

Land Suitability for Reclamation and Development in the West Bank

Prepared by
Land Research Center – LRC



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Ministry of Agriculture
MOA



*“The most critical need is not for more technical solutions
but for socio-political ones”*

April 2010

The Center at a glance:

The Land Research Center (LRC) was established in Jerusalem in 1986 as a branch of the Arab Studies Society headed by the late Mr. Faisel Husaini. LRC is an independent, non-governmental, non-profit Palestinian organization whose activities cover areas in the West Bank (including East Jerusalem) and Gaza Strip. Donations and contributions given by individuals or organizations and joint projects with international and local organizations and institutions fund the activities of the Center.

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Mission:

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- Developing the natural and economical resources.
- Developing the local policies.
- Organizing farmers and public awareness.



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Foreword

The land for Palestinians has a different concept and perception from any other nation or human being on our sphere. The trauma of being expelled from their homeland is imprinted on the psyche of every Palestinian, on those that witnessed it as well as those that did not. The Israeli Occupation threatened their nationality and identity. In addition to that, this occupation led to the loss and degradation of the Palestinian agricultural land, livelihood and destroy their homes. In order to survive and protect their land, Palestinians were forced to defend themselves and fighting on many fronts. One of the fronts is the reclamation and rehabilitation of underutilized land in parts of Palestine, the West Bank and Gaza Strip.

The Land Research Center team in cooperation with the Palestinian Ministry of Agriculture and the United Nations Development Program – Land Development Unit in Jerusalem, found that it is of paramount importance to direct the land reclamation activities in the Occupied Palestinian Territories in a way that optimize the efficiency and effectiveness of its use. This stems from the need to rationalize this process at the policy and decision makers front in addition to technical and engineering front. The rationalization of this process has to be informative and based on thorough knowledge of the physical features of the Palestinian land in addition to the socio-economic dimensions affecting the appropriate utilization of this land. This idea is a culmination of the collective efforts of Palestinian NGOs working in the field of land development.

This study has been born as a participatory reflection within the land development context. It displays the priorities for land reclamation at the macro and micro scales. It addressed answers to very important questions such as: What are the most suitable sites to be reclaimed in each governorate? What is the significance of addressing land reclamation within land spots that are classified as agricultural? What are the most suitable sites to be rehabilitated as forests or rangelands in each governorate? What are the governorates that indicate urgent and desperate needs for land reclamation based on social, economic and political considerations?

The authors of the study tried to give answers to the above-mentioned questions in a language that would be understood by both the policy and decision makers and professionals in the fields of land development and agriculture. Despite this fact, a lot of work needs to be done at the technical and policy making fronts. For example, land use planning is one of the desperate needs for the development and protection of Palestinian land from the internal misuse and from the outsiders appetite to annex more of the remaining of this land.

I hope that future generations would consider this Study as a sincere effort to optimize the productivity of Palestinian land and a step toward protecting this natural resource for their prosperity and sustainable development.

**Jamal Talab, General Director
Land Research Center
April, 2010**

Abbreviations

BG	Bethlehem Governorate
CORINE	Coordination of Information on the Environment - Europe
DEM	Digital Elevation Model
EU	European Union
GDP	Gross Domestic Product
GIS	Geographic Information System
GNI	Gross National Income
HG	Hebron Governorate
JenG	Jenin Governorate
JerG	Jerusalem Governorate
JeriG	Jericho Governorate
LRC	Land Research Center
MOA	Ministry of Agriculture
NA	Non-agricultural Land
NG	Nablus Governorate
NGO	Non-Governmental Organization
oPt	Occupied Palestinian Territories
PCBS	Palestinian Central Bureau of Statistics
PLO	Palestinian Liberation Organization
PNA	Palestinian National Authority
QG	Qalqilya Governorate
RG	Ramallah Governorate
SG	Salfit Governorate
SME	Small and Medium Enterprises
TubG	Tubas Governorate
TulG	Tulkarm Governorate
UNDP	United Nations Development Program
UNRWA	United Nations Relief and Works Agency
WB	West Bank
WFP	World Food Program
WHO	World Health Organization



Executive Summary

The occupied Palestinian territories (oPt) which are composed of the West Bank and Gaza Strip have an area of about 6,209 km². It is populated by about 3,825,512 people of whom 2,385,180 are in the West Bank and 1,440,332 are in Gaza Strip. The average family size in the oPt is 5.8 with 5.5 and 6.5 in the West Bank and Gaza Strip respectively.

The deterioration of the economic situation in the oPt between 1997-2007 is reflected in the drop of 2.9% in the Gross Domestic Product (GDP) per capita. The Gross National Income (GNI) per capita in 2007 is 1230 US\$. The unemployment in the oPt is reported to be 31.5% with 23.2% and 49.1% in the West Bank and Gaza Strip respectively.

The percentage of Palestinians below the poverty line according to real consumption mode is 34.5. It is 23.6% and 55.7% in the West Bank and Gaza Strip respectively. Furthermore, Palestinians with income below the poverty line is 57.3% with 47.2% and 76.9% in the West Bank and Gaza Strip respectively.

Related to food security, households with income below 1.9 US\$ per capita per day are considered food insecure in the oPt. It is reported that 38% of the Palestinian households are considered food insecure, 25% in the West Bank and 56% in Gaza Strip. Also, 14% of Palestinian households are considered vulnerable to be food insecure of whom 16% in the West Bank and 11% in Gaza Strip.

The contribution of the agricultural sector in the West Bank and Gaza Strip was approximately 5.6% of the GDP in 2007¹. This contribution is about one fifth the contribution of this sector in the seventies; therefore, it is of great importance to optimize the utilization of the natural resources in a sustainable way by responding to the human and natural induced factors (i.e. land degradation, poverty, inappropriate practices, etc.) that impede the agricultural productivity. Land Reclamation is one of the most important responses that tackle the negative impacts of land degradation. Many land reclamation projects in the form of de-rocking or hill farming has been taking place since early 1990s. Non-agricultural land in the WB has a high proportion of rocks that has both limited the planted area and dictated the techniques of cultivation. This has been one of the most difficult constraints facing small farmers. Therefore, the agricultural development strategy of the MOA, UNDP-Land Development Unit and Palestinian NGOs embraced large-scale de-rocking as a mechanism for expanding cultivable land and increasing agricultural productivity. These bodies were the main stakeholders in the implementation of these projects. As a result, and for the purpose of promoting this process, UNDP-Land Development Unit, Palestinian Ministry of Agriculture and LRC took the initiative of conducting this milestone study entitled: Land Suitability for Reclamation and Development in the West Bank.

The final goal of this study is to enhance the mechanism of decision making with relevance to the development of land not utilized for agricultural use in the WB through providing the required data and information to the decision makers and technicians to reach the most proper decisions for the most appropriate utilization of this land.

The main specific objectives of this Study would be summarized as follow:

- Preparing readable and friendly using data and information to serve as scientific reference for decision makers and technicians at the governmental and non-governmental sector.
- Preparing classification maps for the non-agricultural areas according to its suitability for development and reclamation.
- Being acquainted with the most influential socioeconomic and political factors that have an effect on land reclamation process.
- Having a general perception about the investment volume in land development with all its needs and tools.

1. Palestinian Central Bureau of Statistics, 2009 Press Release, Preliminary Estimation of Quarterly National Accounts (Second Quarter 2009). Ramallah - Palestine.

The methodology for conducting this Study is composed of the following:

- Literature review.
- Ancillary tools and materials preparation represented in aerial photographs, topographic maps, thematic maps, GIS software, etc.
- Identification of study area based on specified criteria.
- Socioeconomic status investigation of communities adjacent to the identified areas.
- Mapping unit delineation, based on topography, which are composed of hillcrests, slopes, footslopes and drainage depressions.
- Terrain characteristics identification of each mapping unit in terms of steepness, aspect, rockoutcrop and climate.
- Limiting factors matrix construction: since many factors determine the land suitability for reclamation, a matrix for these factors was constructed by giving a weight for each factor.
- Identifying land suitable for reclamation, forestry and rangeland based on physical features characterization and on socio-economic status of surrounding communities.
- Application of the aforementioned analysis at the Governorate level.
- Preparation of the land suitability maps for reclamation, forests and rangelands uses.

