international economists, policy makers, academics and private sector representatives that researches, produces and disseminates position papers which seek to identify economic scenarios and suggest economic recommendations in order to promote win-win outcomes for Palestinians and Israelis. The Aix group was formed thirteen years ago under the auspices of the Université Paul Cézanne - Aix-Marseille III in France and in co-operation with the Peres Centre for Peace in Israel and the Data Centre for Studies and Research in Palestine (Arnon & Bamy, 2010).

From Fig. 4-5 we can see this plan aiming at analysing the development potential of the Palestinian Jordan Valley area, portraying strategic long-term options, and pointing out to certain immediate short-term possibilities.

This plan concentrates on treating all the economic sectors in a balanced and integrative way. On the other hand, the development plans should be in co-operation with the Israeli and Jordanian plans in the Jordan Valley Region, and take into consideration the consequential mutual force of these three parties in both the geography and economics of the region.

This plan studied the political situation of the region which impedes the development of the Palestinian economy as discussed in the previous chapters of this present study. Most of the lands, which are categorized as C lands, are under the control of the Israelis. The Palestinians are prohibited from entering the majority of the lands because they are classified as either closed military areas, shooting range areas, or colonization settlements areas. In addition, the Israeli occupation controls the water resources of the region. These obstacles must be changed radically in order to achieve sustainable development of the Palestinian side of the region and attract Palestinian investors to invest in the region.

The plan includes sector development, including water and water resource Development. In this sector, Palestine must depend on the water desalination programme as a principal water resource in the Jordan Valley, in addition to adopting modern irrigation techniques to save water.

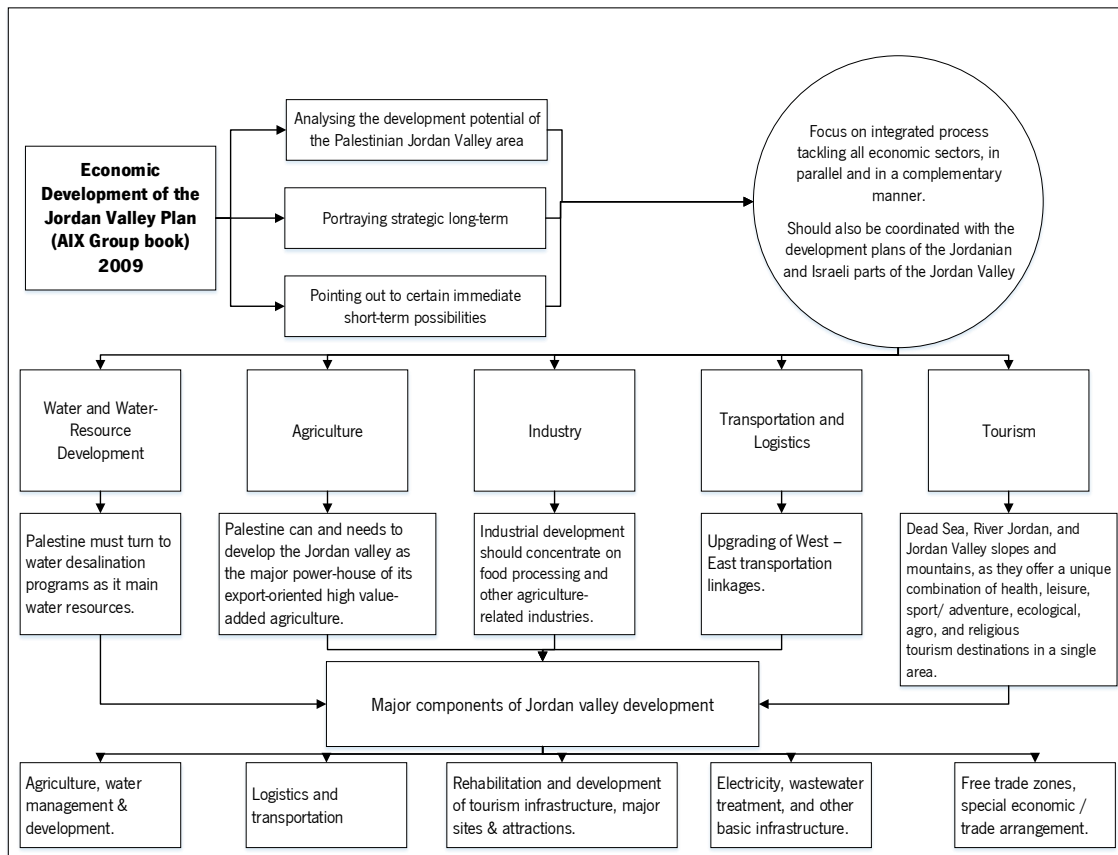
In the agriculture sector, Palestine has to develop this sector as an exporting sector abroad, such as exporting to the countries of the European Union, the Arab Gulf, and the neighbouring Arab countries, in order to benefit the Palestinian economy.

Similarly, the industry sector must develop food industries that are based on agricultural products that can also be exported abroad. In addition, the Dead Sea mineral products industries must be developed and exported abroad.

In the transportation sector, the plan proposed the development of roads that connect the east with the west. In the tourism sector, the Dead Sea area must be developed, the Jordan Valley, and the eastern slopes of the Jordan Valley. The combination of these areas provides a unique mixture for health, recreation, sports, environment, agriculture and religious tourism in one destination.

In addition, the plan recommended that plans must be proposed in order to develop the Jordan Valley as a whole region. Master plans must be put forward to develop the Palestinian concentrations in the region.





**Fig. 4-5: Economic Development of the Jordan Valley Plan (AIX Group book) 2009.**

## **2. Regional NGO Master Plan for Sustainable Development in the Jordan Valley 2015 Eco Peace Middle East (EcoPeace Middle East & Royal HaskoningDHV, 2015)**

The main and overall objective of this Master Plan is to promote peace, prosperity, and security in the Jordan Valley and the region as a whole. Also, this master plan for the Jordan valley focuses on the national water balances of Palestine, Jordan, and Israel in particular. In the NGO master plan the researchers have done many studies of the Jordan valley in terms of the current situation and the need to develop the Jordan valley.

The objectives for sectorial development in each sector such as sustainable tourism, sustainable water management and river rehabilitation, pollution control and sanitation, sustainable urban, energy and infrastructure development, ecological rehabilitation and sustainable agriculture.

As we can see from the Fig. 4–6 the strategic objectives for the sectoral plans as an NGO master plan are:

- **Sustainable tourism and cultural heritage (CH)**

In terms of sustainable tourism and CH, this plan focuses on saving cultural heritage, as well as bolstering the economy and creating jobs in the Jordan valley. This requires investment planning for major sites, development of trans-boundary sites, creation of free tourism areas at the northern head of the Dead Sea between Jordan and Palestine, creation of a Peace Park between Jordan and Israel on the Jordan River. These investment plans in tourism and cultural heritage will create synergies and stronger economic development opportunities in the Jordan valley region.

- **Sustainable water management and river rehabilitation**

The aim of this plan is to overcome the scarcity of water in the Jordan Valley by establishing a system for providing water continuously in order to satisfy the domestic and agricultural uses, not only at the present time but also to guarantee sustainable water resources for the coming generations.

Sustainable water management requires improvements in many areas such as water data collection and management; water planning; water storage and distribution operations, including IT and wireless data transfer, economic and land use planning and related support services.

- **Pollution control and sanitation**

The main aim of pollution control and sanitation is to destroy the pollutions sources in the Jordan Valley by 2025. This requires adequate and complete treatment of recycling waste waters and management of solid wastes in the Jordan Valley. The recycling of waste waters is a significant water resource that can be used in developing agriculture in the region.

- **Sustainable Urban and Infrastructure Development**

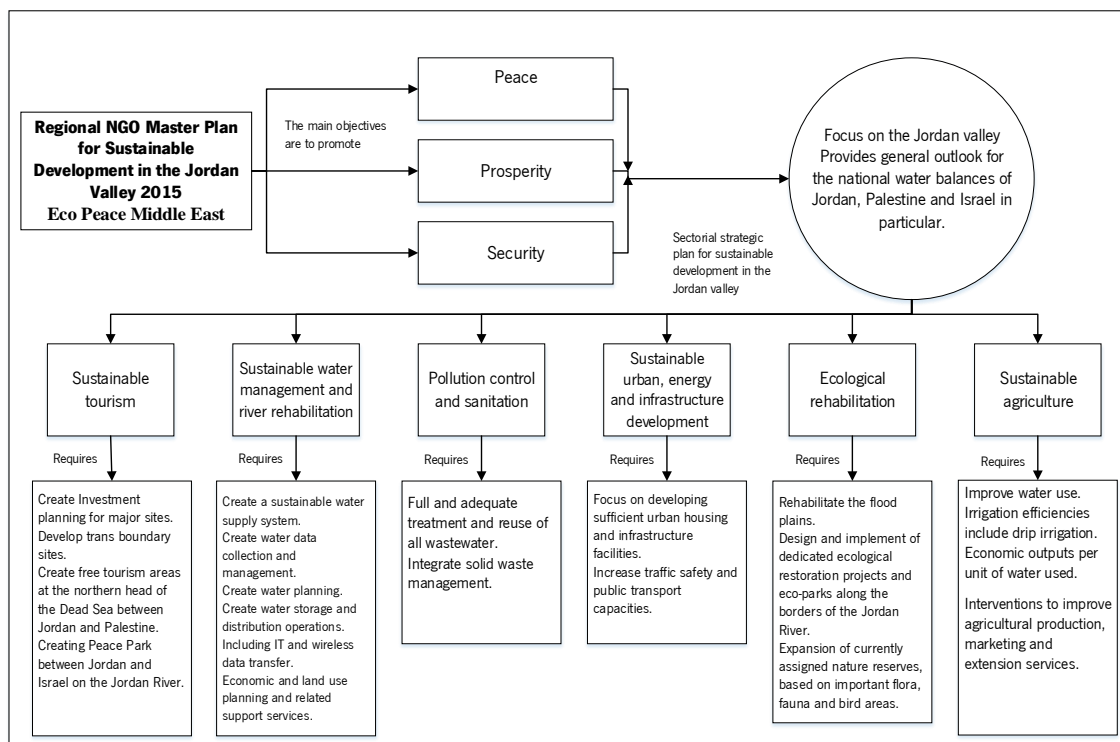
In order to develop the Jordan Valley to accommodate economic and population growth, it is essential to develop the housing facilities, the infrastructure of the urban concentrations in the region, increasing traffic safety and public transport, improving the main and sub-roads, improving traffic safety by setting up traffic signs, traffic lights, and making pavements.

**- Ecological Rehabilitation**

The plan aims at designing and executing specialized ecological projects such as establishing ecological gardens along the Jordan River, maintaining and expanding the natural reserves of plants, animals, and birds. In addition, the plan aims at developing and designing natural recreation areas for the population concentrations in the region.

**- Sustainable agriculture**

The strategic agricultural objective for the study area is improving water use and irrigation efficiencies and also economic outputs per unit of water used. It is assumed that the total water demands for the agricultural sector in the Jordan Valley will remain stable and that adequate tariff policies on water used for irrigation will be implemented, including enforcement, to stimulate more efficient use of water through, for instance, greenhouse drip irrigation.



**Fig. 4-6: Regional NGO Master Plan for Sustainable Development in the Jordan Valley 2015 Eco Peace Middle East**

The previous plans approached planning for the Jordan Valley region from the perspective of sectors that serves the development of Palestinian lands in favour of the Israeli occupation that occupied the lands of the Palestinian inhabitants who have the right to benefit from the region. It is unacceptable to put forward any joint development plan with Israeli which robs the land and natural resources from the Palestinians and deprives them of their simplest rights in favour of the Israeli colonization settlements in the Jordan Valley region. Therefore, such plans cannot be implemented in reality because they recognize the legitimacy of the Zionist entity. On the contrary, the presence of the Israeli occupation in the Jordan Valley region hinders and puts obstacles in the path of developing the region and restricts putting forward Palestinian plans of all kinds and at all the stages of preparing and implementing such plans because the objective of the occupation is to isolate and separate the Palestinian population concentrations. As mentioned earlier, the Israeli occupation has imposed several de facto obstacles that hinder any Palestinian development plan to develop the Jordan Valley region. When planning to develop the region, the main objective should involve the development of this Palestinian land to serve its Palestinian citizens and attract projects and Palestinian capital to the region so that the Jordan Valley region can become an area for expansion that attracts people from the high density populated areas to invest and settle in the area.

It is possible to put forward joint Palestinian-Jordanian plans in order to develop the Jordan Valley region so that such plans develop the sectors that benefit from joint planning with a bordering country, which is Jordan.

### **3. Jericho Master Plan** (Italian Development Co-operation et al., 2010)

The Jericho Master Plan project is one of the development projects funded and implemented by the Italian Development Co-operation of the Ministry of Foreign Affairs in co-operation with the Municipality of Jericho, the Ministry of Local Government of the Palestinian Authority and the Governorate of Jericho. The University of Ferrara supervises the scientific and technical elements of the project.

The Jericho Master Plan is composed of a set of planning tools that on one side fully answers the need to preserve the archaeological, historic, cultural, landscape and natural heritage of Jericho, and on the other to provide adequate solutions to properly plan the development of the area.

The Jericho Urban Master Plan was made according to the guidelines set by the Physical Planning Manual of the Ministry of Local Government of the PNA.

The Jericho Master Plan consists of planning instruments that attempt to protect the civilization, culture, historic, and natural features and the natural heritage of Jericho. In addition, the plan attempts to reach sound planning to develop the area by adopting and using a number of the following tools and plans:

- Using the Urban GIS because it is one of the most significant planning instruments and it is highly efficient and effective in preparing urban plans and implementing them rapidly with great precision.
- Preparing an Emergency Conservation Plan which is, in fact, a preliminary transitional plan prepared by the Jericho Master Plan in order to provide total protection for the heritage of Jericho.
- Preparing new digital plans for the Municipality of Jericho.

Consequently, the Municipality of Jericho will set up the Urban Planning Service by the Jericho Master Plan Implementation Office which will implement and monitor the plan, the Centre for Sustainable Urban Planning which will train and prepare the technical staff of the Municipality.

### **Objective of the master plan**

The Master Plan is based on five main objectives, which in the meantime are important opportunities for Jericho. First of all, the preservation of its unique world historical and cultural tangible and intangible heritage as a basic element of the Palestinian identity. Secondly, the preservation of the cultural landscape of the oasis and of the natural landscape of the desert, the mountain ranges, the water system made from the Dead Sea, the Jordan River and the small valleys (Wadis). Thirdly, the enhancement of the future role of the Palestinian Gate towards Jordan and the rest of the world.

A showcase of innovation consistent with sustainable development: The fourth objective is the reinforcement of the present model of sustainable development through the preservation of adequate space for farming, the development of advanced specialized agriculture, the correct use of water. Finally, the development of sustainable tourism based on tangible and intangible heritage, natural resources and open-air activities respectful of the environment with an adequate supply of guest houses, cultural tourism facilities, and tourist complexes.



## **CHAPTER 5: Delphi Approach**

### **5.1 Introduction**

In the 1950s, the Delphi methodology was developed by Dalkey and Helmer at the Rand Corporation, as a qualitative research methodology in order to forecast the purposes and problem solving of complex topics (Ali, 2005; Dalkey & Helmer, 1963). It included the application of expert opinion of a selection of the optimal U.S industrial system on military issues. After that time, the Delphi approach has been used widely in various studies such as planning, urban and regional analysis, public policy, business applications, natural resources and environmental management research in order to facilitate interaction in investigation of a variety of local, regional, and global issues among stakeholders (Miller, 1993; Musa, Yacob, Abdullah, & Ishak, 2015).

The Delphi technique was originally conceived as “a method used to obtain the most reliable consensus of opinion of a group of experts by a series of intensive questionnaires interspersed with controlled feedback”. The Delphi study consists of four main features: anonymity, repetition, feedback control and a statistical compilation of responses (Rowe & Wright, 1999).

Linstone and Turoff considered it a method for structuring a group of communication processes so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem. Delphi is a “decision-facilitation tool” (Linstone & Turoff, 2002).

The Delphi technique is well suited as a means and method for consensus-building by using a series of questionnaires to collect data from a panel of selected subjects (Dalkey & Helmer, 1963; Linstone & Turoff, 2002).

Delphi, in contrast to other data gathering and analysis techniques, employs multiple iterations designed to develop a consensus of opinion concerning a specific topic. Ludwig (1994) indicates: The Delphi method is mainly used when issues need to be assessed over the long term. As it is the procedure to determine the data that are relevant to the future, it reduces the tacit and complex knowledge to one statement and makes it possible to judge. Therefore, used in combination with other methodologies such scenarios, list of technology or any other technique that could be interesting (Eto, 2003).

## **5.2 Preparing the Delphi method**

In the present study, we have used the qualitative research method since this research method includes the interpretive nature and verification of the study subject within the political, social and economic context for the researchers, participators in the study and readers. In addition, the spinal cord of the qualitative research method is the collection of a wide range data. In this research, the data about planning in the Jordan Valley region was collected by using an array of techniques such as interviews, observations, documents and field studies as well as the Delphi method. The various methods of data collection are considered useful to the study and more efficient than depending on just one source. Following this, the data were analyzed and arranged from the bottom to the top in order to add triangulation to the database (Denzin, 1978).