The main conclusions would be summarized as follow:

- The area for the land suitable for reclamation in the WB is 467 km².
- The area of land suitable for forests is 378 km² and the area of the land suitable for rangeland is 811 km².
- The % of the four land classes suitable for reclamation are arranged according to suitability descending order as follows: most suitable (12.7%), highly suitable (49.1%), moderately suitable (73.9%) and least suitable (0.3%).
- Jerusalem and Hebron Governorates should have the high priority in the land reclamation projects followed by Ramallah, Nablus, Tulkarm, Bethlehem, Qalqilya, Jenin, Salfit, Tubas and Jericho Governorates respectively.
- Hebron Governorate should have the priority in the land rehabilitation for rangeland followed by Bethlehem.

The main recommendations can be summarized as follows:

- Modification of the current implementation strategies of land reclamation in accordance to these study findings, which could be either at the technical or socioeconomic levels.
- To acquire an effective adoption of land development policies and strategies, land use planning should be based on an informative land development database that constitutes the core of land development policies.
- Dissemination of the results and knowledge produced in the context of this Study. The translation of the results should be done at the governorate level and serve as a guide for the MOA and Palestinian NGOs in selecting the land for reclamation.
- Undertaking complementary studies and researches to optimize the results of this study and promote the impacts on the agricultural sector.



I. Introduction

I. Introduction

The West Bank (WB) is a Palestinian land that has been occupied by Israel since June, 1967. This political situation compiled with other human and natural induced factors, imposed severe pressures on the already limited natural resources available for Palestinians in this area.

Non-agricultural land composes about 55% of the West Bank area, agricultural land is 35% and artificial surfaces has about 10% including the Palestinian part of the Dead Sea (3%)². The distribution of these land uses classified at the CORINE first level is shown in Figure 1.

Despite the fact that Palestinians in the WB do not have sovereignty over their natural resources as a result of Israeli occupation, the initiatives and actions implemented by Palestinians with the aid of international community to optimize the available natural resources has been a prevailing trend.

Hilly land reclamation is one of the main responses adopted to optimize the land resources by increasing the agricultural productivity. This response has been taking place since the early nineties of the last century. This response has contributed to sustainable development in the oPt as it has a remarkable economic, social and environmental positive impacts³. In addition to these impacts this process has been institutionalized with the help of UNDP as an integral part of the local Palestinian NGOs working in the agricultural sector and rural development. Although there is a deep understanding and appreciation of the extent of land degradation in oPt, there are no available records or rates of land degradation, nor there are significant indicators systematically monitored⁴.

This study represents a technical milestone for the purpose of rationalizing this response. The final goal of this study is to enhance the mechanism of decision making with relevance to the development of land not utilized for agricultural use in the West Bank through providing the required data and information to the decision makers and technicians, so as to finally reach the most proper reclamation decisions for the most appropriate utilization of this land.

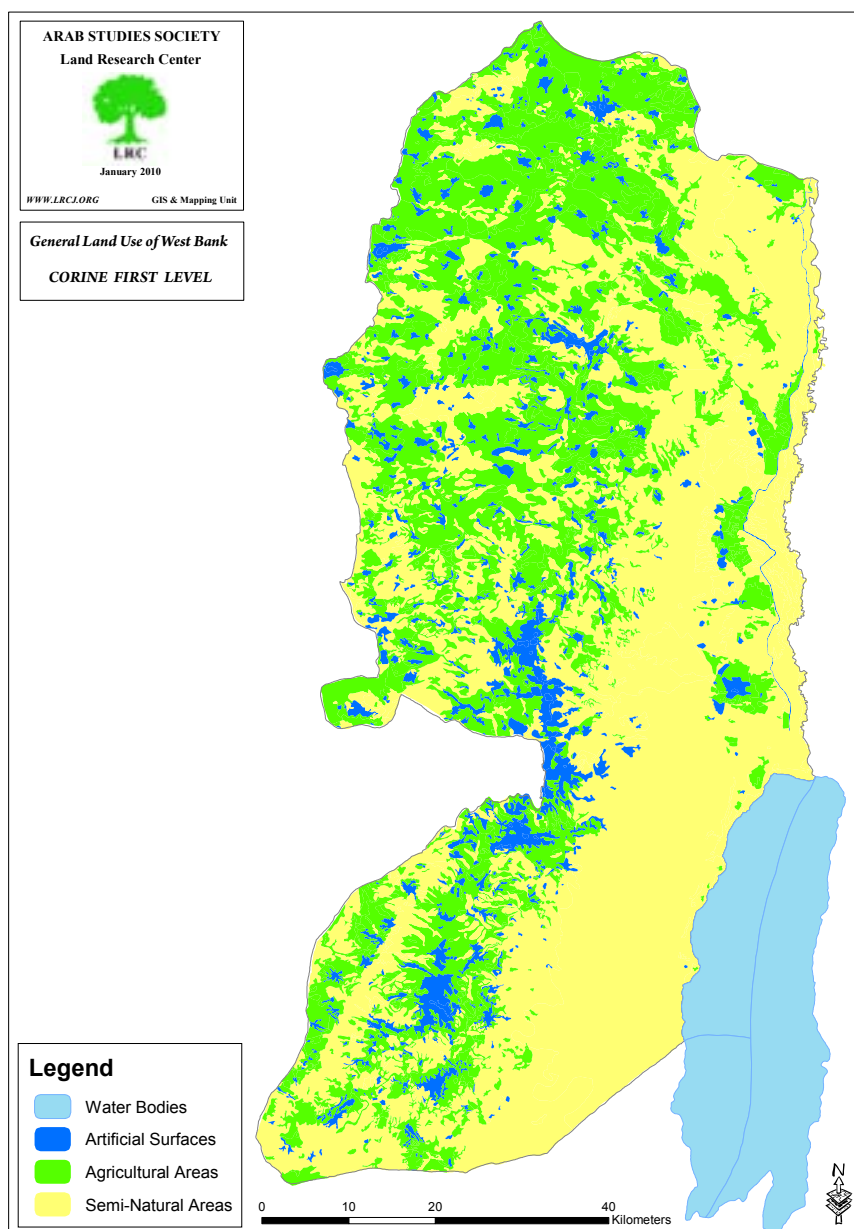


Figure 1: Land Cover Use of the West Bank

2. Land Cover/Use of the West Bank and Gaza Strip, Land Research Center, 2001.

3. Internal reports at the Land Research Center (2001-2010).

4. B. Dudeen, Land Degradation in Palestine: Main factors, status, trends and recommendations, Land Research Center, 2007.

I.1 Study Rationale

Utilization of natural resources in a sustainable approach is the supreme goal for the people everywhere to achieve the highest degree of prosperity. The utilization of these natural resources is a pressing issue in the oPt due to the existing political situation and the natural induced factors restricting the utilization of the land in an efficient way.

The driving forces or factors inducing land degradation in the WB can be classified into human activities and natural factors. These factors would be described as follows:

Human Induced Factors

Human activities are represented mainly in the Israeli atrocities against Palestinian land. The political classification of the land into A, B and C areas in the context of Oslo agreement restricted the ability of Palestinians to conduct land use planning that would help in impeding land degradation.

Socio-economic aspects represented in land tenure system and ambiguity of land ownership, the inaccessibility of land due to the lack of rural and agricultural roads, lack of liquidity and cash, lack of economic motivations, limited education to farmers, lack of credit and marketing facilities and simple technology used in agriculture, all are important social and economic factors led to less utilization of land and hence more land degradation.

Also, with population growth at an annual rate of about 4%, the high population density in some of the most vulnerable rural areas and the dangers posed by this cycle has resulted in an increasing poverty, which have accelerated land degradation.

Lack of awareness of environmental, social and economic values of land degradation is a serious factor leading to more degradation. For example, over-grazing of the available pastures, branches of evergreen trees are often lopped off to provide fodder for livestock. Another important reason for soil erosion is the significant disappearance of terrace culture. However, people are willing to protect land because historical background, culture and religion encourage land protection and agricultural work.

Effective land management is negatively affected by the absence of land use planning. The Israeli Occupation restricted the use of land for various purposes but mainly due to security reasons. Urbanization and even wells construction are prohibited without an Israeli permission. Currently, land reclamation projects are confined to A and B zones which are either urbanized or agricultural areas.

Natural Induced Factors⁵

Climate is an important natural induced factor for land degradation. The area suffering from severe aridity (44% of the total area) is located at the eastern and far southern part of the WB. This area, which is lightly populated, should form the strategic reserve of agricultural land for Palestinians. However, this degree of aridity is accompanied by strict restrictions on utilizing this land for agriculture use, especially in the absence of control by the Palestinians on it. The semi arid area, which is representing a promising agricultural land for the future, is unfortunately suffering from urbanization sprawl according to the population distribution; the same situation is applicable to the sub humid and humid areas (26%) which are heavily populated. The vast area of arid climate provoked salinization process that is the main driving force to desertification in this area.

WB is characterized by a large degree of variation in topography. Its topography is characterized by hilly nature that also contributes to land degradation. The harsh topography in some parts of the WB led to severe soil erosion in all its forms; sheet, rill and gully erosion.

5. Ibid.

The scarcity of water and the deterioration of its quality is a major driving force for land degradation in the oPt. WB is among the parts in the region with the scarcest renewable water resources due to both natural and artificial constraints, amounting to less than 100 m³ per capita per year. This is far below the per capita available in other countries in the Mediterranean and even in the world. Also, it is far below the minimum assigned quantity by the World Health Organization which is 500 m³ per capita per year.

All the above-mentioned driving forces, either human or natural, led to various types of pressures on land that is resulted in the degradation of its quality and quantity. The following are the main land degradation processes and aspects that are taking place in the WB:

Soil erosion is the most destructive degradation process to soils in the WB. It is caused by the combination of climate, harsh topography (steep to very steep slopes), thin vegetation cover and poor agricultural practices. Almost all types of soil erosion are taking place in the WB and all these types are accelerated by human activities.

Soil salinity is another important factor that is adding pressure on the land. In general, there is a close relationship between the climate, the moisture regime and soil salinity. The climate classification of the WB indicates that the soil in vast areas, particularly the eastern part, would be saline. There are several causes for soil salinity in the WB such as the extremely arid to semi arid climate in most areas; the bad irrigation management and practices and the water quality.

One of the degradation processes that have severe impacts on the soil quality is **soil pollution** with different types of contaminants such as limestone waste sludge and the widespread dumping sites.

The rate of **soil loss** due to surface and sealing is relatively high in the oPt. Urbanization and transportation infrastructure is rapid either by Palestinians or by the expansion and establishment of Israeli colonies that is being constructed on the Palestinian confiscated land.

The **reduction in the vegetation cover and loss of biodiversity** is another important pressure on the land. Forest area in the WB is very small (about 4900 ha – comprising less than 1% of the total area). It is estimated that 23% of the forest area has been destroyed from 1971 to 1999. The majority of this destruction has been caused by the construction of Israeli colonies and military bases. Rangeland and natural grassland are also negatively affected in the last three decades due to the political situation.

Having a clear picture about driving forces and pressures of land degradation does not mean that the impacts on the ground are seen clearly; therefore, the responses as a consequence are not promptitude or ad hoc. As a matter of fact, there is no time referenced quantitative analysis for the state of land degradation in oPt to help in assessing the impacts.

The main impacts of these pressures are low agricultural and forage productivity, more abandonment of agricultural practices, all of which had collectively led to more poverty, more fragile ecosystems, and vulnerable land to degradation.

The general characteristics of the ecosystems in the oPt at various scales are getting worse when investigated over short period of time. In most agro-climatic zones, soil productivity has already been lowered by erosion or degradation. Direct quantitative parameters are not available but indirect parameters like agricultural productivity, dependency on working in agriculture, forestry and livestock production are all indicating negative impacts.

Responses to the impacts of various pressures on land would be categorized at the national or governmental level as well as the technical or farm level. Some of these responses are actually taking place.⁶

Land reclamation is one of the significant responses tackling the driving forces, pressures and impacts of land degradation. This response has been taking place during the last 15 years. Most of the land reclamation projects were implemented under the administration and supervision of UNDP-Land Development Unit. As a consequence, MOA, UNDP and LRC agreed that it is necessary to have a technical milestone for the rationalization of this process, so that administrative, technical, economic, planning and consultancy processes and activities would be easier and smoother.

6. B. Dudeen, Land Degradation in Palestine, Land Research Center, 2003. (www.lrcj.org).

I.2 Literature Review

In countries where agricultural land is available in large areas, land reclamation refers most of the time to rehabilitation of mines or quarries, create new land from sea or riverbeds. Land reclamation through the removal of surface rock and stones by heavy machinery (de-rocking) is a well known strategy for hill farming in the Mediterranean region⁷.

In the oPt, land reclamation is an important action taking place in the last few decades for several reasons. One of the most important reasons is the political conflict represented in the Israeli atrocities and violation of international laws by confiscating and annexing land in the WB⁸. Land reclamation enables poor rural people to improve their incomes and living conditions by helping poor farmers to develop rainfed agriculture and manage natural resources more effectively.

Investments were directed towards expanding cultivable areas through the de-rocking of areas with high potential for agriculture. Complementary activities such as extension and marketing were supported to improve productivity and increase farmers' earnings. Interventions for rural women also addressed the need to increase household incomes⁹.

Socioeconomic analysis in the context of land evaluation is a traditional approach that has been implemented since long¹⁰. It is conducted through different approaches: a two stage approach in which the first stage is primarily concerned with physical land evaluation; a parallel approach in which socioeconomic analysis proceeds concurrently with the physical analysis.

Land suitability evaluation is the process of assessing the suitability of land for specified kinds of use¹¹. These uses may constitute major kinds of land use, such as rainfed agriculture (the theme of this study), rangeland, forestry, etc; or land utilization types described in more details, for example, rainfed arable farming based on grapes. There are several studies conducted based on the second kind in the oPt¹², however, no studies are available for the first kind of land suitability.

I.3 Specific Objectives of the Study

The main specific objectives of this Study would be summarized as follow:

- Preparing readable and friendly using data and information to serve as scientific reference for decision makers and technicians at the governmental and non-governmental sector.
- Preparing classification maps for the non-agricultural areas according to its suitability for development and reclamation.
- Having a general perception about the investment volume in land development with all its needs and tools.



7. Syrian Arab Republic: Thematic study on land reclamation through de-rocking, IFAD.

8. www.poica.org.

9. UNDP – Jerusalem and Palestinian Local Agricultural NGOs Reports.

10 Land Evaluation in Europe, FAO, Bulletin 29, 1975.

11. D. Dent and A. Young, Soil Survey and Land Evaluation, George Allen & Unwin Ltd, London, 1981.

12. Land suitability for wheat, almond and olive in Dhahiriya area, Land Research Center, 2004.

II. Methodology

II. Methodology:

For achieving the study objectives, the following steps were undertaken:

1. Literature Review:

Relevant data and information at the local and international levels were collected utilizing the university libraries and internet published material. This is an essential step for highlighting the relevance of land development strategies to attain sustainable development and achieve poverty eradication.

2. Ancillary Tools and Materials Preparation:

The following ancillary tools and materials were prepared for the implementation of the activities in the context of the study:

- Aerial photographs: aerial photographs at a detailed scale (1:5000) were obtained for the purpose of terrain analysis and mapping unit delineation.
- Land use/cover map: land use/ cover map for the WB, which had been produced previously by LRC, was updated to be utilized in this study. This map was prepared using EU CORINE land cover classification (Coordination for Environment) methodology for land use/ cover preparation.
- ArcGIS software: ArcGIS 9.3.1 was utilized for all GIS functions used in the layers (shapefiles) and data analysis.
- Contour lines with 5 m intervals.

3. Study Area Identification:

All the areas classified as non-agricultural in the land use map depending on CORINE methodology were identified. The level and non-steep land surfaces that is comprising a major disqualification of any mechanical land reclamation or hill farming, has resulted in the exclusion of Jericho area, which is mainly encompassing the Ghor area. As a result, the identified non-agricultural area represents 39% of the WB (2195 km²) as shown in Figure 3. After excluding the areas that are not viable for reclamation (i.e plains, valleys), the size of the non-agricultural area that is suitable for reclamation and will be classified according to its suitability for reclamation is 1,686,094 dunums.