Normally, the qualitative research method deals with a small sample of the population who are involved in the research subject since it tends to be more interested in the study objectives rather than randomly. This is because it turns to defining the research subject in order to obtain more accurate and specialized data through analyzing the responses of the participants who are selected very carefully according to several conditions and specifications in contrast to the quantitative research method which aims at obtaining the largest possible number of participants and statistical implications (Miles & Huberman, 1994).

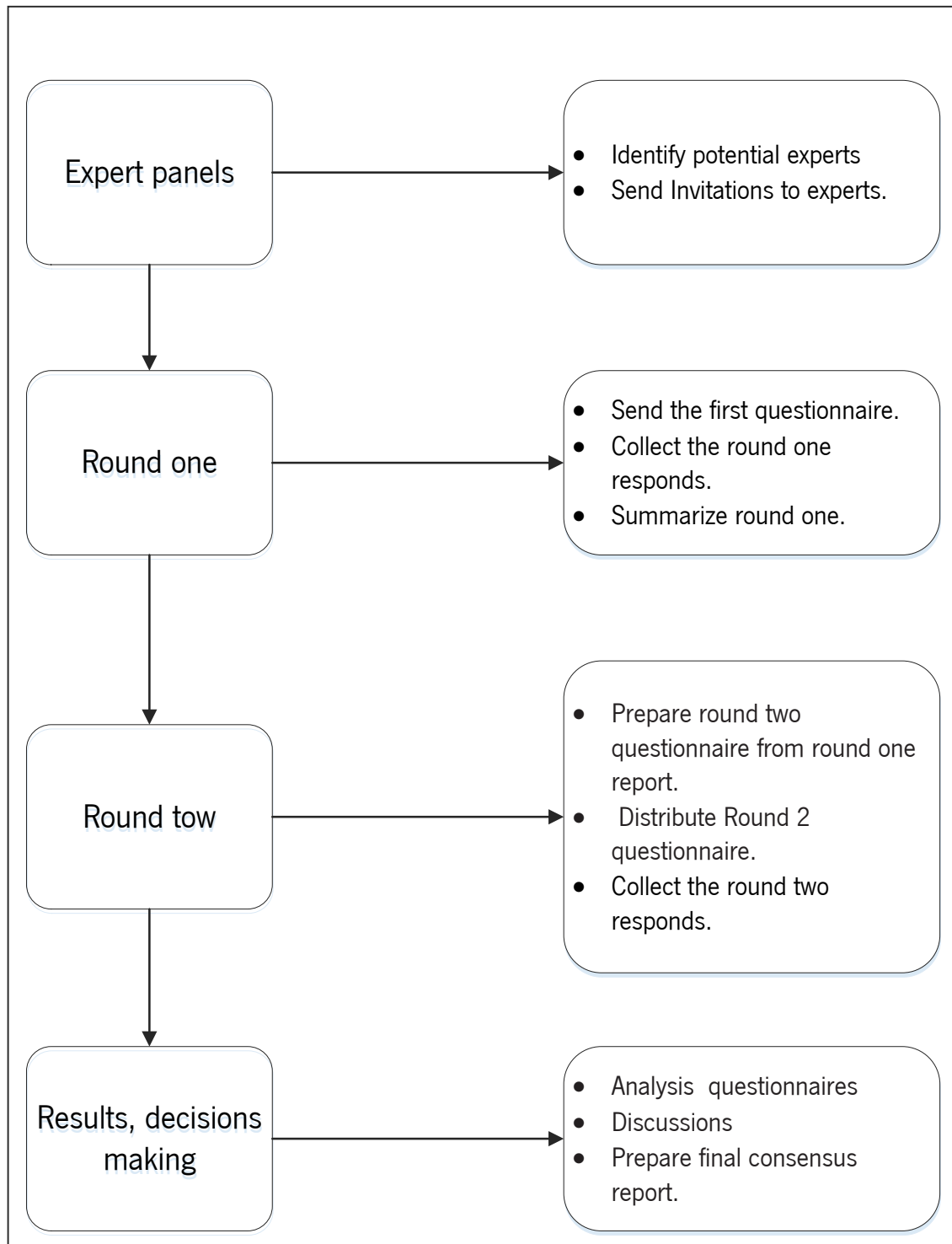
Some researchers believe that the new qualitative research methods are considered much more difficult and need more time to complete than the good quantitative research method (Gephart, 2004).

Mixed methods of Delphi and interviews were used in this study. This research adopted both methods interchangeably. The modified Delphi method served both the simultaneous - the two rounds of Delphi - and sequential triangulation and the semi-structured interviews kind served the sequential triangulation.

### **5.2.1 The stages of preparing the Delphi study and the obstacles and constraints faced by the researcher in the Delphi study**

In this part of the study, we are going to clarify how the Delphi study was administered in its various stages and discuss some obstacles that face the majority of Delphi studies and clarify how we were able to overcome them (Fig. 5-1).





**Fig. 5-1: Delphi study.**

### **1) Selection of the expert panels who will participate in the study**

The process of selecting the experts who may participate in the Delphi study is considered very important and presents a challenge to the researchers (Linstone & Turoff, 2002), because the

perspectives of such experts will have a direct influence on the study findings (Hsu & Sandford, 2007). Participant selection was regarded as a purposeful sample where participants 'expert opinions' were chosen based on their interest as well as “not to represent the general population, but rather their expert ability to answer the research questions ( (Fink & Kosecoff 1985) by Skulmoski, Hartman, & Krahn, 2007).

In the present study, we attempted to overcome this obstacle by looking for experts who had a direct relationship and wide experience in the urban and regional planning in Palestine in general and in the Jordan Valley region in particular, so that we could obtain real, accurate results with high credibility about the study subject. The experts who participated in this study were selected with the utmost care and accuracy by setting up the following standards for their selection. 1) the expert will be specialized either in the field of urban and regional planning or geography; 2) they should have wide experience in the field of urban and regional planning; and 3) they should have participated in setting up plans and planning studies and they should be aware of the reality of planning in Palestine and the Jordan Valley region.

Furthermore, anonymity has been applied, that is to say, the participants in the study do not know each other. This gives the participants the freedom to express their opinions freely and transparently without influencing their opinions since there are neither social nor psychological stresses that influence the participants (Von der Gracht, 2012). In the present study, each of the participants had no contact with the others.

## **2) The expert panel size**

There is no consensus on the optimal size of the panel since many researchers recommend using a small panel (Linstone & Turoff, 2002). Normally, a number of 15 – 18 experts is considered as an acceptable size (Adler & Ziglio, 1996; Day & Bobeva, 2005). On the other hand, less than 10 experts may have a negative effect on the study findings. Some researchers recommend that the size of the panel does not exceed 50 experts (Hsu & Sandford, 2007). However, the larger number of participating experts does not necessarily imply reaching better findings (Keeney, Hasson, & McKenna, 2011).

In the present study, the size of the panel in round 1 was 20 experts, which is considered an excellent size from the academic point of view and agrees with the opinions of several researchers who say that the acceptable panel size is between 10 – 15 experts (Adler & Ziglio, 1996).

At the beginning of the study, invitations were sent to the experts in order to introduce them to the research subject and objectives and request them to participate in the Delphi study. We communicated with 35 experts in the urban and regional planning in Palestine. They work in various locations such as University teaching staff and Palestinian ministries such as the Ministry of Planning and the Ministry of Local Government. In addition, some of them work with foreign organizations that are interested in the field of planning in Palestine. However, a few of the experts apologized for not responding for various reasons including that they did not have sufficient experience or information to participate in the study, or simply they do not have enough time to respond to the study.

### **3) Delphi Rounds**

The Delphi method is based on several rounds of repetition to achieve a consensus among the members of the panel (Dalkey & Helmer, 1963; Linstone & Turoff, 2002). In general, the rounds of the Delphi study ranged from 2 to 10, which was dependent on how many it took to reach a consensus (Woudenberg, 1991). Delphi studies usually must include 2 or 3 rounds (Delbecq, Van de Ven, & Gustafson, 1975).

A large number of rounds may exhaust experts and consume the researchers' resources and time (Schmidt, 1997).

In the present research, it was planned to carry out three rounds of the Delphi study. However, the consensus among the members of the panel was reached after the second round of the study. Therefore, there was no need to conduct a third round, which is considered as a good conclusion in the study in order not to exhaust the experts and waste time and effort.

#### **5.2.2 Conducting the Delphi rounds**

At first, we selected and determined a group of experts from the urban and regional planning in Palestine. Some experts were selected upon recommendations by people who have knowledge and relationship with the field of urban and regional planning in Palestine. Afterwards, we obtained contact information in order to communicate with those experts to invite them to participate in the Delphi study. Then, invitations were sent to the experts selected and the questionnaire was prepared for the first round of the study.

The study questions have to be formed precisely so that all the study components are relevant. During the preparation process of the study questions, it should be taken into consideration the study objective and to what extent the researcher knows about the topics that she intends to study plus the theoretical and conceptual aspects (Bickman & Rog, 1998).

There can also be open-ended questions that can be used to provide the panel members with an opportunity to express their ideas and to capture the information and data that have not been explicitly asked in the questionnaire.

During this stage of the study, the main problems and topics we intended to investigate were determined and the opinions of the planning experts were taken. Afterwards, the questions were formulated so that they could be practical and decisive.

In addition, the questions have to be comprehensive so that they include all the points and aspects related to the urban and regional planning in the Jordan Valley region. The questions were formulated by various methods so that they could serve the present study. For example, open-ended questions were used to provide the experts an opportunity to express their ideas about the various topics and add suggestions that would benefit the study. In addition to that, sequential questions were also used. Since this study is considered a study in the field of urban planning that involves studying and development of various urban sectors, the questions were categorized in groups according to every sector so that constructional sectorial plans could be developed to contain a diagnosis of the present status of each sector related to the most significant problems and requirements. On the other hand, the experts were given the opportunity to provide suggestions of how to overcome such problems and develop all the sectors. Later, decisions would be made in order to promote planning in the Jordan Valley region based on the researcher's study of the present situation and the perspectives of the experts that the researcher obtained from the Delphi study and the semi-structured interviews. In this case, the study's questions aimed to discover the most significant problems that face the planners for the Jordan Valley region, not only during the stage of preparation but also upon the implementation of such plans on the ground. In addition, the experts' opinions were taken on how to overcome such problems. Furthermore, the sectors that should be developed in the Jordan Valley region were investigated, such as the sectors of agriculture, tourism, women, and the youth. Some existing plans to develop the Jordan Valley region were discussed in order to benefit from them and improve them. Then the most important planning methods that are used in the region were studied. Attempts were made in order to reach the level of setting up strategic plans to develop the Jordan Valley region for various

time periods including short, medium, and long-term plans. Upon finishing the first questionnaire (Appendix 1) and making sure that it was comprehensive in including all the objectives that made the researcher use the Delphi system in the study, the questionnaire was sent to the experts who were given adequate time to complete it. Afterwards, the questionnaire was collected from the experts and the responses were studied. An abstract and a report were compiled of these responses in order to design the questionnaire for the second round of the study (Appendix 2). Questions in the second round of the Delphi study were developed based on the responses of the previous round. They were reviewed in an iterative mode.

The make up of the second questionnaire was formulated in different ways. We used the Lickert Scale in measuring to what extent the experts were in agreement about some topics because large discrepancies appeared among some of the experts' responses during the first round so that a greater level of agreement could be reached among the experts' opinions. Then, the second questionnaire was sent to the experts who were given adequate time to complete it. After collecting the second questionnaire, we studied and analyzed the responses that were obtained from the planning experts. It was discovered that there was a consensus in the experts' responses in this round so that there was no need for a third round of the study. The final report of the study was made and the final findings were prepared so that the various planning decisions would be made in order to promote development in the Palestinian Jordan Valley region.

### **5.3 Delphi analysis**

In this chapter, the outputs of Delphi Study, the semi-structured interviews, and the field work performed in the Jordan valley respectively will be discussed. The indicators of each sector will be displayed graphically and in tables. Following this, the points of strengths and weaknesses, possibilities and difficulties will be analyzed. Then, we will determine the needs and priorities, and finally, development projects will be suggested. These proposed strategies for development aim to improve the living level of the residents in the Jordan valley region and promote its competitive capability and attractiveness to both residents and business.

By analyzing the Delphi study, the setting up of urban and regional planning in the Jordan Valley was investigated from several aspects. The planning experts in Palestine were in consensus that the Jordan Valley region needs effective, applicable regional plans that can be implemented in order to develop all the planning sectors in the region. The main reason for the lack of such plans at the regional level for the Jordan Valley is that most of the region's lands are under the control of the Israeli occupation which is responsible for the planning sector in the C area lands. The objective of the Israeli occupation is planning to evacuate the Palestinians from the Jordan Valley region. At the same time, the exploitation of the Palestinian resources to develop the Jewish colonial settlements in this respect is within the intellectual framework that aims to transform the Jordan Valley into Jewish colonial settlements. In addition, the Palestinians do not possess the adequate power and potential capabilities that may allow them to put forward and implement regional plans. Furthermore, the most influential factors affecting the development of planning in the Jordan Valley region and in Palestinian territories are the political situation and the low population density.

The planning process in the Jordan Valley faces several difficulties and obstacles not only in the preparation of plans but also in the implementation of the plans on the ground. In the Delphi study, an attempt was made to identify such problems and then arrange them according to experts' perspectives regarding the most influential obstacles in the planning process during the stages of preparation and implementation. Table 5-1 shows that the most influential problem in the stage of plan preparations is the current political situation and the resulting Israeli occupation policies that impose severe restrictions on setting up plans as discussed earlier. The impact of these policies has an effect on the various sectors discussed in sectoral plans. The lack of financial resources and lack of co-ordination and co-operation among institutions come in the second and third ranks respectively, whereas the

absence or inadequacy of laws and regulations, comes in the last rank regarding its impact on plan preparations.

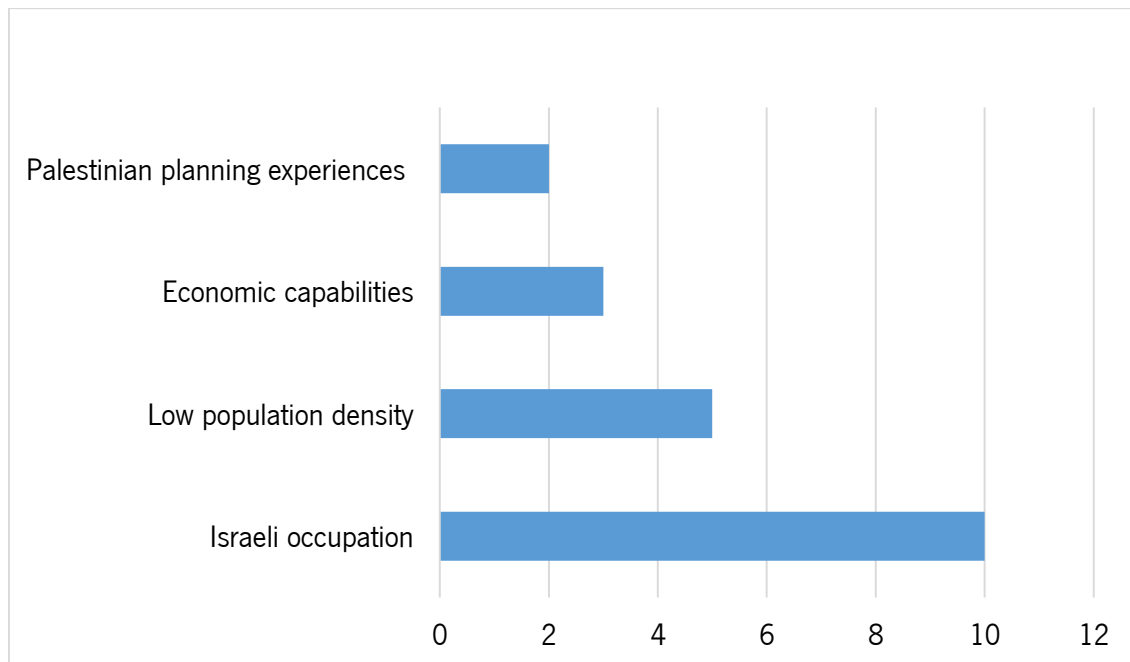
**Table 5-1 The Ranking of Planning Preparation Problems**

<b>Plans preparation problems</b>	<b>Rank</b>
Current political situation	1
Lack of financial resources	2
Lack of coordination and co-operation between institutions	3
Lack of Public participation	4
Lack of necessary information and data (maps, aerial photography, statistics)	5
The absence or inadequacy of regulations and laws	6

Table 5-2 shows the most influential obstacles to the stage of plan implementation according to the experts' arrangement from the most to the least influential. The most influential obstacles on the plan implementation on the ground in the Jordan Valley region are the obstacles related to the political situation. The first three ranks are the colonial settlements, closed military areas, and fire zones respectively, whereas the least influential obstacle is the low population density in the region.