4. Socioeconomic Status Investigation:

The parallel approach in which the socioeconomic survey and analysis proceed concurrently with the physical analysis is adopted in this study. Socio-economic survey for the identified study area population was conducted in cooperation with the MOA directorates. The investigated rural communities were adjacent to the area identified as non-agricultural land. The survey utilized the focus groups approach in addition to distributing a questionnaire to farmers and land owners in the investigated rural communities.

5. Mapping Unit Delineation:

Land form element was selected as the basic mapping unit to fulfill the objectives of the study. The following land form elements were identified and delineated using the on-screen digitizing method:

- Hill Crest – Summit Surface (H)
- Plain (P)
- Valley (V)
- Drainage Depression (D)
- Foot Slope (F)
- Slope (S)

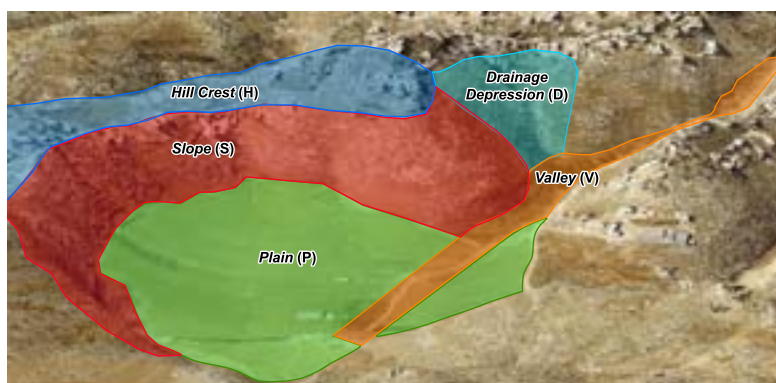


Figure 2: Landform elements sample

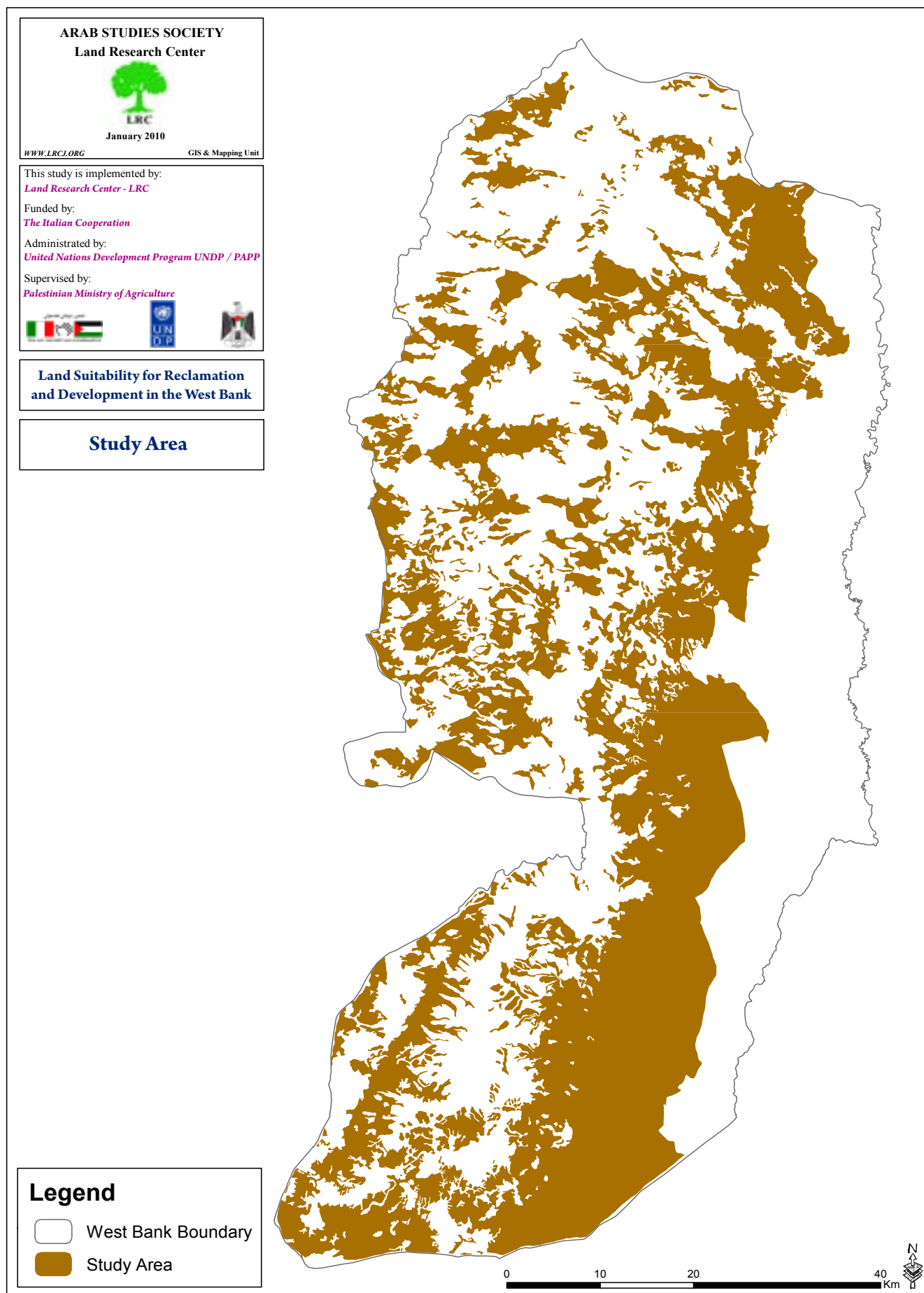


Figure 3: Map of the Study Area

6. Terrain Characteristics Identification:

The following terrain characteristics were identified for each delineated landform elements:

Slope: the following slope classes were identified:

<3% (Plain, Valley , Hill Crest) without any slope	S0
3% - 8%	S1
8% - 18%	S2
18% - 32%	S3
>32%	S4

Aspect:

Aspect class map derived from DEM data could be grouped according to the requested land form classes depending on the final purpose for using the map. These maps were found to be useful in the higher, more rugged terrain where aspect has an influence on the soil temperature and moisture regimes. The dominant aspect for each land form element was identified as follows:

Table 1: Aspect Class (Degree)

Aspect Class (degree)	Description	Abbreviation
0	Flat	No
0 - 22.5 and 337.5 - 360	North	N
22.5 - 67.5	Northeast	NE
67.5 - 112.5	East	E
112.5 - 157.5	Southeast	SE
157.5 - 202.5	South	S
202.5 - 247.5	Southwest	SW
247.5 - 292.5	West	W
292.5 - 337.5	Northwest	NW

Land Use:

The dominant land use was assigned to each delineated landform element. The following general land use classes were identified in the Study area: Trees = T, Arable = A, Quarries = Q, Urban = U, Colony = C, Non = N.

Rockoutcrop:

The rockoutcrop class was assigned to each delineated landform element based on the percentage of the covered area of the land surface by rocks utilizing the aerial photographs. These classes are as follows:

Table 2: Rockoutcrope Class

Rockoutcrop Class (%)	Status
0	Free
5	Slight
10	Moderately available
20	Available
30	Highly covered
> 40	Rocky area

Climate:

An aridity index utilizing De Martonne approach was assigned to each landform element. The identified classes are: arid, semi-arid and sub-humid.

7. Limiting Factors Matrix Construction:

Since many factors determine the land suitability for reclamation, a matrix for these factors was constructed by giving a weight for each factor. Table 3 displays the components of this matrix.

8. Identifying Land Suitable for Reclamation:

According to the above mentioned matrix, each polygon has been assigned a value classifying its suitability for reclamation. The suitable land for reclamation should possess the following criteria:

- Slope should be less than 32% (excluding plains and valleys).
- Rockoutcrop should be less than 40%.
- Rainfall should be more than 300 ml/year.

After considering these factors the area classified as suitable for reclamation is about 467 km² (467,000 dunums).

Table 3: Weights of factors determining land suitability for reclamation

Class 5%				Slope 20%				Rock outcrop 25%				Aspect 5%				Socio-economic 15%				Climate 30%			
S	F	H	D	S0	S1	S2	S3	10=>	10-20	20-30	30-40	NW , W	SW , S	NE , N , No	SE , E		Excellent	Very Good	Good	Fair	Arid	Semi Arid	Sub Humid
1	3	4	5	5	15	20	10	10	25	15	5	5	4	3	2		15	12	8	4	15	30	20
Min		Max		Min	Min	Max		Min	Min	Max	Max	Min	Min	Max	Max		Min	Min	Max	Max	Min		Max
1		5		5	5	20		5	5	25		2		5	5		4		15	15	15		30

According to table 3, the land suitability for reclamation classified as follows:

Most suitable : 81% - 100%
 Highly suitable : 61% - 80%
 Moderately suitable : 41% - 60%
 Least suitable : 32% - 40%

9. Identifying Land Suitable for Forests and Rangelands:

The remaining area is the land that would be classified as suitable for forest and rangeland use which has an area of 1,189,089 dunums. The land suitable for forests is assigned according to the following criteria (the existence of each of the following conditions is a killing factor for land reclamation):

- Slope is $>32\%$.
- Rockoutcrop is $>40\%$ in areas where rainfall is >300 ml/year.
- Rockoutcrop is $<40\%$ in areas where rainfall is <300 ml/year.

The area for the land suitable for forest is found to be 378,381 dunums.

The land suitable for rangeland is assigned the following criteria:

- Slope is less than 32% .
- Rockoutcrop is $>40\%$ in the areas where rainfall is >300 ml/year.
- Rockoutcrop is $<40\%$ in the areas where rainfall is <300 ml/year.

The area for the land suitable for rangeland is found to be 810,708 dunums.

10. Applying the above mentioned results at the Governorate level.

11. Preparation of the land suitability maps for reclamation, forests and rangelands uses.

12. Preparation of the final reports with maps included in the report.



Figure 4: The consultancy team categorizing reclamation-able land

III. Findings of the Study

III. Findings of the Study:

The results and analysis will be addressed at both the WB and Governorates levels. The results at the WB level would be utilized for strategic planning at the level of policy and decision making. For technical and administrative purposes, each governorate would be considered as a unit for which all the physical features and socioeconomic dimensions were investigated.

III.1 West Bank Level

III.1.1 oPt at a Glance

The occupied Palestinian territories -oPt- involve the West Bank and Gaza Strip (W&G) which are two geographically separated areas. The oPt has an area of about 6,209 km² including the Palestinian part of the Dead Sea (189 km²)¹³. The area of the WB is about 5660 km². Land suitability for reclamation will be addressed for the WB only; therefore, the core referral will be concentrated in this report on the West Bank.

Demographic Indicators

The oPt is populated by about 3,825,512 inhabitants¹⁴ of whom 2,385,180 are in the WB and 1,440,332 are in the Gaza Strip. It is worth mentioning that more than four million Palestinian are registered refugees in Jordan, Syria and Lebanon. The average family size in the oPt is 5.8 with 5.5 and 6.5 in the West Bank and Gaza Strip respectively¹⁵.

The population pyramid in the oPt in 2008 showed that high proportion of individuals are under the age of 15 years (42.5%), 52.2% are under 18 years old, while the proportion of elderly individuals is comparatively low¹⁶. These percentages indicate high fertility rates and that the Palestinian society is a young society. The fertility rate in the oPt is 4.6; it is 4.2 in the WB. The average age at marriage is 24.8 years for male and 19.5 for female. In the WB, the average age at marriage is 25.4 years for male and 19.8 for female. It has been estimated by the PCBS that the rate of natural increase in the population of the W&G was about 3.0% in mid 2007, which is one of the highest rates in the world.

Economic Indicators

The deterioration of the economic situation in the oPt between 1997-2007 is reflected in the drop of the GDP per capita which is -2.9%. GNI per capita in 2007 is 1230 US\$¹⁷. The unemployment in the oPt is reported to be 31.5% with 23.2% and 49.1% in the West Bank and Gaza Strip respectively.

The percentage of Palestinians below the poverty line according to real consumption mode is 34.5. It is 23.6% and 55.7% in the West Bank and Gaza Strip respectively. Furthermore, Palestinians with income below the poverty line is 57.3% with 47.2% and 76.9 in the West Bank and Gaza Strip respectively¹⁸.

Related to food security, households with income below 1.9 US\$ per capita per day are considered food insecure in the oPt. According to such indicator, it is reported that 38% of the Palestinian households are considered food insecure, 25% in the West Bank and 56% in the Gaza Strip. Also, 14% of the Palestinian households are considered vulnerable to be food insecure of whom 16% in the West Bank and 11% in the Gaza Strip.

The vulnerable communities are spread all over the West Bank and Gaza Strip; the following map (fig.3)¹⁹ displays the distribution of these communities. It is clear that communities adjacent to the Israeli separation wall are mainly vulnerable.

13. Land Research Center, GIS Department.

14. Projected population until mid 2008 according to PCBS publications.

15. PCBS, 2007.

16. Palestinian Central Bureau of Statistics, 2009. Annual Report 2009. Palestine Children-Issues and Statistics. Child Statistics Series (No. 12). Ramallah-Palestine.

17. The State of the World Children, 2009.

18. World Food Program (WFP), FAO, UNRWA, Joint Rapid Food Security Assessment, May 2008.

19. Palestinian Occupied Land, Consolidated Appeal Process, OCHA, UNDP, 2009.

Infrastructure

The infrastructure in the oPt has been enhanced noticeably since the establishment of Palestinian National Authority in 1994. However, there are still considerable percentage of the population lacking the electrical, water and sewage public services. Only 33.7% of the Palestinians connected to electrical, water and sewage networks simultaneously²⁰; 42.3% are connected to electrical and water networks simultaneously which means that about 90% are without connection to sewage networks.

Environmental Indicators

The environment in the oPt is under pressure due to natural and human induced factors. The macro assessment pointed out the following environmental threats in the oPt:

- The pollution resulted from the discharge of solid waste from the Israeli colonies.
- Drinking water contamination by the wastewater discharge either by Palestinians or from the Israeli colonies.
- The excessive use of pesticides and insecticides in addition to other toxic chemicals without control.
- The uprooting and land excavation by the Israeli military authorities and colonizers²¹.
- Land degradation represented in soil erosion, contamination and loss of biodiversity²².
- Air pollution resulted from the construction of industries and mineral extraction sites like stone quarries with the dwelling areas.

Political conditions

In addition to the above mentioned pressures, there is a limiting factor for development in the Palestinian territories which is the Israeli occupation. The occupation measures and actions put another pressure on the already fragile economic, social and institutional situation in the oPt.

There are restrictions on the movement of Palestinian people and goods, which is intensified during the second Intifada (2000). Also, there is continuous land confiscation, house demolition, trees uprooting and other actions and restrictions⁶. The report issued by Save the Children UK, Welfare Association and Palestinian Counseling Centre indicated that more than 300,000 Palestinians are at risk of losing their homes because of demolition orders issued by the Israeli authorities.²³

The building of new colonies and the expansion of the existing ones at the expense of Palestinian land is still an on-going process. The construction of the Separation Wall led to harmful impacts on about 149 Palestinian communities according to PCBS, leaving about 30,112 hectares inaccessible to Palestinians. Most of the affected land is of great agricultural value and essential to hundreds of families' livelihood.

III.1.2 Physical Features

As indicated in the methodology part, the most important physical features that affect the land suitability for reclamation are: landform elements; slope steepness; aspect; rockoutcrop and climate. The total area of the non-agricultural land in the WB that would be suitable for reclamation (NA) is 467 km² which constitutes about 8.2% of WB area. The above mentioned physical features would be described as follows:

Landform Elements' Classes

The existing landform element classes that are found in the non-agricultural area (NA) of the WB are: slope, footslope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

20. Palestinian Central Bureau of Statistics, 2008. Population, Housing and Establishment Census 2007 Census Final Results in The West Bank – Summary (Population and Housing). Ramallah - Palestine.