**Table 5-2 Plans implementation problems**

<b>Plans implementation problems</b>	<b>Rank</b>
Colonial settlements	1
Close military areas	2
Fire zones	3
Lack of water resources	4
Regional roads	5
Lack of financial resources	6
Lack of population density	7



**Fig. 5-2: The factors which most affect the development of planning in the Jordan valley region.**

According to the Delphi study we defined that the factors which most affect the development of planning in the Jordan valley region and in the Palestinian territories (Fig. 5-2), are the Israeli occupation policies, factors such as geopolitical classification ABC, Israeli settlements, military camps, military checkpoints and closed military areas, road closures imposed by the Israelis, low population density and the distribution of Palestinian communities, the economic capabilities for the Palestinian authorities and, finally, the planning experience of the Palestinian institutions.

One question included in the Delphi questionnaire intended to identify, according to the experts' opinion, the different solutions for the resolution of the planning problems in the short, medium, and long terms.

**The fundamental solutions proposed by experts for the resolution of the planning problems in the short term are:**

- Preparing a sustainable plan for local communities in the Jordan Valley region to organize the land use activities.
- Better links between the different planning hierarchy, the availability of economic funds and resources to be allocated.



**Regarding the medium-term solutions, the experts were in consensus that adequate proposals would be:**

- Preparing sustainable regional plans for the regions with different scenarios under political instability.
- Resolution of the political problem and ending the Israeli occupation.
- Linking the regional plans to the national vision, activation of the Local and District Planning Committees in the Jordan valley, especially in Area C.

**The fundamental solutions for the resolution of the planning problem in the long term, in the experts' opinion are:**

- Full transfer of planning power to the Palestinian side, and extending the management of the Palestinian competent authorities in Area C to deliver all the basic services.
- Developing spatial planning and management of resources.
- Linking the spatial planning interventions in a more coherent way with the national level (National Policy Agenda (2017-2022)).
- Preparing master plans for all Palestinian localities and regional development with different scenarios.
- Economic and political development, connection with all regions having more water sources.

In conclusion, to overcome the problems of planning in the Jordan Valley region we have to solve the political problem.

There are three types of planning methods: formal planning, informal planning, and covert planning. According to Delphi study (Table 5-3), the planning method most prevalent in the Jordan Valley region is the formal planning followed by informal planning, whereas covert planning is not common in the planning process in the Jordan Valley region.

90% of the planning experts agreed that informal planning is effective and helpful for the planning process in the Jordan Valley in resisting the Israeli policies. Since the Jordan Valley is under Israeli control, as mentioned earlier, the Israeli occupation policies prevent the Palestinians from utilizing and developing the Jordan Valley. In addition, 85% of the planning experts believe that covert planning is

considered a new method that will be effective and helpful to overcome the Israeli obstacles in the planning process in the Jordan Valley.

**Table 5-3 Types of Planning Methods in the Jordan Valley**

<b>Planning Method</b>	<b>Rank</b>
Formal planning	1
Informal planning	2
Covert planning	3

Furthermore, the experts were in consensus that the popular participation in the stages of the planning process is not only ineffective but is also inadequate for making the planning process successful. The experts recommended developing plans and joint projects with the Jordanian government due to the effectiveness of such sectoral plans in developing the Jordan Valley, such as the agricultural sector and co-operation in marketing the agricultural crops abroad. In addition, it is essential to develop the tourism sector and the various economic and services sectors jointly with the Jordanian government.

Before starting to study the planning sectors, we will discuss the semi-structured interviews that were carried out. During the interviews, the planning topics in the Jordan Valley region and the most important plans and projects put forward and implemented were discussed.

At first, the political aspect of the region was discussed. It was a generalized opinion that the population density in the Jordan Valley region is low due to the climate conditions and the Israeli occupation policies. It should be noted that the Israeli occupation has been investing millions of US dollars in order to settle Jews in the region. However, these efforts have not succeeded on a large scale because the inhabitants of the Israeli colonial settlements are not the original citizens and so they could not live there. On the other hand, the Palestinian citizens, who are the legitimate land owners, have not been supported by any means (financial support or facilities). Despite that, they are steadfast on their lands and they are trying to adapt and stay on their land in spite of all the natural, political, and economical obstacles.

During the period between 1969 and 1970, the Israeli occupation authorities closed vast areas of the Jordan Valley region that constituted approximately 85% of the total area of the region. Following the Alone Project, which we discussed in the second chapter of the present study, the land of the

Jordan Valley region were put under the control of the Israeli internal military command in Tel Aviv since they considered the Jordan Valley region as a part of the internal security of the Israeli occupation. As discussed in the second chapter, many Israeli colonial settlements were erected in the region. The economic activity of most of the settlements is agriculture since the Israeli occupation controls 11% of the fertile agricultural lands. The Palestinians control only the building areas with security and administrative management or administrative and services management.

According to the governor of Jericho and Al-Aghwar, the Israeli occupation controls 95% of the water resources in the Jordan Valley region. Before 1967, the area of agricultural lands was 500 Km<sup>2</sup> whose production was used to satisfy the local market and exported to the neighbouring countries such as Jordan, the Arab Gulf states, and others. However, after the 1967 Israeli occupation of the Jordan Valley region, the area of agricultural lands shrank to merely 50 Km<sup>2</sup> due to the Israeli occupation control of the land and water resources. At the same time, the Israeli occupation created a lot of obstacles so that the Palestinian farmers could not reach their lands in order to cultivate and take care of them. The misuse of the agricultural lands by the Israeli occupation resulted in the soil degradation making it unsuitable for cultivation. In addition, the use of water wells and springs on a large scale by the Israeli occupation led to increased salinity of the water, resulting in a shift from the cultivation of vegetables to the cultivation of palm trees and banana groves. With regard to water sources in the province, the 6,000 Israeli settlers in the Jordan Valley region consume about 45 million cubic metres of water annually. Large amounts of water are also transferred to the Israeli settlement blocs that are located outside the Jordan Valley region. On the other hand, the Palestinians in the West Bank of the Jordan River are deprived of their share of the water because of the Israeli control of the region. Before 1867, the number of water wells was about 209 Artesian wells to a depth of 100 – 150 metres. However, most of those wells were deactivated after 1967; only 67 wells, which are in severely bad conditions, remained in the Jordan Valley region.

During the interviews, the development projects in the Jordan Valley region were discussed. According to the governor of Jericho and Al-Aghwar, the Palestinian National Authority has attempted to instigate numerous development projects in the service sectors, e.g. health, education, and agriculture. Those projects have been implemented in co-operation with the Omani and French governments according to the financial capabilities and the Israeli intervention. In the educational sector, 300 classrooms were renovated and added to the schools in the Jordan Valley region. The Palestinian government also provided buses to transport students from remote communities to join

schools in the neighbouring communities such as the Marj Al-Ghazal community. In the health sector, the Palestinian National Authority has exerted efforts to make basic health services reach all the communities in the Jordan Valley region. In addition, two mobile medical clinics were provided by the Palestinian government to the Bedouin areas of the region.

According to the Head of Rural Development in the Ministry of Local Government, based on the study of the needs of the communities of the Jordan Valley region, it has been planned for 92 service projects to be started in co-operation with foreign institutions, but only 26 projects were implemented on the ground depending on the material capabilities. The projects that were implemented were service projects such as providing transportation, building schools and clinics, and constructing roads, in addition to small joint projects with local societies such as community educational programmes and various training programmes. In addition, a project was proposed to recycle solid wastes.

About 7 years ago, it was agreed to implement the Peace Passage Project between the Palestinian National Authority, the Jordanian government and the government of Israel. The project implementation started on the ground on an area of 1.15 Km<sup>2</sup> located in the A and C areas of land, where 12 factories were constructed and equipped. In addition, the Israelis agreed to connect the industrial zone with a street.

Then, the idea of constructing an airstrip in the Palestinian territories was proposed. The location was suggested towards the village of Al-Auja. During the term of the former prime minister Salam Fayyad, the idea of constructing an airstrip was proposed so that it would become an international airport that would be constructed in the land between the village of Nabi Mousa, Jerusalem, and Jericho. The plans were prepared but the government of the Israeli occupation did not agree to construct the airport; therefore, it was not implemented.

In the tourism sector, projects were prepared in order to develop tourism services in the Dead Sea area since the Israelis control and are the beneficiaries of the economic returns of the tourism sector as a whole. Therefore, various projects should be proposed in order to activate the internal and external tourism in the region. Consequently, the Jericho Gate Project was proposed by the PADECO Holding Company, the Palestinian Telecommunications Group, and the Palestine Company for Real Estate Investments (PARECO) to the south of Jericho. This is a huge tourism development project which is the first of its kind in Palestine. It includes the development of various tourism and recreational facilities including the construction of housing villas, hotels, resorts, sports city, recreational theme and marine

park, a commercial complex, and other tourism and recreational facilities. The proposed project is expected to serve both internal and external tourism.

In addition, a new 400-room hotel was constructed. The Palestinian Investment Fund prepared a plan to construct new housing complexes to the north of Jericho. Nevertheless, the government Israeli rejected its implementation.

Through the Delphi study, we identified which sectors evolved less as a result of suffering from problems related to the Israeli occupation. According to the consensus of the experts for ranking these sectors, we found that the services and infrastructure sector occupies the first rank, being the most affected by the current situation. The education and health sectors are placed in the second and third ranks respectively, followed by the public services and production sectors in the fourth and fifth ranks respectively, as shown in Table 5-4.

**Table 5-4 The ranking of the sectors which have more problems**

<b>Sectors</b>	<b>Rank</b>
Services and infrastructure sector	1
Education sector	2
Health sector	3
Public service sector	4
Production sector	5

In fact, the absence of an adequate infrastructure network imposes severe restrictions on the regular development of all economic activities, to goods and people, affecting the normal and adequate societal evolution, reducing the perspectives for economic growth and diminishing the possibilities for quality of life improvement.

Regarding the infrastructure sector, Table 5-5 shows the different areas of activities or sectors and its order according to the consensus of the planning experts. The water sector comes in the first rank since it is the weakest and most troublesome infrastructure sector, followed by the sanitation and roads sectors, whereas the telecommunication sector comes in the last rank in ranking.

**Table 5-5 The ranking of the service and infrastructure sectors that having the mostproblems**

<b>Services and infrastructure sector</b>	<b>Rank</b>
Water network	1
Sewage	2
Roads	3
Electricity	4
Telecommunications	5

## **5.4 Sectorial plans**

Sectors are economic, social and administrative areas according to the type of goods or services (Government of SAMOA, 2003). Sector plans provide a detailed statement of the performance of the sectors and the problems and opportunities, and sectoral development objectives, policies, and strategies that may promote the development of the Jordan Valley region.

Sectoral plans address various problems arising within the sectors. Such concerns may include better governance and improved public administration, improved services delivery, public works and natural resource management (Amooti, 2006).

In order to develop very good and sufficient sectoral plans for the Jordan valley region, it is necessary to work in partnership with the government agency, private sector and non-government stakeholders, such as the planning experts. In this study we are going to work on the sectorial plans for the Jordan valley according to the analysis of the Delphi study and the researcher's opinion. In the Delphi study for the Jordan valley region we address detailed situation analysis of the sectors, but focus more on how to move forward to future objectives.

### **5.4.1 Economic sectors**

In order to promote the economic projects in the Jordan valley region, we need to study the current situation for the economic sectors, such as agriculture, tourism, and leisure, production, markets, and storage. Study of the economic sectors aims to improve the life situations in this region, increase competitiveness and attractiveness for housing and business.

## **1. Agricultural sector**

As we discussed in Chapter 3, the Jordan valley region has great potential for agricultural development. Agriculture not only plays a significant role in the local economy of the region, but it also contributes to the economic and social development through its contributions to the gross domestic product and providing work opportunities. In addition, agriculture is very important in protecting the land from confiscation and colonization. Furthermore, it contributes directly to the environment improvement and preservation. At the same time, agriculture is inter-related with other sectors as a provider of the needs for industry, and at the same time as a consumer and user of the inputs and services from other sectors. The agricultural sector in the Jordan Valley is considered developed compared to other sectors, but still needs more development plans.

In order to develop the agricultural sector in the Jordan Valley region, it is important to study the current situation of the sector. By analyzing the Delphi study, we have reached the conclusion that the current situation of the agricultural sector has severe constraints and faces important obstacles. Firstly, the contribution of the agricultural sector to the GDP is not significant. In addition, the laws and regulations related to the protection of agricultural land are neither effective nor adequate. The farming techniques are traditional. Furthermore, the agricultural sector is significantly affected by the political situation and the Israeli occupation measures, which were investigated in the second chapter of this thesis, such as the Oslo categorization of lands that divided the land into A, B, and C areas, in addition to land and natural resources confiscations for the benefit of the Israeli occupation colonial settlements.

Table 5-6 shows the problems and obstacles that have an impact on the agricultural sector in the Jordan Valley region arranged from the most influential and obtained from the viewpoint consensus of the planning experts who participated in the Delphi study. According to Table 5-6, the most influential problem that affected the agricultural sector is the Israeli occupation that controls the lands and water resources. The second problem is the Israeli occupation control of the crossings which results in being unable to market the agricultural products. Lastly is the problem of urban expansion of the agricultural land.

**Table 5-6 Agriculture Sector Problems**

<b>Agriculture Sector Problems</b>	<b>Rank</b>
Israeli occupation controls the lands and water resources	1
The Israeli occupation control the crossings which result in a lack of a marketing of the agricultural products	2
The lack of agricultural services and non-use of agricultural mechanization	3
Food industries are undeveloped	4
Fragmentation of land ownership due to inheritance system of Lands	5
Urban expansion on the agricultural lands	6

The Israeli occupation control of the land and natural resources is having direct significant impacts on the agricultural sector because the prevalent cultivation system in the region is the irrigated farming that depends on the waters of springs and water wells rather than the rain-fed irrigation. This is due to the fact that the annual rain average in the region is low because the climate of the Jordan Valley is dry and semi-dry, as mentioned earlier in the second chapter of the present study.

## **2. Tourism and leisure**

The Jordan Valley region is considered one of the Palestinian natural regions that have tourism significance due to its location and natural features, in addition to the existence of numerous locations that could be used to develop the tourism sector in Palestine. Furthermore, there are several important cultural, heritage and religious monuments. In addition, the eastern slopes that overlook the region are also important. These features are considered significant factors if utilized adequately to develop the internal and external tourism in the Jordan Valley region. However, the tourism sector, like other sectors, suffers a lot from the Israeli occupation measures due to its control of the tourism and heritage sites. The Israeli occupation deliberately neglected and devastated a lot of those sites for the purpose of obliterating Palestinian history which is deeply rooted in the region. In addition, the Israeli occupation has changed the features and names of most of the heritage sites in order to conceal their Palestinian history and distort the facts. It should be remembered that the city of Jericho (Fig. 5-3), which is the oldest city in history, is located in the Jordan Valley region, as mentioned in the second chapter of the present study. The city contains the oldest archaeological sites such as Tell Al-Sultan or Old Jericho, the Mount of Temptation (Fig. 5-4) which contains a lot of abbeys and churches such as the Monastery of the Temptation (Quruntul Abbey). On the eastern slope of the Mount of Temptation, there are a large



number of caves (approximately 30 – 40 caves) where hermits and monks lived during the early dates of Christianity. The area also contains many historical and religious sites such as the Monastery of St. John or the Monastery of St (Fig. 5-5) John the Baptist, the Latin Convent, the Sugar Mills, Naran, Abul-Alayeq Hills, Hisham Palace (Fig. 5-6, Fig. 5-7), Wadi Al-Kelt, the Monastery of St. George (Deir Kelt), the Shrine of Moses (Fig. 5-8), the Shrine of Hasan Al-Ra'ee, and the Shrine of Aysha.