21. See www.poica.org.

22. www.lrcj.org

23. Save the Children UK, Welfare Association and Palestinian Counseling Centre, 2008.

Slopes: this landform element is prevailing in the area. It has slope ranges from gently inclined (3-8%) to steep (18-32%). It covers an area of about 289.0 km² which is equivalent to 61.9% of the NA and 5.1% of the WB area. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

Drainage Depressions: It has an area of about 61.3 km², which represents about 1.3% of the NA and 1.1% of the WB area. It represents spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 113.9 km² which represents about 24.4% of the NA and 2.0% of the WB area. It is composed of small spots that are sometimes cultivated. It is worth mentioning that not all the hillcrests in the WB are mapped because the areas of those hillcrest are small and cannot be shown at the map scale of this report. In addition, some of the hillcrests widths are very narrow to be mapped.

Footslopes: It has a comparatively small area of about 2.5 km² that represents about 0.5% of the NA and less than 0.1% of the WB area. It is a transitional area between slope and plain with moderate or low percentage of rockoutcrop. It is available mainly in HG, NG and TubG.

Slope Steepness Classes

The following slope classes have been found in the NA of the WB and could be described as follows (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes and usually represents level area. It covers an area of about 66.9 km² which is equivalent to 14.3% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 65.9 km² which is equivalent to 14.1% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 163.5 km² which is equivalent to 35.0% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 170.8 km² which is equivalent to 36.6% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop due to the excessive erosion processes taking place in such type of slopes.

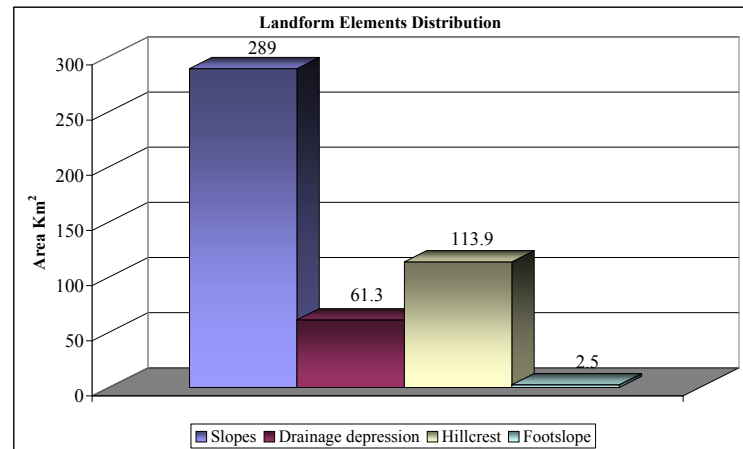


Figure 5: Landform elements in the NA of the WB

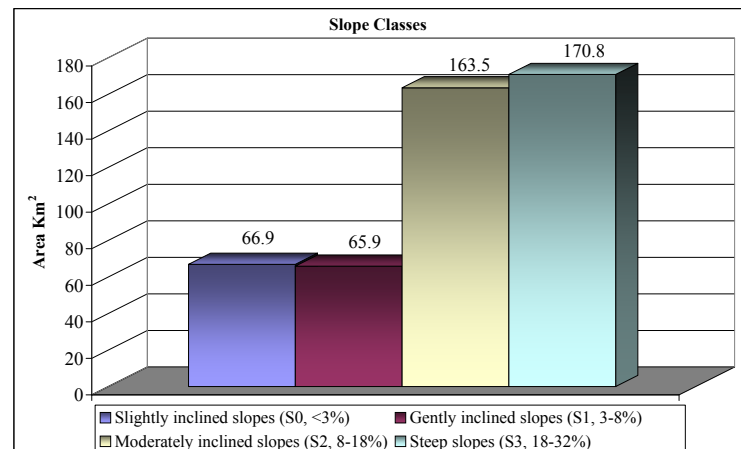


Figure 6: Slope classes in the NA of the WB

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3. The aspect class data indicates that the non-oriented flat area with (0) aspect degree represents a small area (15.6%). It is composed mainly of flat hillcrests. In Palestine, areas with northern and western aspects (Mighian) are normally considered much better for agriculture than those with eastern and southern aspects (Mishmas). The first part has an area of about 16.8% while the second part is about 26.7%.

Rockoutcrop Classes

The majority of the area (87.1%) has high rockoutcrop (>20%). The presence of large areas with high percent of rockoutcrop is an indication to the natural reason for non-cultivation rather than human reasons. Natural reasons can be attributed mainly to the slope steepness resulting in high rate of erosion, as well as the nature of rainfall in terms of quantity distribution.

Climate Classes

The total area of the arid class is 273.4 km², which is comprising about 58.5% of the NA; the area of the semi arid part is 125.9 km², which is comprising about 27.0% of the NA; and the sub humid area is 67.5 km², which is comprising about 14.5% of the NA. The following chart displays the three classes of the climate that exist in the study area with their conjugative descriptions:

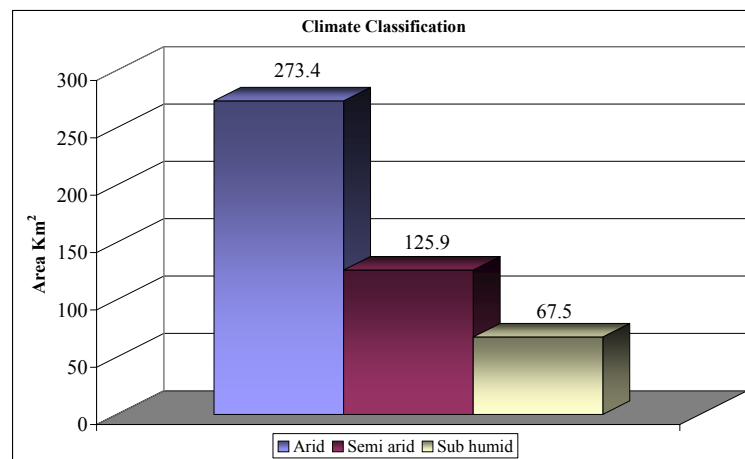


Figure 7: Climate classification of NA in the WB

The majority of the NA area is suffering from aridity and is occupying most of the area (about 85.5%). This degree of aridity put severe and diverse restrictions on utilizing this land for agriculture, especially in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl as a result of the high population growth rate and the wide range of population distribution; the same situation is applicable to the sub humid area (14.5%) which is heavily populated. The vast area of the arid climate provoked the salinization process, especially with the high rate of evaporation and the limited amount of rainfall, which are the main driving forces to desertification in this area.

III.1.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the NA composes the core of the analysis for the preparation of the land suitability map in the WB. The analysis depended on intersection of the different classes in the aforementioned four layers by using GIS, which resulted in the spatial quantitative delineation of the boundaries for different areas with their respective characteristics (i.e. landform, steepness, aspect, and rockoutcrop).

The map displays the land suitability classes for reclamation, rangeland and forestry that is attached in this Study as Annex 7 (The attached map to the book).

Table 4 reveals that lands with the least suitable class for reclamation represent the smallest percentage of the total area among all classes (0.3%).

Table 4: Land suitable for reclamation areas

Suitability classes	Area (km ²)	Area %
Most suitable	59.2	12.7
Highly suitable	229.5	49.1
Moderately suitable	177.0	37.9
Least suitable	1.3	0.3
Total	467.0	100

Land Suitability for Forests and Rangeland

The total area in WB that is classified as suitable for forests and rangeland is estimated at about 1189.1 km². This land is qualified for such classification as a result of the presence of one restriction or more from the slope, rockoutcrop and the climate. For example, lands suitable for forests should have 300 ml/year of rainfall or more, and the rockoutcrop should be less than 40%. As a result of this analysis, the total area of the land that is classified as suitable for forestry is estimated at about 378.4 km². This area represents about 6.7% of WB. This percent does not mean that this is the only land available and suitable for forestry but it means that this land acquired high suitability for forestry compared to other lands in the study area, and of course, after excluding the land suitable for reclamation. The area of land classified as suitable for rangeland is estimated at 810.7 km² (14.3% of the WB area). The percentage of land suitable for reclamation from the NA is 8.2 of the WB area.