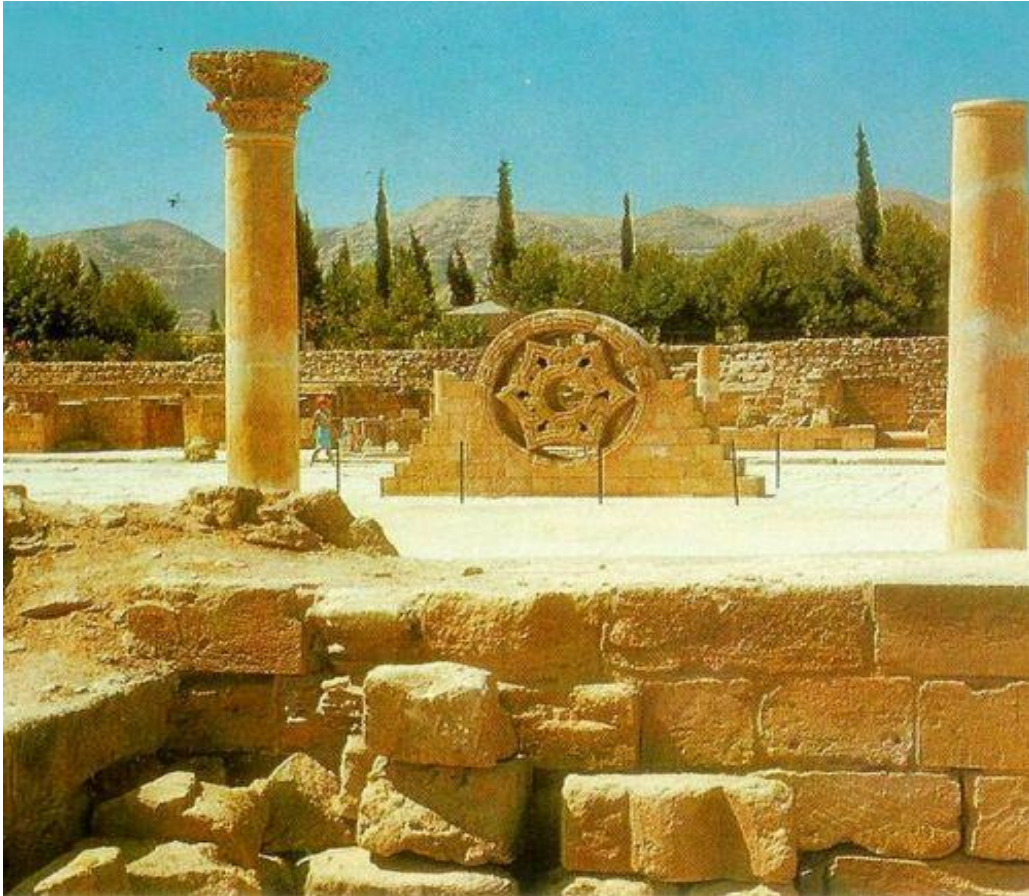
**Fig. 5-3: Tell Al-Sultan or Old Jericho (Jericho and the Jordan Valley governorate, n.d.)**



**Fig. 5-4: The Mount of Temptation (Abraham Path, n.d.)**



**Fig. 5-5: The Monastery of St. George (Deir Qelt) (dreamstime, n.d.)**



**Fig. 5-6: Hisham Palace (Jericho and the Jordan Valley governorate, n.d.)**



**Fig. 5-7: Hisham Palace 2 (Fadi Amirah)**



**Fig. 5-8: The Shrine of Moses (Jericho and the Jordan Valley governorate, n.d.).**

In the Delphi study, the participants were in consensus that the tourism sector in the Jordan Valley region suffers from numerous problems and obstacles as shown in Table 5-7 which shows the experts arrangement of such problems starting from the most influential in this sector. The most important obstacle in developing the tourism sector in the Jordan Valley region is the Israeli occupation control of the archaeological sites, followed by the Israeli colonial settlements that are established in the biodiversity areas. The least influential obstacle is the limited areas that are available for tourism investment.

**Table 5-7 Tourism sector problems**

<b>Tourism Sector Problems</b>	<b>Rank</b>
Israeli control of archaeological sites	1
The Israeli colonial settlements that control vast areas of biodiversity	2
Poor financial sources	3
Weak tourism services in general and accommodation in particular	4
Israeli military checkpoints and closures	5
Closed military and Israeli fire zoon areas	6
Limited areas that are available of tourism investment	7

## **5.4.2 Infrastructure sectors**

- **The Water Network Sector**

### **Water consumption reality**

According to a study entitled “Background on the Jordan Valley”, which was published by B'Tselem in 2011, 44.8 million cubic metres of water are assigned annually for the 10.000 settlers who live in the Jordan Valley. Approximately 97.5% of this quantity is used for agriculture. This quantity is approximately a third of the whole water quantity that is available for the 2.6 million Palestinians who live on the West Bank (B'Tselem, 2011b).

In 2011, the average home consumption of the Israeli settler equalled 450 litres a day, which equalled about six times the average quantity of water for the Palestinian individual, which did not exceed about 60 litres a day in 2009. In addition, some settlements in the Jordan Valley, such as an Nwei'ma, located to the east of Jericho, consumes much less, approximately 10 – 20 litres a day per individual. Obviously, the situation is far worse for some Bedouin settlements in the Jordan Valley, such as Al Hadeedy, Al-Farisiya, and Al-Ras Al-Ahmar, which do not even have a water network; therefore, they have to buy bottled water or water tanks for extremely high prices. The average water quantity per individual is less than 20 litres, which is much less than the average water quantity that is recommended by the World Health Organization for the daily consumption of water, which is 100 litres per individual (Safaa Hamada, Vieira, & Ghodieh, 2016).

### **The Israeli policies to take control of water sources**

Since 1967, the Israeli occupation authorities have made military orders to control the Palestinian water sources. A military order was issued to prevent and hinder Palestinians who wished to dig water wells. The process of digging a well has to pass through 18 stages before obtaining the approval of the Israeli occupation authorities. Furthermore, Israeli occupation authorities limit the water quantities that may be pumped from such wells by placing a meter on each well. If a Palestinian exceeds the limited quantity, he is forced to pay a high financial fine to the Israeli occupation authorities.

In 1982, the Israeli Defense Minister, Ariel Sharon, handed over the water administration in the Palestinian territories occupied in 1967 to the Israeli water company, Mekorot, which started to construct a large water network to supply the Israeli army and colonial settlements. Following this, and in the mid-1970s, the Israeli company expanded its operations to connect the Palestinian towns and

villages, which did not have a public water network. However, it did not attempt to improve the Palestinian existing water networks (B'Tselem, 2011a).

Moreover, the Israeli occupation authorities systematically destroyed the Palestinian wells. The Israeli water company, Mekorot, dig wells at much deeper levels than the Palestinian wells in the Palestinian territories which resulted in drying up the old Palestinian wells because the water moved to deeper wells. The new wells, which have been dug by the Israeli water company, are to supply water to the Israelis and settlers rather than the Palestinians, who suffer from severe shortage of water in the Palestinian towns and villages, especially in summer. Consequently, they have to buy water for extremely high prices from the Israeli water company, on the contrary the Israelis are supplied with huge amounts of water, not only at all times but also for very low prices (B'Tselem, 2011a; Palestinian Water Authority, 2012).

In 2002, the Israeli occupation authorities prevented the Palestinians from excavating or digging new wells in their lands (Palestinian Water Authority, 2012).

The problem of water scarcity in the Palestinian territories in the Jordan Valley is an urgent humanitarian problem since the water sector in Palestine, in general, suffers from a problem caused by the Israeli occupation policies including continuous aggression and organized devastation of the water networks and wells, causing a severe decline in the necessary average quantity of water. Through analyzing the Delphi study, the Jordan Valley region is considered one of the most deprived Palestinian regions from problems that result from policies of the Israeli occupation which controls the majority of the water resources in the region. In addition, there is no Palestinian water network that supplies the Palestinian communities, but the total dependence is on the Israeli water networks. Most of the water lines are old and need maintenance and renewal. Nevertheless, the Israeli occupation hinders their maintenance and rehabilitation. The previous paragraphs (water consumption reality) show a comparison and contrast of the consumption quantities between the Palestinian citizens, who are the true owners of rights and land, and the inhabitants of the Israeli colonial settlements which are erected illegally on the land of the Jordan Valley.

- **The Sewage Sector**

Through analyzing the Delphi study, the researchers were in consensus that all the communities in the Jordan Valley region, approximately 65,764 inhabitants, are not served by sewage networks. The citizens in these communities dispose of the sewage waste water by using cesspits, and when these

cesspits are full, the citizens empty these cesspits on the sides of the roads, in the valleys and in the nearby agricultural areas which, in turn, causes health issues, environmental problems, and pollution of the agricultural lands and running water in the valleys. Consequently, the problem of treating waste water in this region constitutes a fundamental requirement to satisfy the needs of the inhabitants.

- **The Electricity and Telecommunications Sectors**

The Jordan Valley region suffers from shortages of electric power. Through analyzing the Delphi study, the researchers were in consensus that the Jordan Valley region lacks a Palestinian power network because the Israeli occupation controls the security administration of the majority of the land in the region. The only main source of electricity is the Israeli National Company. Some communities do not even have electricity. Many Palestinian farmers rely on electric power to pump water from wells and springs in order to irrigate their crops. They buy this electricity from the Israeli National Company for huge amounts of money.

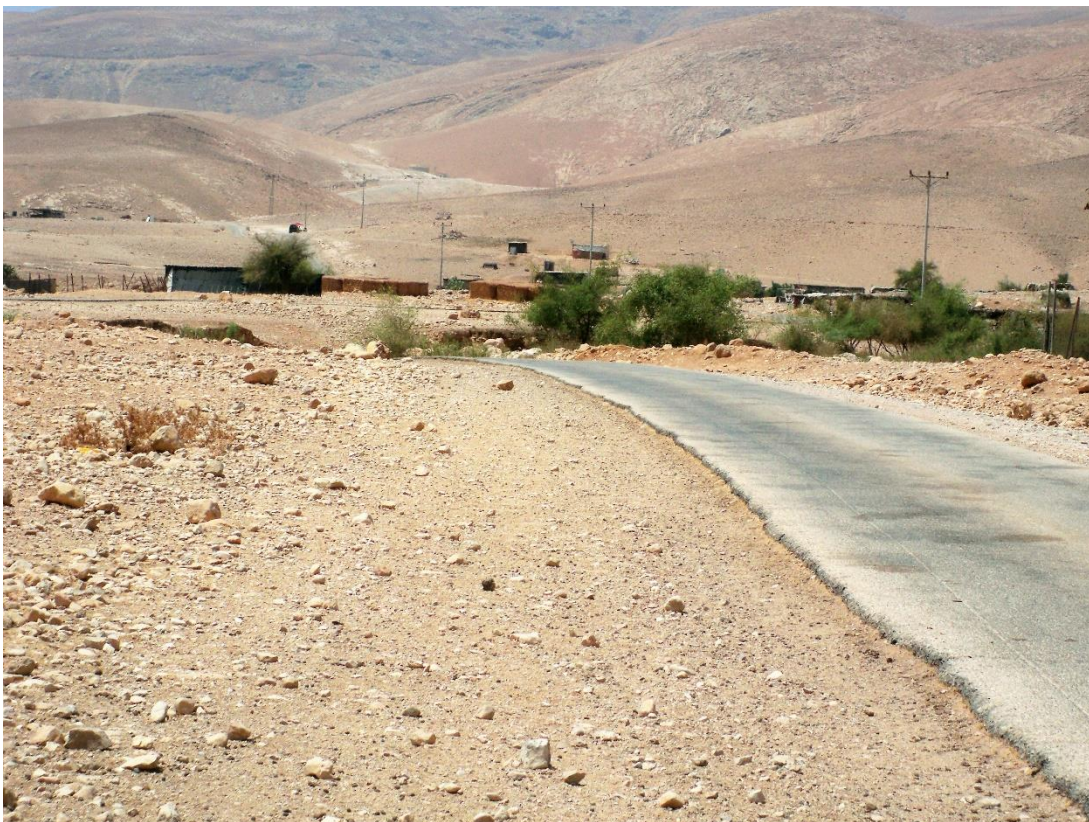
Similarly, the telecommunications sector in the Jordan Valley region suffers from the problem of the lack of a Palestinian infrastructure to provide the people with Palestinian telecommunications services, whether land or cellular, due to Israeli occupation control of the land and preventing Palestinians from constructing infrastructure for the telecommunications sector.

All the participants in the Delphi study were in consensus that it is essential to implement solar energy projects in the Jordan valley region. As mentioned earlier, the Jordan valley region is characterized by high temperatures and powerful solar radiation that could be utilized to develop solar energy projects. It should be remembered that solar energy is a clean and sustainable source of energy that could generate electric power and provide all the communities in the region. In addition, it could supply the consumers with sufficient quantities at reasonable prices and with technical and environmental specifications that achieve the international standards.

- **The roads and transport sector**

The planning experts, who participated in the Delphi study, were in consensus that the roads and transport sector is suffering from many weaknesses due to the Israeli occupation policies that prevent the Palestinians from constructing infrastructure for the roads and transport sector. In addition, the Israeli occupation policies prevent the construction of new roads that may serve and facilitate the movements of people, commodities, and products among the communities both inside and outside

the region. Another reason for the fragility of this sector is the low population density in the region and scattering of disperse communities in remote areas. It should be noted from Fig. 5-12 that some communities are marginalized and there are no roads to reach them. Consequently, the roads and transport sector in the Jordan Valley region is very weak. In addition, the maintenance programmes for the roads and transportation are weak and inadequate. Most of the Palestinian roads in the region are very narrow and unmade (Fig. 5-9, Fig. 5-10, Fig. 5-11), whereas the roads that serve the Israeli colonial settlements are fast and up-to-date roads.



**Fig. 5-9: Palestinian Road**

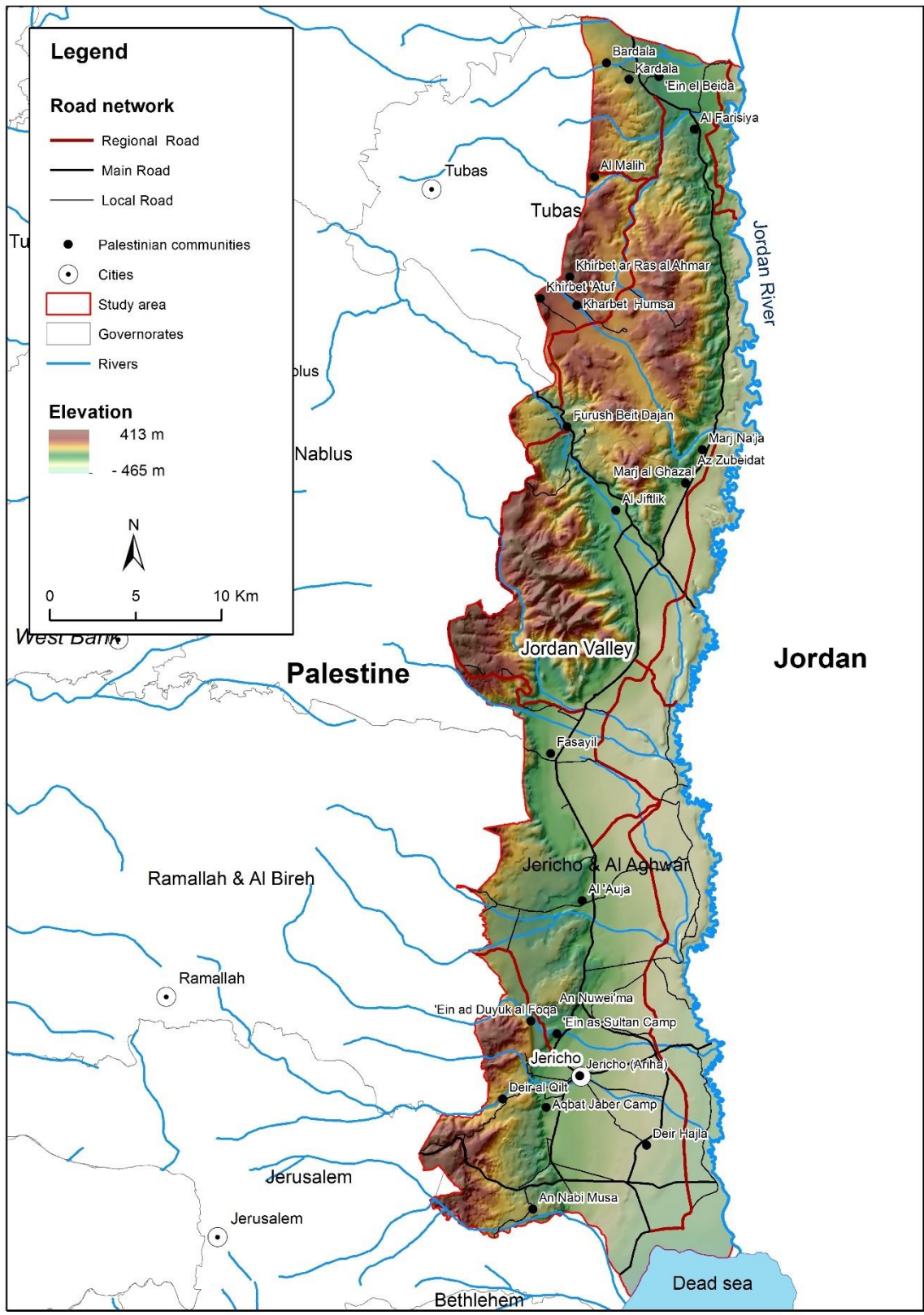




**Fig. 5-10: Narrow road**



**Fig. 5-11: Al Jiftlik Street**



**Fig. 5-12: Map of the Jordan Valley Road network**

## **The needs of the roads and transport sector**

The roads and transport sector is in urgent need for the following measures and interventions: preparing periodic maintenance programmes for the roads and transportation, putting forward development projects in order to improve the roads, especially in the areas of archaeological and tourist attractions, developing the tourism transport in order to facilitate the movements of both the local citizens and tourists to these areas that would achieve prosperity of the tourism sector in the region. In addition, this sector needs significant financing resources in order to develop and invest in it.

Finally, the experts suggested developing and building roads to connect the east with the west in order to facilitate connections with the communities in the region. In addition, I recommend connecting the communities of the region with the neighbouring regions such as Nablus, Jenin, Tubas, Bethlehem, and Hebron in order to facilitate the daily movements of the citizens around the region and the various communities, in addition to preparing regular transportation schedules.