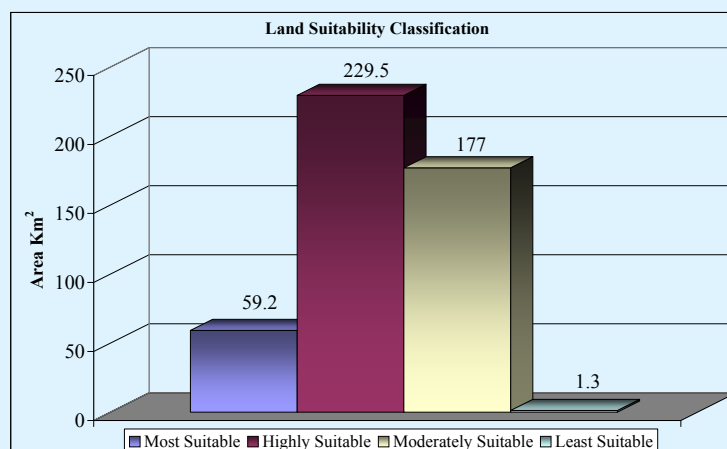


Figure 8: Chart of suitability classes in the WB

Table 5: The areas of the land suitable for reclamation, forestry and rangeland

Suitability classes	Area (km ²)	% (Class area / WB area)
Forestry	378.4	6.7
Rangeland	810.7	14.3
Reclamation	467.0	8.2
Total	1189.1	29.2

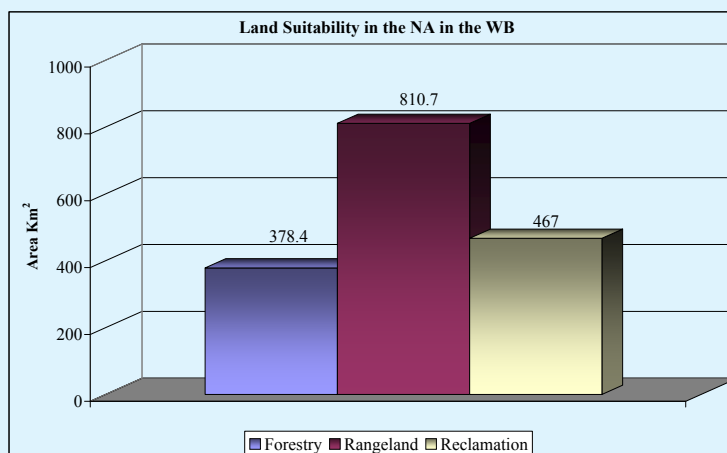


Figure 9: Chart of land suitability in the NA

III.1.4 Further Analysis

The suitability for reclamation classification at the Governorate level according to physical features and socioeconomic dimension is displayed in the Governorates' analysis chapter; therefore when it comes to selecting the appropriate sites at the governorate level, all the required directing data are available at each Governorate chapter. When it comes to the macro scale selection at the national level, the following data would be drawn from the findings of this study compiled with the data and information related to the agricultural production and population:

The distribution of land suitable for reclamation is not even among the WB governorates. The following table displays some important parameters that should be related to land reclamation planning.

Table 6: General data for WB Governorates.

Governorate.	Popul. (PCBS 2007)	Area km ²	Per / km ²	Agric. Plant producti. (x1000 US\$)	US\$/ Person from Agric. Prod.	LS for rec. (km ²)	LS for For. & .Rang	Livest. Prod. x1000 US(\$)
Hebron	552164	1067	517	63648	115	245.6	277.3	108825
Bethlehem	176235	608	290	12633	72	25.1	218.7	26835
Jerusalem	363649	354	1027	4089	11	55.5	97.1	12894
Jericho	42320	609	69	54157	1280	6.5	49.9	12948
Ramallah	279730	849	329	16188	58	59.7	207.2	24295
Salfit	59570	202	295	6393	107	4.3	32.9	6640
Nablus	320830	613	523	28812	90	43.5	117.2	38616
Qalqilya	91217	174	524	36990	406	2.7	16.3	14378
Tulkarm	157988	245	645	59800	378	9.8	16.2	18194
Jenin	256619	573	448	104683	408	8.4	18.7	52753
Tubas	50261	366	137	48901	973	5.9	74.0	13521
Total	2,350,583	5660	415	436,294		467	1125.5	329899

Taking the three factors for each governorate in consideration: person/km², US\$/person from agricultural productivity and the area of land suitable for reclamation and giving each factor 33% weight, the priority for each governorate for reclamation would be ranked as shown in table 7. This ranking is fruitful when planning for land reclamation at the national level for the purpose of leveraging the agricultural productivity and addressing the social dimensions of development. The planning at this level has the economic dimension as a priority although it would not be directly addressing poverty eradication at the household level.

To further illustrate the weighting of each of the above mentioned factors, the significant level for each is given 33% and the percentages for other governorates is given accordingly, For example, HG population density (517 persons/km²) is given 16% since the highest population density (1027) is for Jerusalem which has been given the weight of 33%, the US\$/person from agricultural productivity for HG (115) has been given 3% since Jerusalem has the lowest US\$/person (11) and has been given the weight of 33%, the land suitable for reclamation for HG (245.6 km²) which is the highest among governorates has been given the weight of 33%. The addition of the percentage weight for each governorate constitute the rank of the governorate (in case of HG: 16%+3%+33%=52%). This mark puts HG the second rank in terms of its priority for land reclamation as shown in the following table.

Table 7: Governorates priority for reclamation

Governorate	Rank
Hebron	2
Bethlehem	6
Jerusalem	1
Jericho	11
Ramallah	3
Salfit	9
Nablus	4
Qalqilya	7
Tulkarm	5
Jenin	8
Tubas	10

Jerusalem Governorate should have the priority in the land reclamation projects followed by Hebron Governorate with high priority than other governorates as represented by their ranking. These two governorates are followed by Ramallah, Nablus, Tulkarm, Bethlehem, Qalqilya, Jenin, Salfit, Tubas and Jericho Governorates respectively.

Related to the land suitability for forests and rangeland, and taking the two factors for each governorate in consideration: land suitable for forest and rangeland (50%) and the livestock production in each governorate (50%) as an indicator for the livestock volume. The governorate with the largest area suitable for forests and rangeland is given 50%; other governorates were given their weight percentage accordingly. Also, the governorate with the highest livestock production is given 50%; other governorates were given their weight percentage accordingly. the priority for each governorate for land rehabilitation as rangeland would be ranked as follows:

Hebron Governorate should have the priority in the land rehabilitation for rangeland followed by Bethlehem Governorate. These two governorates are followed by Ramallah, Nablus, Jenin, Jerusalem, Tubas, Jericho, Tulkarm, Salfit and Qalqilya Governorates respectively.

Table 8: Governorates priority for forests and rangeland

Governorate	Rank
Hebron	1
Bethlehem	2
Jerusalem	6
Jericho	8
Ramallah	3
Salfit	10
Nablus	4
Qalqilya	11
Tulkarm	9
Jenin	5
Tubas	7

III.1.5 Socio-Economic analysis at the West Bank level

Objective of the Socio-economic Part of the Study

The aim of this study is to increase the awareness of the characteristics, needs, and priorities of communities who own or have access to land suitable for reclamation in the West Bank. This study aims to draw a more comprehensive picture which will enhance the effectiveness and efficiency of future initiatives.

Study Area

The socio-economic part of the study analyzes the current socio-economic differences of owners and users of land classified as suitable for mechanical reclamation within the West Bank. The sample areas tackled were selected based upon the outcomes generated using the (GIS), which pinpoints land suitable for reclamation. Areas with high concentration of land suitable for mechanical reclamation were identified in ten Palestinian governorates²⁴ using data and maps prepared at an earlier stage during the technical part of the study.



Figure 10: Study preliminary result releasing workshop. (Jan. 12, 2010)

24. excluding Jericho whose nature is comprising a major disqualification of any mechanical land reclamation

Methodology of Study

A probability sample was conducted so that sampling error could be calculated and therefore, results could be generalized about the study population. It should be noted that a large sample was chosen to reflect a moderately realistic view of the variables. Given that the study population is large and spread along the West Bank, a stratified random sampling technique was adopted to identify the sample areas. A staff of agricultural engineers from each agricultural directorate in the West Bank worked on collecting data. Each researcher visited a number of predetermined sites, there they gathered information from landowners in addition to land users. The total number of sites covered was 285 sites which included: cities, villages, and camps. Information about each community was gathered using two methods:

I. Focus groups: Participants were knowledgeable members from the community. During the focus group sessions socioeconomic issues were discussed in-depth. Among the topics raised were the participants' personal experience with land reclamation, their understanding of agriculture, how they perceive it as a career, their need and the limitations preventing utilizing land, constraints and priorities of the village community as a whole.