### **5.4.3 Social sectors**

- **The Housing Sector**

All the participants in Delphi study were in consensus that the housing sector in the Jordan valley region suffers from the Israeli occupation policies. The Palestinians are not able to extend their building because the Israeli occupation authorities do not issue building licenses in Area C. Therefore, the Palestinian citizens are forced to resort to building without licenses. Eventually, the Israeli occupation authorities demolish those buildings.

It should be noted that the Palestinians are permitted to build on land in the A and B areas; however, the areas of land in these parts are very small. In addition, the Israeli occupation has been limiting the movements of the Palestinians and violating their rights by demolishing their houses, agricultural constructions, and livestock farms (Fig. 5-13), displacement of their owners, leaving them in the open areas, confiscating their possessions on the pretext of building without obtaining licenses, since those constructions are located in areas under Israeli control, i.e. Area C. Such actions are taken for the purpose of forcing them to emigrate and, consequently, emptying the area of the Jordan Valley of the Palestinians, confiscating it for the benefits of the occupation, the colonies, and the closed military bases, and building by-pass roads that connect the colonizing settlements with each other. In addition, the region suffers from weak urban connections among the communities because of Israeli obstacles (S. D. Hamada et al., 2015).



**Fig. 5-13: An Israeli bulldozer demolishing a Palestinian building in the Jordan Valley (B'Tselem, 2016)**

The Jordan Valley region is characterized by areas that are capable of urban expansion in the province, particularly in the rural areas within the low to medium value agricultural lands. However, large areas of such lands are located under Israeli control, i.e. Area C.

- **The Health Sector**

The health sector is one of the most important sectors relating to the lives of the people. Therefore, the availability of health services is a fundamental right for every citizen in the region. The health sector is similar to the other sectors since it suffers from numerous problems according to the analysis of the planning experts who participated in the Delphi study. A consensus was reached that the health sector was placed in the third rank after the services and infrastructure sector and the educational sector with regard to suffering from problems and obstacles. One of the most significant problems that the health sector suffers from is that some communities lack health centres. In addition, the health centres that are available in some communities are merely small health centres that do not contain all the specializations and health services needed. Some communities suffer from the poor spatial distribution

of health centres. Moreover, the health sector also suffers from the Israeli occupation policies such as closures, blockades and other measures, especially in the remote communities.

According to the 2012 statistics of the Ministry of Health, the number of health centres in the Jordan Valley region was 43 health facilities, including one hospital in the city of Jericho, that are supervised by government, private sector, national and UNRWA establishments (Palestinian Central Bureau of Statistics (PCBS), 2012; The Palestinian Ministry of Health, 2015).

- **The Educational Sector**

The educational sector is considered one of the most vital sectors that have direct impact on all the other sectors in the community. Therefore, this sector has to be prioritized and plans have to be set up for its development in Palestinian society in general and in the communities of the Jordan Valley region in particular. In addition, it must be used as a weapon to confront the Israeli occupation plans, stabilize the Palestinian identity, and prevent the occupation from confiscating more land. It should be emphasized that there is a significant connection between the low education level in the Jordan Valley region and the trend to work in the Israeli colonial settlements that are erected on the lands of the region. The encouragement of education in this regions is expected to limit this phenomenon so that this Palestinian work power could be utilized to develop the Palestinian communities instead. More effort must be exerted by the civil community establishments, international organizations and the United Nations bodies that take care of children's rights in Palestine in order to reduce the phenomenon of dropping out from schools and return the drop-out students to school. Rehabilitation programmes must be organized in order to make sure that children do not return to work in the Israeli colonial settlements. As the following Table 5-8 shows, the total number of schools in the Jordan Valley region is 39 government, UNRWA, and private schools. 16 schools are located in the city of Jericho alone whereas the rest of the schools are distributed throughout the communities in the Jordan Valley region, but some communities do not have schools. Therefore, the students are forced to go to schools in neighbouring communities either on foot or by buses that are made available by either the Ministry of Education or the local councils. This state of affairs is considered a challenge and obstacle for students, especially in the shadow of the Israeli occupation measures. Therefore, some parents are forced to prevent their children, especially females, from going to school for their protection and safety.

**Table 5-8 The number of schools and student by localities in the Jordan Valley region**

<b>Nº</b>	<b>Locality</b>	<b>Governorate</b>	<b>Number of schools</b>	<b>Total of Students</b>
<b>1</b>	Bardala	Tubas	3	504
<b>2</b>	Kardala	Tubas	*	*
<b>3</b>	'Ein el Beida	Tubas	2	328
<b>4</b>	Al Farisiya	Tubas	*	*
<b>5</b>	Khirbet Humsa	Tubas	*	*
<b>6</b>	Khirbet ar Ras al Ahmar	Tubas	*	*
<b>7</b>	Al Malih	Tubas	*	*
<b>8</b>	Khirbet 'Atuf	Tubas	1	73
<b>9</b>	Marj Na'ja	Jericho	1	211
<b>10</b>	Az Zubeidat	Jericho	1	220
<b>11</b>	Marj Al Ghazal	Jericho	2	305
<b>12</b>	Frush Beit Dajan	Nablus	1	110
<b>13</b>	Fasayil	Jericho	2	449
<b>14</b>	Al Jiftlik	Jericho	1	100
<b>15</b>	Jericho	Jericho	16	5920
<b>16</b>	An Nuwei'ma	Jericho	3	513
<b>17</b>	'Ein ad Duyuk al foqa	Jericho	*	*
<b>18</b>	Al 'Auja	Jericho	3	1382
<b>19</b>	'Ein as sultan camp	Jericho	1	947
<b>20</b>	Aqbat Jaber camp	Jericho	2	1560
<b>21</b>	Deir al Qilt	Jericho	*	*
<b>22</b>	Deir Hajla	Jericho	*	*
<b>23</b>	An Nabi Musa	Jericho	*	*
	<b>Total</b>		<b>39</b>	<b>28125</b>

(Palestinian Central Bureau of Statistics (PCBS), 2012). \*: no data.

### **The need to develop the educational sector**

Through investigating the current situation of schools in order to evaluate the needs by communication with the Ministry of Education, as represented by the education directorates in Nablus, Tubas and Jericho, studying some reports on the needs of some communities, and analyzing the perspectives of participants who took part in the Delphi study, it has been found that the educational sector in the Jordan Valley region suffers from numerous problems and is in urgent need of establishing new schools, rehabilitation of some current schools, and building new classrooms in some schools. The majority of schools are in urgent need of educational aids as Table 5-9 shows. In addition, there is a need to develop the educational process so that it becomes centralized around the student.

**Table 5-9 The Need to Develop the Educational Sector**

Nº	Locality	Governorate	New schools	Rehabilitation of existing schools	Educational aids
1	Bardala	Tubas		*	*
2	Kardala	Tubas	*		*
3	'Ein el Beida	Tubas			*
4	Al Farisiya	Tubas			
5	Khirbet Humsa	Tubas			
6	Khirbet ar Ras al Ahmar	Tubas			
7	Al Malih	Tubas	*		
8	Khirbet 'Atuf	Tubas			
9	Marj Na'ja	Jericho	*	*	*
10	Az Zubeidat	Jericho		*	*
11	Marj Al Ghazal	Jericho			*
12	Frush Beit Dajan	Nablus	*		*
13	Fasayil	Jericho	*	*	*
14	Al Jiftlik	Jericho	*	*	*
15	Jericho	Jericho			
16	An Nuwei'ma	Jericho	*		
17	'Ein ad Duyuk al foqa	Jericho	*		
18	Al 'Auja	Jericho		*	*
19	'Ein sultan camp	Jericho	*	*	*
20	Aqbat jabber camp	Jericho	*	*	*
21	Deir al Qilt	Jericho			
22	Deir Hajla	Jericho			
23	An Nabi Musa	Jericho			

(Directorate of Education - Tubas, 2016; Palestinian Central Bureau of Statistics (PCBS), 2012; The Applied Research Institute – Jerusalem (ARIJ), 2006, 2006, 2006, 2012, 2012, 2012, 2012a, 2012, 2012, 2012b) \*: means urgent need.

### **Some of the problems that the educational sector suffers from**

Through analyzing the perspectives of participants who took part in the Delphi study, it has been found that there is a consensus among the experts that the second sector that suffers from weakness and problems in the Jordan Valley region is the educational sector as Table 5-10 shows.

**Table 5-10 Ranking of the sectors of activity considered as having more problems**

<b>Sectors</b>	<b>Rank</b>
Services and infrastructure sector	1
Education sector	2
Health sector	3
Public service sector	4
Production sector	5

The main problems identified by experts were:

- Shortage of schools, classrooms, and educational equipment.
- Difficulties of reaching schools by both the teachers and students due to the Israeli military checkpoints such as the Al-Hamra checkpoint.
- The Israeli occupation policies that prevent issuing licenses to build new schools.
- Schools are remote from Palestinian communities.
- Low population density in some Palestinian communities.
- An imbalance in the spatial distribution of schools and educational services.
- Shortage of school computer laboratories.
- Proliferation of conventional teaching methods that are often based on memorization.

• **The Youth Sector**

The Palestinian community is considered a young community. The demographic expectations indicate that it will remain so for many years to come. Therefore, the youth sector is the basic foundation that bears the responsibilities in the near future, since they are the most dynamic mass in all communities. They have physical and mental powers, creative potential, and enormous capacity for giving. Consequently, good preparation of the young people to confront the problems that the youth sector is facing is considered a pivotal matter in any development plans on both regional and national levels. This means that there should be significant interest in this age category. It should be emphasized that the young people suffer from general social problems, and at the same time, they face their own problems, especially the problem of unemployment among the young people and the scarce potentials that are available for them in cultural and social activities. Consequently, there are enormous obstacles



that hinder them from utilizing their powers and achieving their objectives. Therefore, we can say that the young people are living in a dilemma that goes deep in the reality of the community itself.

The youth sector in the Jordan Valley region is one of the sectors suffering most due to the scarcity of youth establishments and resources that are deployed to serve the young people, in addition to the weak potential. In contrast, for this huge amount of young energy that could be utilized, there is a significant shortage in official establishments and sponsoring of youth activities, negligence of the youth talents and voluntary powers of the young people, particularly the absence of an organized framework for youth voluntary work. Consequently, this situation must be addressed urgently.

By analyzing the opinions of the planning experts about the problems that have the greatest impact on the youth sector in the Jordan Valley region these are arranged in Table 5-11 which shows the consensus of the planning experts, the problem of the weakness of civil establishments that look after the young people is the most influential problem in this sector. This is followed by the severe shortage of youth establishments, weak potentials of the available establishments, lack of specialized youth centres and, finally the lack of an office of the Supreme Board of Sports & Youth.

**Table 5-11 Youth Sector Problems**

<b>Youth Sector Problems</b>	<b>Rank</b>
The weakness of civil establishments that look after the young people	1
A severe shortage of youth establishments, and weak potentials of the available establishments	2
Lack of specialized youth centers	3
Weak potentials of the government ministries that take care of special programs for the young people	4
Lack of arts and cultural facilities in the governorate	5
A societal culture that delimits the role of the youth in the community and change	6
Lack of an office of the Supreme Board of Sports & Youth	7

According to the Delphi study, about 80% of experts agree that there is not enough concern for the youth sector in the region of the Jordan Valley within the development plans that are put forward to develop the region, while 20% said that they had no knowledge about this topic.

Taking into account the experts' opinion, the basic needs of the youth sector are:

- Providing infrastructures for the young people such as cultural centres, arts centres, theatres, playgrounds, and other youth facilities.
- Providing special programmes for the young people on both official and civil levels.
- Taking part in involving the young people in the public and societal issues through activating their roles in the local boards and schools.
- Setting up an organized national body that supervises work in the youth sector.

- **The Women Sector**

The Palestinian women have been suffering not only from the Israeli occupation but also a society that discriminates between males and females. However, the Palestinian women have been able to prove themselves and stand side by side with men in their struggle and fight against the Israeli occupation. Furthermore, she has been having a significant and influential role in the Palestine Liberation Organization, so that she can take on important positions in Palestinian society. In this way, the Palestinian woman finds herself in a much better position than the woman in many Arab and Islamic countries.

The situation of the women's sector in the Jordan Valley region enjoys a number of special features besides the characteristics of the Palestinian woman's status in general. In the Jordan Valley region, the Palestinian women have proved, during the national struggle process, that she is a partner in this struggle and endures a double burden in confronting the arbitrary measures of the occupation that are added to the traditional burdens that women bear in similar Arab societies. In the Jordan Valley region, which is considered an agricultural region, the Palestinian women have been participating in the agricultural activities, with skills and distinctiveness to contribute to ensuring their family, in particular, when she does as the men of the family who are absent due to martyrdom, detention, or being on the run from the authorities.

According to Delphi study, approximately 75% of the experts agreed that there are not sufficient programmes for training and empowering women in the region of the Jordan Valley, and 15% said that they did not have knowledge on this topic. Due to the traditional culture in the region, the women's participation in the development process is severely delimited. The economic factors have significant impact on women's education. Table 5-12 shows the consensus of opinion of the planning experts, the most influential problem in the women's sector are: harassment and limitations arising from the

cultural traditions of the community, followed by the limited support for the women's sector, lack of good exploitation of the available opportunities, and finally the measures of the Israeli occupation and their impacts on women.

**Table 5-12 Women's Sector Problems**

<b>Women's Sector Problems</b>	<b>Rank</b>
Harassment and limitations arising from the cultural heritage in the community	1
Limited support for the women's sector and lack of good exploitation of the available opportunities	2
The lack of helping the environment for working women (qualified nurseries)	3
The absence of women and children's recreation facilities	4
Inefficient training programmes and empowerment for women in line with human development	5
Lack of women's participation in internal and external conferences	6
The measures of the Israeli occupation and their impacts on women	7



## **CHAPTER 6: Proposals for the Future Regional Planning for the Jordan Valley Region**

In the previous chapter, an analysis of the main activities in the various sectors was carried out, taking into consideration the planning experts included in the board of experts that took part of the Delphi methodology we implemented. Moreover, we proceeded with interviews with individuals involved in the planning process in Palestine. These methodologies allowed us to reach a consensus about the planning process in the region of the Jordan Valley. In this part of the study, we defined the most influential limitations and problems that affect the urban and regional planning in the Palestinian region of the Jordan valley, followed by the fundamental needs this territory faces and by a set of proposals and project priorities that we consider indispensable to develop the different sectors and the whole territory.

### **6.1 Urban and regional planning problems in the Jordan valley region**

The urban and regional planning in the Jordan valley is facing a diverse set of problems which hinder the normal development of the territory and its communities. These problems as can be identified taking into consideration the different sectors as follows:

#### **Agriculture sector:**

- Israeli occupation control of the lands and water resources.
- The Israeli occupation control of the crossings which result in a major limitation for the marketing of agricultural products.

#### **Tourism sector:**

- Israeli control of archaeological sites.
- The Israeli colonial settlements that control vast areas of bio-diversity.
- Poor financial resources.
- Weak tourism services in general and accommodation in particular.

#### **Infrastructure sectors (water network, sewage, electricity and telecommunications):**

- There is the lack of a Palestinian infrastructure network because the Israeli occupation controls the security administration of the majority of the land in the region.

#### **The roads and transport sector:**

- The Israeli occupation policies that prevent the Palestinians from constructing infrastructures for the roads and transport sector.

#### **The Housing Sector:**

- Weak urban connections among the communities because of Israeli obstacles.

#### **Health sector:**

- Lack of health centres in some communities.
- The health centers are small and do not contain all the specializations and health services
- . Suffers from the Israeli occupation policies such as closures, blockades and other measures especially in the remote communities.

#### **Educatin sector:**

- Shortage of schools, classrooms and educational equipment
- Difficulties of reaching schools by both the teachers and students due to the Israeli military checkpoints such as Al-Hamra checkpoint.
- The Israeli occupation policies that prevent issuing licenses to build new schools.
- Schools are remote from Palestinian communities.

#### **Youth sector:**

- The weakness of civil establishments that look after the young people.
- A severe shortage of youth establishments, and weak potentials of the available establishments.
- Lack of specialized youth centers.

- Weak potentials of the government ministries that take care of special programs for the young people.

**Women sector:**

- Harassment and limitations arising from the cultural heritage of the community.
- Limited support for the women sector and lack of good exploitation of the available opportunities.
- The lack of helping the environment for working women (qualified nurseries).

**6.2 The priorities and projects to develop sectors in Jordan valley region**

Based on the identification of the main problems facing urban and regional planning in the various development sectors, and taking into consideration the expert opinions and the information provided by the different studies and plans analyzed during the present research, we achieved a set of proposals and development projects by sector for the Palestinian region of Jordan Valley.

**Agricultural sector:**

The strength points that may be benefit in developing the agricultural sector are as follows:

- Abundant reserves of underground water.
- Vast agricultural lands that are considered among the most fertile agricultural lands in Palestine.
- Climate which is warm in winter and hot in summer and is suitable for growing numerous crops in their off-season, giving them substantial competitive advantages, such as bananas, various types of vegetables and cereals.

**The basic needs of the agricultural sector are:**

- Reclamation of new agricultural lands.

- Ending the Israeli occupation and guaranteeing of the control of the Palestinian Authority on the crossings and borders in order to facilitate the movement of agricultural products on both the local and global levels.
- Enforcing the agricultural insurance system related to catastrophes.
- Supporting the Palestinian farmers in the Jordan Valley regions, especially in rural areas.
- The delivery of water to new areas in the region.
- Using modern systems to find reliable water resources for agriculture such as water desalination and sewage waste water recycling.

### **Suggested projects to develop the agricultural sector**

#### **a) A centre for manufacturing, storing and marketing frozen vegetables, fruit and agricultural products**

The idea of setting up a factory for packing, freezing, and distributing vegetables, fruits, and agricultural products is to help small farmers to market their products, and because of the lack of foreign marketing opportunities, in addition to the weak infrastructures of the agricultural marketing establishments. Consequently, it is essential to think of ways to improve the local marketing circumstances, and ways of increasing the potential life span of the agricultural commodities, especially vegetables in order to display them for consumers at the appropriate time, place and price for the benefit of both farmers and consumers. On many occasions, the surplus of large quantities of various crops of vegetables and fruits in the region leads to increasing supplies more than demand which decreases the price of the related commodity, and consequently, the producer suffers losses.

Effects of the Project:

- Increasing the farmers' income.
- Providing work opportunities.
- Improving the local marketing opportunities.
- Increasing the areas of cultivated lands.
- Fighting the products of the colonies.



## **b) Establishing purification and desalination plants and reuse of treated waters for irrigation**

The aim of this project is to make use of salt water and sewage wastewater in the region through desalination of salty waters for use in various sectors including the agricultural sector. The purification plant is an important project to purify and recycle wastewaters so that the recycled water could be used for irrigating plants in order to support the agricultural sector and increase the areas of cultivated lands. Furthermore, the project will contribute to the protection of the environment and public health in the region. It is also considered as a sustainable water resource that can be relied on in developing various sectors in the region.

Effects of the Project:

- Waste water treatment.
- Protection of the environment and public health.
- Promoting the national economy.
- Flourishing the region by developing the agricultural sector as a result of providing adequate quantities of water and exporting agricultural products outside the region.
- Contributing to developing other sectors including the industry and service sectors among others.

## **c) Rehabilitation of wells, springs and establishing new wells to collect water**

As discussed in the second chapter of the present study, the Jordan Valley region is rich in underground water that can be used in agriculture. It is also possible to provide sustainable and integrated water resources that are capable of meeting the basic needs of the population of the region and developing the basic sectors in the region.

Aims of the project:

- To raise the capacity of the groundwater wells.
- To reduce the waste ratio of the extracted water.
- To supply the communities of the region with water for drinking and agriculture.

- To reduce the operating costs of the wells.
- To rehabilitate the springs in the region.

#### Effects of the Project:

- Increasing the areas of cultivated land.
- Reducing the prices of agricultural products.
- Decreasing the number of working hours of the targeted wells so that their functioning life would be prolonged.
- Optimal utilization of the water resources that are in excess of the population's needs in the region by developing and rehabilitating the underground wells and springs.
- Achieving decent living conditions for the citizens.
- Expanding the irrigated land areas.
- Promoting industry.

#### **Tourism sector:**

In order to develop the tourism sector in the Jordan Valley region, the following policies are recommended:

- Programmes to develop cultural tourism in the region and building tourism facilities to attract tourists from varied origins.
- Programmes to protect and develop the heritage sites.
- Rehabilitation of the archaeological and tourism sites that have been devastated by excavation, cleaning, and reconstruction of the Palestinian archaeological sites.
- Linking the tourism plans in the Jordan Valley with other national and international plans, with Jordan for example.
- Constructing hotels and other accommodation facilities.
- Constructing a recreation area in the Al-Jiftlik area.

- Implement public gardens and natural landscaping.
- Tourism development area – or the so-called therapy tourism.

### **The Programme for Developing Environmental Tourism in the Jordan Valley Region:**

This programme aims at constructing public parks to serve the communities of the Jordan Valley region and other citizens throughout the country too who would like to be involved with environmental tourism and enjoy the beauty of nature. The parks should also contain areas that are specified for games for children in order to attract families with their children. Such projects will create new work opportunities and support the national economy.

### **Water sector:**

#### **The needs and priorities for developing the water sector:**

- Developing and setting up local Palestinian water networks, and attempt to supply pure water and guarantee its quality in order to supply the citizens needs.
- Making attempts to set up projects to maintain and rehabilitate the old water networks so that this programme treats the daily urgent need for drinking water with the purpose of repairing the internal networks that deliver water, and also repairing and rehabilitating the internal networks for the villages where the drinking water networks were destroyed, and reduce the percentage of waste water.

#### **These projects aim at achieving the following objectives:**

- To provide a decent life for the citizens of the targeted areas by achieving satisfaction of drinking water for the communities at a lower cost.
- To increase the areas of irrigated agricultural land.
- To resist the Israeli occupation.
- To set up agricultural projects.
- To create new work opportunities.
- To preserve the environment.

- To achieve food security.
- To protect the environment from the dangers of soil erosion.
- To achieve optimal use of the water resources by transporting water to regions that lack water networks.

The projects that were recommended in the agricultural sector are joint projects that serve more than one sector. These projects are:

- The rehabilitation of wells and springs and establish new wells to collect water.
- Establishing purification and desalination plants and reusing treated water for irrigation.
- Water tanks for the storage of the treated water.

**Needs and projects:**

- To construct a sanitation sewage network that covers the needs of the inhabitants in all the cities, towns, and villages in the Jordan valley region.
- To set up purification plants in order to filter wastewater for the purposes of utilizing recycled water for other uses so that it may support and develop other sectors such as the industry and agriculture sectors.
- Transporting waste water from these towns and villages by the proposed networks to the proposed wastewater treatment plants.
- To protect public health and the environment.
- To dispose of the waste water correctly.
- To reduce pollution resulting from waste water cesspits.
- To limit the pollution of the agricultural lands and running water in the valleys.
- To prevent the pollution of the agricultural land.
- To treat waste water and utilize it in agriculture.
- To treat wastewater in a safe way.

- To protect the environment and the health of the citizens.
- To encourage the national economy.

### **The Electricity and Telecommunications Sectors**

The basic requirements to develop the electricity and telecommunications sectors are:

- To develop projects in order to construct a Palestinian power network and telecommunications networks.
- To exert every effort to implement such projects on the ground and ensure that they reach all the communities of the region.
- Develop solar stations for the production of electricity.

The advantages of implementing such projects are:

- They raise the electric power in the region.
- They increase the energy resources in the region.
- They reduce dependence on the Israeli provider of the electric power.

### **The roads and transport sector:**

Priorities and projects to develop the roads and transport sector:

The roads and transport sector needs construction of an infrastructure in the areas that do not have roads, in order to establish a connection between the remote communities and the major cities and villages and to promote the transportation of both people and goods. In addition, it is essential to set up policies and plans in order to develop and rehabilitate the infrastructure of the various patterns of the roads and transport sector in the Jordan Valley region. The effectiveness of the transport and roads, both internal and external to the region, should be improved. A regular transport system and programmes based on the main points and fixed timetables should be adopted in order to connect the communities of the region and also to facilitate the transport service between the region itself and

neighbouring regions. It is also important to construct proper roads for agricultural purposes to facilitate farmers in reaching the agricultural land and, at the same time, to facilitate the transportation of agricultural products. On the other hand, the private sector should be encouraged to participate and invest in the activities of the roads and transport sectors through constructing or operating and managing central passenger transportation stations. It is also essential to operate branch offices for the Ministry of Transport in the region in order to supervise this sector and ensure that the citizens receive services in an excellent way within the public safety standards and specifications. Furthermore, it is important to create public transportation complexes in some communities, organize and arrange such complexes, and construct proper stops for the buses and vehicles.

### **Priorities and projects to develop the roads and transport sector:**

The positive results of applying for the above-mentioned development programmes and projects would be:

- Easy movement between the communities due to the proliferation of a road network.
- Reducing travel time since the area of the region is vast.
- The presence of the main related directorates and entities in the region.
- The good proliferation of the road networks in the region.
- Facilitate adequate distribution conditions for industrial and agricultural products.
- Promote economic growth in the region and increase commercial dynamics.

### **Housing sector:**

In order to develop the housing sector, we suggest the following:

- Putting forward programmes in order to develop decent housing for the Palestinian families in the marginalized communities that suffer from severe living and housing conditions.
- Reaching financial agreements to support the Palestinian farmers for building and improving their living conditions in the region.

- Setting up policies and programmes to encourage the Palestinian farmers to live and stay in the Jordan Valley region in order to confirm their identity, conserve their land, and prevent the Israeli occupation from confiscating their land.
- Distributing the government lands to the Palestinian farmers to utilize and protect them.
- Construction of housing communities in the Jordan Valley region.

### **Health sector:**

According to the study of the communities needs in the Jordan Valley region, most of the communities in the region urgently need to establish health clinics and centres. There is also an urgent need to reconstruct and rehabilitate several of the existing clinics. All the clinics urgently need to buy medical equipment. It is also vital to establish medical clinics at a high advanced level and provide them with qualified health staff with experience and training.

Development programmes to provide health services to the citizens of the Jordan Valley region:

It is essential to make attempts to put forward a strategic plan for the development of the health sector in the region, with the participation of all parties that have a relationship with this sector in order to ensure the provision of a more integrated health system that provides the public with high quality health services and health care for all in equality and justice, and at the same time, promotes the health service system and reinforces the steadfastness of the citizens in the Jordan Valley region.

In order to develop the health sector, we suggest that the level of health of the citizens must be improved at the beginning by providing varied and developed health services that should be expanded to the marginalized areas; raising the health awareness of the citizens; providing emergency and first aid services, especially to the remote areas from the centre; building specialized health clinics; reinforcing the proliferation of emergency units and primary care in the communities in order to overcome the problem of military checkpoints.

A project to carry out general maintenance for hospitals and clinics including complete refurbishment of hospital buildings in addition to building clinics and primary health clinics in order to help citizens, especially in the remote areas.

## **Education sector:**

### **Priority issues that are suggested to develop the educational sector:**

- 1) Building urgently-needed new schools in several communities. Aqbat Jabber Camp, Al Jiftlik, and Fasayil need basic schools to be built as they have none at present; Al Nwei'meh, Ein ad Dyuk and Frush Beit Dajan need to build secondary schools; Ein Sultan Camp needs to build schools for all educational stages, and Marj Na'ja needs to build a school for girls.
- 2) Refurbishment of existing schools, adding new classrooms and supplying educational equipment for Al 'Auja, Aqbat Jabber Camp, Al Jiftlik, Az Zubeidat, Ein Sultan Camp, Fasayil, Marj Na'ja, Marj Al Ghazal and Frush Beit Dajan.
- 3) Continuous up-dating of teachers in order to develop educational techniques. Increasing interest in extracurricular activities in order to focus on the educational dimensions of the personality of the student.

### **Proposed projects to develop education in the Jordan Valley region:**

#### **Developing public education, agricultural vocational education, and continuous training in the region**

Since the Jordan Valley region is characterized by the availability of fertile land, the water sources are needed to irrigate farmland, a climate that can achieve the conditions to meet seasonal competition, all of these require keeping up with developments in agricultural techniques. Therefore, the presence of secondary agricultural education is very significant in order to possess basic skills in this field. In addition, it is essential to provide continuous training programmes for farmers and young people during their involvement in the agricultural productive process so that such projects encourage school graduates to continue their university education in the field of agriculture. In addition, farmers must be provided with skills related to the modern agricultural techniques and work opportunities based on modern agricultural skills must be provided in order to improve the quality of both public and vocational education. Increasing investment volume will create good work opportunities, reduce rates of unemployment, raise worker skills in agriculture and increase the national income.

## **Youth sector:**

### **Projects:**

- a) Providing infrastructures for young people such as cultural centres, arts centres, theatres, playgrounds, and other youth facilities.



Attempts should be made to set up programmes and centres related to educating the young people and investing in their capacities and talents so that they may become an active element in developing the Jordan Valley region. The programmes, which are specially designated for the young people and capable of keeping up with their physical and psychological growth, would create a generation of young people that are capable of bearing the responsibilities of developing and defending their homeland, and consequently, liberating their country from the Israeli occupation.

b) The programme for supporting the empowerment and rehabilitation of the young people.

The programme for empowering the young people in the region is carried out through specialized training courses, seeking help from local and global experience in the field of the empowerment and rehabilitation of the young people, for the purposes of refining the energies and skills of the young people in the scientific, practical and societal spheres.

c) Setting up a vocational training centre

The communities in the Jordan Valley region lack a vocational training centre, or vocational or technical training colleges despite the fact that the work market needs a vocational work force. Most of the individuals are enrolled in the labour market at an early age without the vocational education that may enhance or improve their chances or their incomes. Here, it is obvious that the region needs a vocational training centre that includes disciplines and specializations that are related to the manufacturing of agricultural, food processing, maintenance of agricultural implements and other disciplines needed by the region.

### **The Women's sector:**

Consequently, there is an urgent need to enhance and implement equality between men and women in all areas, whether educational or vocational and encourage women to participate in all the activities. It is also essential to provide support, both material and moral, in order to empower women, which in turn leads to developing the community in the Jordan Valley region. In order to develop the women in the Jordan Valley region, we suggest that several programmes should be adopted for the purposes of empowering women and changing the dominant culture related to their roles in the society, especially in the rural communities. Educational seminars and workshops can be organized in all the communities in the Jordan Valley region, so as to clarify the importance of the roles of women in developing the Palestinian community. These programmes also aim at reducing the discrimination between males

and females that will support the roles of the Palestinian women in general and in the rural communities in particular. Furthermore, it is essential to put forward development plans that take into consideration the support of the various women's issues such as the education and their participation in all the political and economic activities side by side with men having equal opportunities. In addition, it is essential to support the economic projects that are related to women and facilitate the opportunities for obtaining financial support; and to put forward an empowering training programme in order to organize the continuous training course in the framework of development and support the productive role of women. It is also possible to organize an exhibition for handicrafts products in order to encourage women to increase their production. The project that was suggested previously to develop the youth sector, namely, establishing a vocational training centre, is, in fact, a joint project that may be utilized to empower and develop women too. Another suggestion is the establishment of a central women's centre with a multi-purpose hall for feminine activities. Educational programmes must be organized in order to increase the awareness of women's education and its impacts on improving the social and economic circumstances of not only the family but also the whole community. It is also important to provide scholarships for excellent and talented women in order to utilize and develop their talents and capabilities in developing the communities in the region.

### **6.3 Aspects of the implementation of plans in Palestinian territory**

The implementation of planning projects in Palestine and the development of regional planning is a huge challenge, taking into consideration the existing political situation. Although the long term strategic plans for a territory's development are important, the short and medium term planning is considered more efficient and much better than the long-term planning due to the political circumstances from which the Jordan Valley region suffers, as a result of the Israeli occupation policies including the confiscation of lands and natural resources. The short term planning helps in achieving significant and speedy results and achievements which the communities need urgently. Therefore, we recommend using short-term planning in the Jordan Valley region in order to ensure rapid changes on the ground and protect the remainder of the land and natural resources from the Israeli occupation, and at the same time, confront the Israeli occupation and liberate all the lands of the Jordan Valley region.

The planning system in Palestine under the Israeli policies does not have enough power to deal with the different spatial problems that face planning endeavours. Because of the Israeli policies of control

over the resources and the land, the Palestinian planners face challenges and limitations in their autonomy and abilities.

In the shadow of the Israeli occupation policies that prevent the Palestinian citizens from planning to use and develop their land, and in order to protect the remainder of the land, and to resist long-term occupation, it would be better to make attempts to develop planning as a form of the Palestinian resistance through searching for up to date planning methods and techniques that may help in overcoming such obstacles. The best planning methods are covert planning since it suits planning in the occupied territories. The planners have to work in co-operation with the government and non-government establishments and in partnership with the citizens in order to put forward development plans and implement them in utmost secrecy. In this way, the Israeli occupation might be prevented from attempting to hamper and prevent the planning process especially in the regions that are categorized as C areas that are under the total control of the Israeli occupation.

By looking into some cases of secret planning, such as the covert planning for social transformation in Indonesia, we can see that during the 1990s, the sufferings of the people in Indonesia increased because of political oppression, and social and economic inequalities. The people were disappointed and so the concept of covert planning started through the people's responses to the oppressive policies. According to Scott (2008) in his book *Weapons of the Weak*, it was closely related to the concept of covert planning. Scott describes covert planning as a form of resistance that adopts indirect confrontation. Rather than using direct confrontation when there is a great disparity in forces such as the case of the presence of authoritarian power that imposes orders upon a weak group of people, it would be better for those people to adopt an effective strategy to attempt to make decisions and take required measures in order to make radical changes in the future. In addition, covert planning includes planning from the bottom, that is, from the level of people or the oppressed group and embodies the ambition for liberation. This was the case in Indonesia where the local people adopted the method of covert planning in order to resist the oppression of the authority, which is considered a launching point towards political liberation (Scott, 2008).

In the case of Palestine, the situation is completely different. The parties that have to participate in the covert planning are not only a group of people but rather a co-operation and co-ordination between the local people and government departments in addition to the world community establishments so that the covert planning process will be completed through an interactive process among these groups for the purpose of confronting the Israeli occupation and its policies in order to cause radical changes

on the ground, confirm the Palestinian identity, and liberate the Palestinian territories from the Israeli occupation which have been there for a very long time.

Since the majority of the Jordan Valley region has been under complete Israeli control, any attempt to make plans fails in its implementation since the Israeli occupation imposes numerous obstacles to its implementation on the ground. Therefore, the time has come to resist this occupation by covert planning with an international participation in order to improve the living conditions of the communities in the region, to grant them the minimum living levels of their rights as people, to enjoy their land, and to make use of the natural resources in this region.

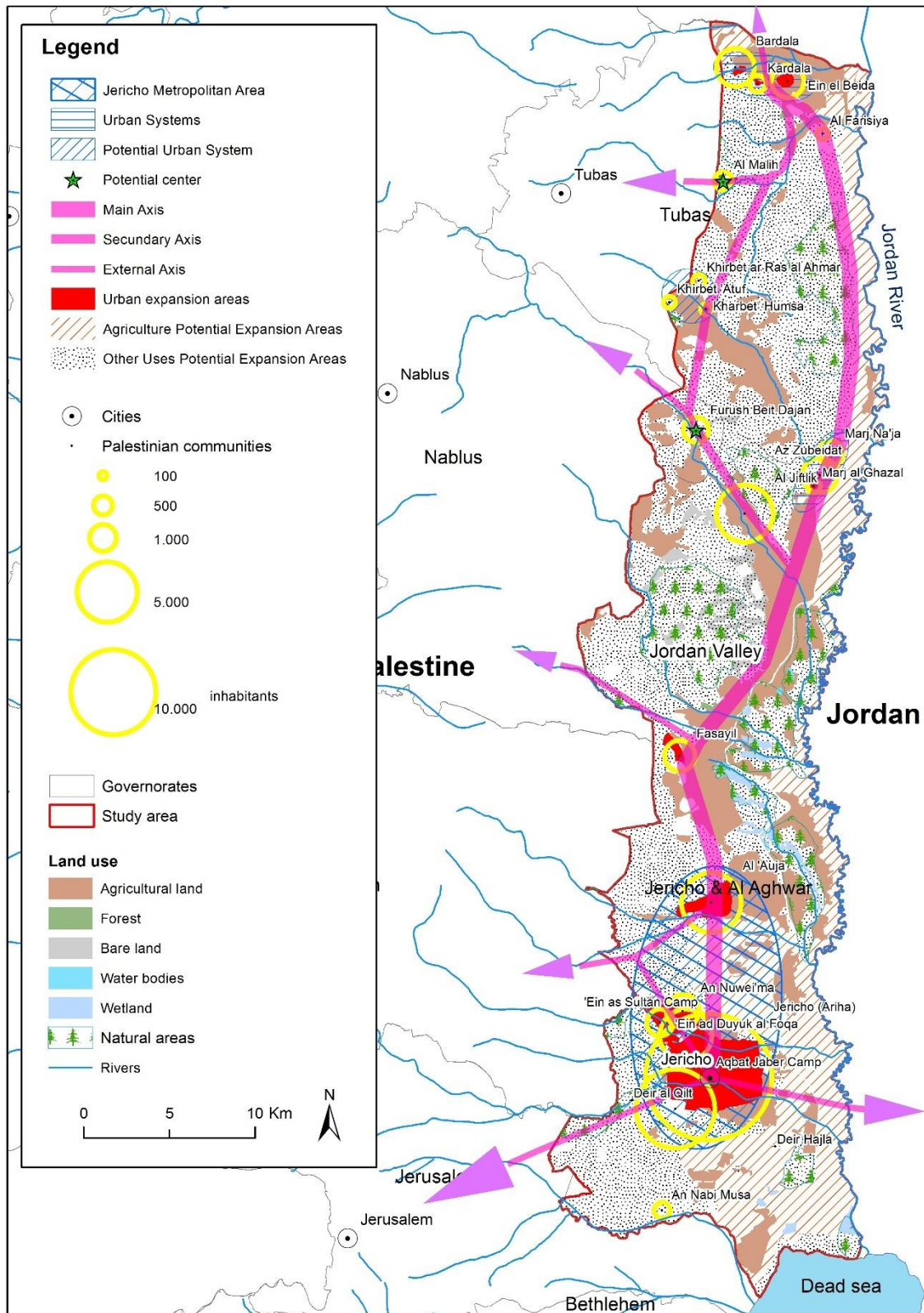
We suggest using the covert planning methods to develop plans in Jordan valley, which will be effective and helpful to resist the Israeli obstacles in the planning process in the Jordan valley.

From the proposals made in the previous section, we consider it important to try to define a global strategy for planning in this territory. Taking into consideration the measures that have a direct impact on the territory and that have a territorial expression, we decided to develop a schematic vision of planning for the Jordan Valley region, supported by the following assumptions:

- To promote a sustainable and adequately planned territory;
- To promote a competitive, integrated and open economy;
- To promote territorial and populational development and well-being;
- To increase citizenship, equality and freedom for all Palestinian society.

To achieve these goals is fundamental to promote the implementation of the different measures referred to previously, taking into consideration the design of a strategic tool to define and spatialize the intervention in the territory.

The Jordan Valley region constitutes an area with great potential for the expansion of agriculture, in the regional context. The existence of water sources is strategic, despite the arid climate and the significant salinity of the soils (as mentioned in Chapter 2), mainly in the southern part of the Jordan Valley. Considering these aspects are of great relevance to the agricultural sector in the economic development of Jordan Valley (and of Palestine). Considering the existence of an expanse of plain areas in the Jordan river's right bank (from the north of the Jordan Valley till the Dead Sea) is proposed the use and reclamation of these areas to the promotion of agricultural activities (Fig. 6-1).



**Fig. 6-1: Proposal for land zoning in the Jordan Valley region.**

The mountainous areas of the eastern slopes of the Palestinian mountains, characterized by steep slopes, are less suitable for agriculture, but it would be important to promote their use with other

activities, such as afforestation (which is almost insignificant in the Jordan Valley) or the promotion of conservation strategies (promotion of environmental protection measures, definition of natural conservation areas for specific habitats preservation and also for environmental education).

The economic development of the Jordan Valley has to have, as a driving force, natural and human resources. As was referred to previously the agricultural sector can be a key factor for economic development, but the industry (based on the agricultural sector) and tourism can also help promote the economic development of this region.

Linked with these factors, it is important to take into consideration the promotion of integrated and qualified urban and territorial systems, based on diversity and complementarity. These urban systems (or cities) concentrate the majority of qualified human resources and are the basis for the organization of the territory and for its development.

In the study area, we can identify a major regional urban area, which integrates the city of Jericho. Considering its future evolution and its proximity to Al'Auja, it can be considered and promoted as a metropolitan area, representing a regional centrality in the Jordan Valley.

In the northern and central parts of the Jordan Valley, some villages present a population dimension and proximity that can be explored, in terms of synergies, in order to define new centralities and promote secondary urban systems that may complement the Jericho Metropolitan Area (Bardala, Kardala and Ein el Beida, in the north, and Marj Na'ja, Az Zubeidat and Marj al Ghazal, in the centre).

Also, the mobility and connectivity infrastructures are very important for economic development, promoting the accessibility and mobility of people and goods, allowing the articulation of all the territory and promoting its position in the regional context. In this context, the definition of the main axes of connectivity is fundamental and these have been defined in Fig. 6-1. We should stress the main axis that connects the northern urban system of Kardala-Bardala with the Jericho Metropolitan Area, which is fundamental not only for the mobility in the Jordan Valley but especially for the connectivity with the other regions of Palestine and with other countries.

## **Conclusions**

The study of the present situation of the Jordan Valley region planning has been the main objective of this thesis. To pursue this goal, we defined some specific objectives: to evaluate the natural and human characteristics and potentialities of the Jordan Valley region; analyze and understand the legal structure and the development of planning in the middle east region and in Palestine; identify the main constraints for planning in the Jordan Valley region; and analyze the perception of experts and political actors about planning in the Jordan Valley region. The accomplishment of these specific objectives would allow us to define a set of proposals that we consider fundamental to promote adequate development for the Jordan Valley region and that may contribute to the definition of an integrated regional plan.

After identifying the research problem, the objectives, the research methodologies, review of some previous studies, and by using the research techniques and methodologies, the human and geographical characteristics of the Jordan Valley region were investigated. Following this, the land vegetation and usage in the region were also investigated. Through these investigations, the capabilities that distinguish the Jordan Valley region were identified because they are considered extremely significant and necessary in the planning and development process for the region at all the planning stages and preparations until their implementation on the ground. Those characteristics were reviewed in the second and third chapters of the thesis. It was concluded that the Jordan Valley region is characterized by significant natural potentials such as the availability of water resources, fertile soil, and a warm climate in winter. In addition, it includes numerous archaeological and tourist attractions. The Jordan Valley region is considered a significant area for population expansion, particularly for the neighbouring areas that have high population density. Furthermore, it contains vast areas that can be utilized for planning to construct modern and essential housing complexes.

Through studying the current political situation in the Jordan Valley region, it is concluded that the most significant problem that the population faces in the region is the daily violations that strain the Palestinians and increase their burdens due to the Israeli occupation policies, its control over the majority of the land in the Jordan Valley, the water resources, and the entrances of the Jordan Valley region, leading to hindering the movements of people and goods. The situation is made worse due to many reasons such as the military training of the Israeli occupation army. The confiscation of land on the pretext of erecting natural reservations, and then transferring the use of the land to the locations

of the Israeli colonial settlements for the purpose of putting restrictions on the Palestinian citizens, who are the owners of land. Then to transfer the Palestinians from the region in order to evacuate the area to continue their colonization. On the other hand, the Israeli occupation policies are considered an obstacle to planning to develop the Jordan Valley region by preventing the Palestinians from building and expanding in the region where they live in extremely hard conditions in respect of housing since the houses are not suitable for living in and the shortage of the simplest services in the communities which lack water, electricity and sewage networks. In contrast, the Israeli occupation keeps on developing the Israeli colonial settlements by offering numerous facilities and incentives for the Jewish settlers so that they may settle in the region.

As a result of all the above mentioned policies, the Jordan Valley region is suffering from low population density which is also considered an obstacle to the development process of the Jordan Valley region. Therefore, it is essential to provide support, incentives, and facilities that encourage and attract the Palestinian citizens to come and live in this region in order to confront the Israeli occupation policies.

Furthermore, the laws and regulations of urban and regional planning that are enforced in Palestine are, in fact, old-fashioned and out of date regulations that were inherited from the colonization period that does not serve the best interests of the Palestinians regarding the facilitation of developing marginalized regions such as the Jordan Valley region. In this respect, it is essential to make attempts to propose laws and regulations that guarantee the good sensible planning of land according to the various development fields, in addition to guaranteeing the implementation of such plans on the ground in order to develop the planning process in Palestine on all levels, particularly the regional level which suffers from weaknesses.

Through reviewing the potential of the Jordan Valley region and its strategic reservoir of various development sectors, we have suggested, in the fifth chapter of the present study, a number of necessary projects which could be developed and up-graded, in addition to the construction of infrastructures that pave the way for such projects and create an attractive atmosphere for investors in order to construct development projects that contribute to strengthening the local economy of the region and increase the ratio of local income for the citizens.

It is essential to make attempts to find the finance to implement the projects that require concerted efforts and work in order to achieve a developed region. In order to attract financiers to invest in the



region, it is essential to create an economic environment characterized by peace, safety, and security. This can be achieved by making attempts to terminate the Israeli occupation of the region and evacuate all the Israeli colonial settlements. The Palestinian government must take over the complete civil and security control of the lands and natural resources that are located in the region. Here all efforts must be concentrated including all the Palestinian, regional, and international efforts which must be employed in order to terminate the Israeli occupation immediately and permanently.

At the same time, hard work must be put in to achieve a comprehensive and integrated urban planning system for the Jordan Valley region. It is necessary to offer a number of initiatives related to the forms of co-operation and co-ordination, participate in joint programmes and projects between the local government councils and the neighbouring towns and regions, in addition to the forms of co-operation with the various types of civil community organizations and the academic, scientific and vocational communities in the fields of urban development and planning. On the other hand, planning in the Jordan Valley region must take into consideration the implementation of the concepts of sectoral planning, sustainable development, environmental preservation, societal planning, public participation, creative thinking, research and planning, and building of basic capacities and skills.

Furthermore, it is important to start a programme of training to organize periodic workshops that include the Jordan Valley region in order to develop and build the self-capabilities of the teams that work in planning at all the institutions so that they will be capable of good planning and implementation of such projects. This could be achieved in partnership with the various sectors, the local entities and ministries under the umbrella of the governorate or the local government boards that lead this job and take the principal supervision of implementing the projects based on the tasks that are assigned to them according to the related presidential decrees. The implementation of the projects that are related to the region require extensive efforts from all the sectors and institutions in order to create a co-ordinated, comprehensive and integrated regional development that may benefit the whole region, create a fertile investment environment, and lay solid foundations for strong, integrated communities that enable the Palestinian citizens to keep possession of their land which is threatened with confiscation.

It is also necessary to make attempts to apply the principle of decentralization and public participation in the management and implementation of project plans. That is to say, moving from the level of central management to the level of local authorities and the affiliated quarters in order to achieve all the requirements for sustainable development. The principle of decentralization assigns a

part of the responsibilities and powers from the central to the local administration. It also provides opportunities to work at the local level, contributes to increasing the incomes of individuals and households, develop and improve the level of the services provided, and provide better opportunities for the participation of citizens in making the decisions that affect them, their families and local communities in the region.

On the other hand, it is also essential to spread environmental awareness and the optimal use of natural resources among the community sectors in various methods, conserve all the types and forms of heritage in general and the archaeological treasures in particular. The development projects that target the service of the community and the productive societal projects should also be supported.

Establishing micro-commercial projects represents an instrument to generate additional resources for income since the micro projects are more flexible and adaptable to the rapid changes than large companies. On an individual level, the launching of a commercial business sometimes constitutes the sole solution for certain community sectors such as women, young people, and retired employees who were previously employed in the public sector. At the early stages, in particular, the owners of the micro commercial projects usually lack the necessary information and instruments to manage their businesses. They also need up-dated information about the market. Therefore, it is necessary to establish the proper framework that provides administrative support, advice, and tools for those who express the desire to take risks in launching business initiatives.

Finally, we would like to emphasize the fact that the development of regional planning based on developing various sectors in Palestine requires establishing a strategy for the regional sectoral planning which, in turn, requires an awareness of the current situation, the present and expected requirements for the regional development, the identification of the internal and external influences with, at the same time, the determination of the future vision clearly putting forward transitional objectives and long-term expectations of that vision. In addition, it is important to open the door for the participation of stakeholders in the urban projects including investors, business persons, various social sectors, officers of the municipal and health administrations, public facilities, protection of the environment, public health, security, social services, education, and so on.

The strategic regional and urban planning require following up during implementation because it is based on a future vision. In addition, planning implementation including the strategies to develop the various sectors, requires preciseness of supervising and monitoring progress step by step in order to

modify the negative aspects in the plans or changing them for the better. Therefore, the administration of the region or the city should adopt the technique of strategic administration in managing the whole region's administration including transport, maintenance, sewage networks, water, energy, the women and youth sectors, the sectors of agriculture and tourism, in addition to the supervision and control of implementing the strategic plans.

In the fifth chapter, the study recommends several projects in order to develop the various sectors including the economic sectors, such as agriculture, tourism and leisure; social sectors, such as, youth, women, health, housing and education; and the infrastructure sectors such as, electricity and telecommunications, water, sewage, roads and public transport. The study also recommended the use of covert planning because it is very effective and beneficial in making significant developments in the region in the shadow of the region's circumstances related to the Israeli occupation policies which hinder the preparation of formal plans and their implementation on the ground. It is also recommended to adopt short and medium range planning in the Jordan Valley region because it is efficient and much better than the long range planning due to the present political situation that the Jordan Valley region suffers from Israeli occupation policies and confiscation of land and natural resources. This is also useful for the purpose of attempting to protect the remainder of the land and natural resources from the dangers of the Israeli occupation policies, and at the same time, to try to confront the Israeli occupation and liberate all the lands of the Jordan Valley region.



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## **Appendix**

### **A. Delphi questionnaire: Round 1**

**Safaa Hamada**, PhD researcher in the Department of Geography (Regional and Urban Planning) at the University of Minho, Portugal.

Supervisor: **Antonio Vieira**, University of Minho, Portugal.

Co-supervisor: **Ahmed Ghodieh**, An-Najah National University, Palestine.

The Jordan Valley Region is considered one of the Palestinian regions that suffers most from problems, the most prominent and important of which is the current political situation. Most of the area (about 95% of the Palestinian land in the region) is still under Israeli control. In addition, the area is suffering from random, bad urban organization, especially in the shadow of the lack of structural and regional plans that determines development and use of the land in most of the demographic concentrations in the Jordan Valley. Furthermore, the area suffers from severe decrease in population density. The region is also suffering from non-exploitation of its natural, physical and human resources for its development. Furthermore, studying the potential for urban development of the Palestinian region of the Jordan Valley has not received sufficient attention from researchers. Therefore, the researcher found it appropriate to carry out this study in order to discover the possibilities of carrying out urban development in the Jordan Valley region in parallel with the urban axes that are available in other Palestinian regions so that it may constitute a geographic pilot study in urban and regional planning that may help decision-makers and other researchers in their future studies.

Also, this research aims to study the current urban reality in the Palestinian region of the Jordan Valley, determining the potential for development in it, so that it may become a developed region from an urban perspective, like other Palestinian regions. It should be noted that this region is marginalized and overlooked in the urban development plans due to the Israeli occupation of the region since 1948.

In the context of this PhD research, we are evaluating the status of planning in the Jordan Valley region and identifying the existing potential for the promotion of an adequate and sustainable regional and urban plan for the study area. Please, read carefully and answer the following questions.

1. Do you consider that there is an absence of planning in the Jordan valley region? YES/NO

Comment:

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2. Do you consider that there is adequate planning in the Jordan Valley region? YES/NO

Comment:

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3. What factors most affect the development of planning in the Jordan valley region and in the Palestinian territories?

Comment:

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4. Which solution do you believe would be fundamental for the resolution of the planning problems, in the short, medium and long term?

Short

term: \_\_\_\_\_

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Medium term:

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Long

term: \_\_\_\_\_

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5. Which constraints imposed by the Israeli authorities do you consider the worst for planning development?

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6. If your answer to question 1 is positive, can you identify which sectors of activity you consider have more problems? (Please, order by the most influential problem 1, 2, 3, 4...)

<b>Sectors</b>	<b>Number</b>
<b>Services and infrastructure sector</b>	
<b>Public service sector</b>	
<b>Education sector</b>	
<b>Health sector</b>	
<b>Production sector</b>	

<b>Services and infrastructure sector</b>	<b>Number</b>
<b>Electricity</b>	
<b>Water network</b>	
<b>Telecommunications</b>	
<b>Roads</b>	
<b>Sewage</b>	

<b>Public service sector</b>	<b>Number</b>
<b>Markets</b>	
<b>Storage</b>	
<b>Public transportations</b>	
<b>Tourism and leisure</b>	

<b>Natural reserves</b>	
<b>Housing</b>	

7. In order to develop an urban axis in the Jordan valley, planners must be aware of the needs for development in each sector of activity. According to your experience in planning, what are the major gaps we can identify in order to develop urban strategic plans for the Jordan valley, taking into consideration the different sectors of activity:

7.1. Services and infrastructure sector:

7.1.1 Electricity:

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7.1.2 Water network:

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7.1.3 Telecommunications:

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7.1.4 Roads:

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7.1.5 Sewage:

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7.1.6 Others:

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7.2. Public service sector:

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7.2.1. Markets:

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7.2.2. Storage:

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7.2.3. Public transportations:

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---

7.2.4. Housing:

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7.2.5. Others:

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7.3. Education sector:

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7.4. Health sector:

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7.5. Production sector:

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7.6. Tourism and leisure:

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7.7. Natural reserves:

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7.8. Other needs:

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8. The urban and regional planning in the Jordan valley region is being affected by a number of problems, both in terms of plan preparation and implementation. Please, order by the most influential problem 1, 2, 3, 4...

<b>Plans preparation problems</b>	<b>Number</b>
<b>The absence or inadequacy of regulations and laws</b>	
<b>Lack of Public participation</b>	
<b>Lack of coordination and cooperation between institutions</b>	
<b>Current political situation</b>	
<b>Lack of financial resources</b>	
<b>Lack of necessary information and data (maps, aerial photography, statistics)</b>	

Comment:

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<b>Plans implementation problems</b>	<b>Number</b>
<b>Colonial settlements</b>	
<b>Close military areas</b>	
<b>Fire zones</b>	
<b>Lack of water resources</b>	
<b>Regional roads</b>	
<b>Lack of financial resources</b>	
<b>Lack of population density</b>	

Comment:

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8.1.Suggestions to overcome the problems of planning in the Jordan Valley region:

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9. Do you think that the agricultural sector can be considered as a developed sector? YES/NO

Comment:

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9.1.Do you think that the agricultural sector still needs to develop in the Jordan valley region?

YES/NO

Comment:

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9.2. The development of agricultural sectors in the Jordan valley region is being affected by a number of obstacles. Please, order by the most influential factors 1, 2, 3, 4...

<b>Urban expansion on the agricultural lands</b>	
<b>Fragmentation of land ownership due to inheritance system of Lands</b>	
<b>Israeli occupation controls the lands and water resources</b>	
<b>The lack of agricultural services and non-use of agricultural mechanization</b>	
<b>Food industries are undeveloped</b>	
<b>The Israeli occupation control the crossings that resulting in a lack of a marketing the agricultural product.</b>	

Comment:

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9.3. Do you think there are laws and legislation to protect agricultural areas? YES/NO.

Comment:

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9.4. Is agricultural land defined in master plans? YES/NO.

Comment:

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9.5. Can you give some suggestions as to how we can develop the agricultural sector in the Jordan valley?

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10. Do you think the establishment of a project for renewable energy (solar energy) in the region of the Jordan valley will promote its development? YES/NO

Comment:

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11. The tourism sector in the region of the Jordan Valley suffers from various problems. Please, rearrange the following problems according to their impact on tourism in the region, starting from the most influential 1, 2, 3, 4...

<b>Weak tourism services in general and accommodation in particular</b>	
<b>Limited areas that are available of tourism investment</b>	
<b>The Israeli colonial settlements that control vast areas of biodiversity</b>	
<b>Israeli control of archaeological sites</b>	
<b>Israeli military checkpoints and closures</b>	
<b>Closed military and Israeli fire zoon areas</b>	
<b>Poor financial sources</b>	

11.1. Could you suggest appropriate projects and requirements to develop tourism in the region of the Jordan Valley?

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12. Do you consider that there is an absence of care to promote the empowerment of women in the planning process in the Jordan Valley region? YES/NO

Comment:

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12.1. The development of women in the Jordan Valley region is being affected by a number of obstacles. Please, order by the most influential factors 1, 2, 3, 4...

<b>Harassment and limitations arising from the cultural heritage of the community</b>	
<b>The measures of the Israeli occupation and their impacts on women</b>	
<b>Limited support for the women sector and lack of good exploitation of the available opportunities</b>	
<b>The absence of women's and children's recreation facilities</b>	
<b>Inefficient training programs and empowerment for women in line with human development</b>	
<b>Lack of women's participation in internal and external conferences</b>	
<b>The lack of helping environment for working women (qualified nurseries)</b>	

12.2. Do you think that there are sufficient programmes for training and empowering women in the region of the Jordan Valley? YES/NO

12.2.1. If your response is YES, do you think that such programmes are effective and have positive impacts on the role of women in the community?

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12.2.2. If your response is NO, what are the reasons lacking in such programmes?

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12.3. Could you recommend how the women's sector can be developed the region of the Jordan Valley?

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13. The development of the youth sector in Jordan valley region is being affected by a number of obstacles. Please, order by the most influential factors 1, 2, 3, 4...

<b>Severe shortage of youth establishments, and weak potentials of the available establishments</b>	
<b>Lack of specialized youth centers</b>	
<b>Weakness of civil establishments that look after the young people</b>	
<b>Lack of arts and cultural facilities in the governorate</b>	
<b>Lack of an office of the Supreme Board of Sports &amp; Youth</b>	
<b>Weak potentials of the government ministries that take care of special programs for the young people</b>	
<b>Societal culture that delimit the role of the youth in the community and change</b>	

13.1. Do you believe that there is enough care of the youth sector in the region of the Jordan Valley by the development plans that are put forward to develop the region?

YES/NO. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

13.2. Could you recommend how the youth sector can be exploited in order to develop the region of the Jordan Valley?

\_\_\_\_\_  
 \_\_\_\_\_

14. Do you think that planning for joint development projects and plans in some sectors between Palestine and Jordan may be effective and vital to develop the region of the Jordan Valley?

YES/NO

14.1. If your response is YES, could you suggest what sectors or plans may be joint between Palestine and Jordan?

\_\_\_\_\_  
 \_\_\_\_\_

14.2. If your response is NO, could you give your reasons for this?

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15. Do you think that there is a development plan for local communities in the Jordan Valley region, because the majority of the territory is under the control of the Israeli occupation (area C)?

YES/NO

If your answer YES, please answer Q16.1, Q16.2 and Q16.3. If your answer is NO, please answer Q16.4

15.1. Could you write please for which communities in the Jordan valley and mention if these plans implement or not yet?

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15.2. Why these plans are not implemented yet?

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15.3. If these plans are implemented the result has good effect on the land? If the answer NO please give your reasons.

YES/NO

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15.4. The reasons for the absence of a development plan?

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16. Suggest how we can overcome the lack of planning to organize and develop these communities?



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17. Do you think there is popular participation in the planning process for the Jordan valley?

YES/NO

If you answer no, please say why?

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18. Which of the following planning methods are more prevalent in the Jordan valley region?

(Please, order by the 1, 2, 3...)

<b>Formal planning</b>	
<b>Unformal planning</b>	
<b>Covert planning</b>	

19. Do you think informal planning is effective and helpful for planning process in the Jordan valley?

YES/NO

Why? \_\_\_\_\_  
\_\_\_\_\_

20. Do you think covert planning is effective and helpful for the planning process in the Jordan valley?

YES/NO

Why? \_\_\_\_\_  
\_\_\_\_\_

21. Which strategies do you think should be implemented for adequate and sustainable planning in the Jordan Valley?

Short

term:

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Medium term:

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Long term:

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22. Which measures would be fundamental for the Jordan Valley development, in terms of the planning process?

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23. Which communities in the Jordan Valley region do you consider to present the most needs?

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Thank you very much for your co-operation.

## B. Delphi questionnaire: Round 2

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Supervisor: **Antonio Vieira**, University of Minho, Portugal

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Please select the number below that best represents how you feel about urban and regional planning in Jordan valley:

		<b>Strongly Agree</b>	<b>Agree</b>	<b>Undecided</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<b>1</b>	There is public participation in the planning process in the Jordan valley					
<b>2</b>	Informal planning is effective and helpful for planning process in the Jordan valley to resist the Israeli polices					
<b>3</b>	The covert planning is considered a new method that will be effective and helpful to resist the Israeli obstacles in planning process in the Jordan valley.					
<b>4</b>	The fundamental solutions for the resolution of the planning problem in short term are:					
<b>4.1</b>	Prepare a sustainable plan for local communities in the Jordan valley to organize the land use activates.					
<b>4.2</b>	Better link between the different planning hierarchy, the availability					

	of economic funds and resources to be allocated.					
<b>5</b>	The fundamental solutions for the resolution of the planning problem in medium term are:					
<b>5.1</b>	Resolution of the political problem and end of the Israeli occupation.					
<b>5.2</b>	linking the regional plans to the national vision, Activation of the Local and District Planning Committees in the Jordan valley, especially in Area C.					
<b>5.3</b>	Prepare sustainable regional plans for the regions with different scenarios under political instability.					
<b>6</b>	The fundamental solutions for the resolution of the planning problem in long term are:					
<b>6.1</b>	Full transfer of planning power to the Palestinian side, and extend the management of the Palestinian competent authorities in Area C to deliver all the basic services.					
<b>6.2</b>	Economic and political development, connection with all regions having more water sources.					
<b>7</b>	To overcome the problems of planning in the Jordan Valley region:					
<b>7.1</b>	Solve and improve the political problem.					
<b>7.2</b>	Develop spatial planning and management of resources.					
<b>7.3</b>	link the spatial planning interventions in a more coherent way with the national level (National					

	Policy Agenda (2017-2022).					
<b>7.4</b>	Prepare master plans for all Palestinian localities and regional development with different scenarios.					
<b>8</b>	The most influent factors affecting the development of planning in the Jordan valley region and in Palestinian territories are political situation and low population density.					

The major gaps identified by specialists in the first round for each sector are listed and ranked by a number of references. If you disagree, propose a different ranking.

<b>Sectors</b>	<b>Rank</b>	<b>Reordering</b>
<b>Education sector</b>	1	
<b>Health sector</b>	2	
<b>Services and infrastructure sector</b>	3	
<b>Public service sector</b>	4	
<b>Production sector</b>	5	

<b>Services and infrastructure sector</b>	<b>Rank</b>	<b>Reordering</b>
<b>Sewage</b>	1	
<b>Water network</b>	2	
<b>Roads</b>	3	
<b>Electricity</b>	4	

<b>Telecommunications</b>	5	
<b>Public service sector</b>	<b>Rank</b>	<b>Reordering</b>
<b>Housing</b>	1	
<b>Public transportations</b>	2	
<b>Storage</b>	3	
<b>Tourism and leisure</b>	4	
<b>Markets</b>	5	
<b>Natural reserves</b>	6	

The problems related to plan preparation and implementation were ranked, by the 1st round specialists, and are listed by order in the following tables.

Do you agree with the rankings? Yes\_\_\_

If you disagree with any ranking, please indicate your ranking proposal in the tables.

<b>Plans preparation problems</b>	<b>Rank</b>	<b>Reordering</b>
<b>Current political situation</b>	1	
<b>Lack of financial resources</b>	2	
<b>Lack of coordination and cooperation between institutions</b>	3	
<b>Lack of Public participation.</b>	4	
<b>Lack of necessary information and data (maps, aerial photography, statistics)</b>	5	
<b>The absence or inadequacy of regulations and laws</b>	6	

<b>Plans implementation problems</b>	<b>Rank</b>	<b>Reordering</b>
<b>Colonial settlements</b>	1	

<b>Close military areas</b>	2	
<b>Fire zones</b>	3	
<b>Lack of water resources</b>	4	
<b>Regional roads</b>	5	
<b>Lack of financial resources</b>	6	
<b>Lack of population density</b>	7	

The obstacles affecting the development of the agricultural sector were ranked, by the 1st round specialists, and are listed by order in the following tables.

Do you agree with the ranking? YES \_\_\_\_\_

If you disagree with any ranking, please indicate your ranking proposal in the tables.

	<b>Rank</b>	<b>Reordering</b>
<b>Israeli occupation controls the lands and water resources</b>	1	
<b>The Israeli occupation control the crossings that resulting in a lack of a marketing the agricultural products</b>	2	
<b>The lack of agricultural services and non-use of agricultural mechanization</b>	3	
<b>Food industries are undeveloped</b>	4	
<b>Fragmentation of land ownership due to inheritance system of Lands</b>	5	
<b>Urban expansion on the agricultural lands</b>	6	

The obstacles affecting the development of the tourism sector were ranked, by the 1st round specialists, and are listed by order in the following tables.

Do you agree with the ranking? YES\_\_\_\_\_

If you disagree with any ranking, please indicate your ranking proposal in the tables.

	<b>Rank</b>	<b>Reordering</b>
<b>Weak tourism services in general and accommodation in particular</b>	1	
<b>Israeli control of archaeological sites</b>	2	
<b>The Israeli colonial settlements that control vast areas of biodiversity</b>	3	
<b>Poor financial sources</b>	4	
<b>Israeli military checkpoints and closures</b>	5	
<b>Closed military and Israeli fire zoon areas</b>	6	
<b>Limited areas that are available of tourism investment</b>	7	

The obstacles affecting the development of the women's sector were ranked, by the 1st round specialists, and are listed by order in the following tables.

Do you agree with the ranking? YES\_\_\_\_\_

If you disagree with any ranking, please indicate your ranking proposal in the tables.

	<b>Rank</b>	<b>Reordering</b>
<b>Harassment and limitations arising from the cultural heritage of the community</b>	1	
<b>Limited support for the women sector and lack of good exploitation of the available opportunities</b>	2	



<b>The lack of helping environment for working women (qualified nurseries)</b>	3	
<b>The absence of women and children's recreation facilities</b>	4	
<b>Inefficient training programs and empowerment for women in line with human development</b>	5	
<b>Lack of women's participation in internal and external conferences</b>	6	
<b>The measures of the Israeli occupation and their impacts on women</b>	7	

The obstacles affecting the development of the youth sector were ranked, by the 1st round specialists, and are listed by order in the following tables.

Do you agree with the ranking? YES \_\_\_\_\_

If you disagree with any ranking, please indicate your ranking proposal in the tables.

	<b>Rank</b>	<b>Reordering</b>
<b>Weakness of civil establishments that look after the young people</b>	1	
<b>Severe shortage of youth establishments, and weak potentials of the available establishments</b>	2	
<b>Lack of specialized youth centers</b>	3	
<b>Weak potentials of the government ministries that take care of special programs for the young people</b>	4	
<b>Lack of arts and cultural facilities in the governorate</b>	5	

<b>Societal culture that delimit the role of the youth in the community and change</b>	6	
<b>Lack of an office of the Supreme Board of Sports &amp; Youth</b>	7	

The planning methods more prevalent in the Jordan valley region were ranked, by the 1st round specialists, and are listed by order in the following tables.

Do you agree with the ranking? YES\_\_\_\_\_

If you disagree with any ranking, please indicate your ranking proposal in the tables.

	<b>Rank</b>	<b>Reordering</b>
<b>Formal planning</b>	1	
<b>Informal planning</b>	2	
<b>Covert planning</b>	3	

Thank you very much for your co-operation.