II. Questionnaires: Trained agricultural engineers working for agriculture directorates conducted structured interviews and filled out questionnaires to gather in-depth information on social and economic status of communities. Questionnaires dealt with population dynamics, socio-economy of the village, land suitable for reclamation (land use, land tenure, current use of abandoned land), farming systems, constraints preventing land utilization and hindering Palestinian agriculture sector. The survey²⁵ was based upon a sample of 1,500 households which covered ten governorates within the West Bank.

Agriculture and Economy

Prior to 2000, a high percentage of Palestinian laborers opted to work in Israel. The reason behind this is the relatively high wages offered for manual labor within Israel, compared to that in the West Bank. Not only are domestic wages lower in the West Bank, but also profit from some enterprises is below the average wage rate paid in Israel. As a result, labour in agriculture, in addition to other productive sectors was redirected toward employment in Israel.

Working in Israel has not only weakened productive sectors, and domestic production; it has also increased domestic prices of non-tradable goods, because of push in demand, caused by the huge amount of remittances per annum. Besides the hike in prices along the years, the shift in demand increased imports of tradable goods, shaping an economy of consumption fed by imports²⁶. Moreover, the phenomenon of exporting labor to Israel implied higher wages in the domestic economy, translated into higher costs of production, that do not match gains in productive sectors, such as, agriculture causing it to loose competitiveness in foreign markets²⁷.

Against all odds, employment in the agricultural sector increased after the beginning of the second Intifada. As a result of the crises, working in Israel was no longer an option for a large number of the Palestinian labor force, since access into Israel was no longer permitted. Therefore, Palestinians with limited resources were forced to look for an alternative to generate income. In this situation agriculture was the way to go, as it does not require much capital. Agriculture was found to best suit a population whose savings were being drained and which was met with an increase in poverty rate. Hence, many switched to the agricultural sector as a (last resort employer)²⁸. Other people found in the agricultural sector the possibility of a sustainable self-fulfillment strategy through producing a basic food basket for domestic consumption. As a result, the agricultural sector became a major source of employment in the West Bank; agriculture employed 16.6% of the labour force in 2007 as compared to 11.5% in 1999, prior to the start of the second Intifada in the year 2000²⁹.

However, agricultural contribution to gross domestic product (GDP) in the West Bank, decreased from 11.5% in 1999 to just 5% in 2007³⁰. Combined to other factors, the continuous confiscation of Palestinian

25. The questionnaire (in Arabic) is attached in the Annexes

26. UNCTAD, The Palestinian war-torn economy: aid, development and state formation, in2006, UNCTAD: New York and Geneva

27. Ibid

28. UNCTAD, Transit Trade and Maritime Transport Facilitation for the Rehabilitation and Development of the Palestinian Economy2004, UNCTAD: New York and Geneva.

29. UNCTAD, Labour and Population 2008, Geneva, UNCTAD. Available from: <http://www.unctad.org/Templates/Page.asp?intItemID=4967&lang=1>

30. PCBS, Percentage Contribution to GDP by Economic Activity for the Years 1994-2007 at Constant Prices, PCBS.

lands by Israel has damaged the absorptive capacity of the Palestinian agricultural sector. Some of the West Bank's most fertile lands were confiscated for the construction of the Israeli separation wall. To be more specific, by mid 2004 around 86% of the land illegally confiscated in the West Bank by Israel for the purpose of building the separation wall was fertile agricultural land³¹.

The decline in Palestinian agricultural productivity in the West Bank is also down to Israel's closure policy, restrictions on mobility, and its tightened control over all borders and trade zones. Israel regulates Palestinian travel and trade not only between the West Bank, Gaza, Israel, and the rest of the world, but also within Palestinian cities and towns³². The shipment of Palestinian products is usually subjected to tightened security measures, as Israeli authorities limit the working hours on borders, as well as, the number of truckloads permitted³³. Additionally, the West Bank is a land-locked area; the flow of Palestinian products relies on Israeli ports for both exporting and importing. Tightened Israeli security measures, uncomfortable transport procedures and the drastic waiting hours at borders have made trade not only expensive, but also very problematic, especially for perishable agricultural products, which can not withstand alternating weather conditions once cultivated and loaded onto trucks. This hindered access to international markets is dependent on the political temper of Israel. Over the past years, the Palestinian economy has become widely dependent on that of the Israeli. Whereby 92% of the total number of imports to the (oPt) are from Israel, while, 91% of Palestinian exports are to Israel³⁴.

Foreign Aid and Agriculture

Over the past years and due to political changes on the ground, a substantial change in the nature and amount of assistance for the agricultural sector took place. As shown in Table 9, The already insufficient share of assistance disbursed to agriculture (1.9% prior to the second Intifada) declined by more than half to become less than 1% of total assistance disbursed in the (oPt), which is due to rapid changes caused by conflict.

Table 9: Donor Support - WB and Gaza

Year	Total average annual disbursement to all sectors (\$million)	Annual average disbursement for agriculture (\$million)	Share of agriculture in total assistance (%)
1999-2000	528.3	9.8	1.9
2001-2004	1,022.8	7.6	0.7

This decrease in agricultural aid shows contradiction when compared to the increase in the amount of total assistance given to the Palestinian Authority within the same period. In other words, as total assistance went up, the share of agriculture declined.

UNCTAD 2006

Table 10 sheds light on the degree of inconsistency between the allocation of foreign aid and emerging needs on the ground. Starting from the year 2002, the agricultural sector became a major economic shock absorber as its shares in domestic employment increased from 12.6% to almost 16% in 2004. During the same period, its share in aid for agricultural development (excluding relief assistance and budget support) was minimal, reaching a low of 0.4%. When comparing the large share of agriculture in domestic employment generation, with its very small share in development assistance, a great level of inconsistency could easily be pointed out.

The final impact in the decline of the agricultural productive capacity, previously mentioned, is not only a result of technical difficulties Palestinian farmers face, but also a result of prohibiting restrictions imposed by the occupying Israeli government and a lack in support for development. If such scarcity continues in the allocation of funds for the agricultural sector, and trade of agricultural products continues to be controlled by Israel, this would lead to the Palestinians' inability to cultivate and suffice their basic needs. Consequently becoming poor customers for goods imported mainly from Israel and largely financed by donors³⁵.

31. UNCTAD, The Palestinian war-torn economy: aid, development and state formation, in 2006, UNCTAD: New York and Geneva.

32. UNCTAD, Transit Trade and Maritime Transport Facilitation for the Rehabilitation and Development of the Palestinian Economy 2003, UNCTAD: New York and Geneva.

33. Ibid.

34. UNCTAD, Report on UNCTAD assistance to Palestinian people, in TD/B/54/3. 2007: Geneva.

35. UNCTAD, The Palestinian war-torn economy: aid, development and state formation, in 2006, UNCTAD: New York and Geneva

Demography

The total population of the West Bank in mid 2009 has been estimated to be around 2.4 million, of which 46.6% is considered urban, while rural population reached 53.4%. Urban localities totaled 62 spread over the West Bank's territories, representing 9.3%. Rural localities totaled 583 representing 87.5%, while 21 Refugee camps in the West Bank represent 3% of the total localities³⁶.

Table 10: Assistance V.S. Employment in Agriculture Sector - WB and Gaza

Year	Total Dev. Assistance (\$ Million)	Assistance to Agriculture (%)	Domestic* Employment (thousands)	Domestic* Employment in Agriculture (%)
1999	474.4	2.5	461.0	12.6
2000	456.1	1.7	486.8	13.7
2001	318.0	7.0	442.1	11.7
2002	229.4	0.4	439.1	14.9
2003	359.2	0.6	538.2	15.7
2004	256.6	2.0	558.8	15.9

*excluding employment in Israel

UNCTAD 2006

The average number of family members in the West Bank is about 5.5³⁷. The size of an average household in the sample study revealed 8.9. Nevertheless, family size was found to vary according to socio-economic strata, and governorate. In 2007, estimates showed that the population of the West Bank in terms of gender was equally composed of 1.14 million males, in addition to 1.14 million females³⁸. The Palestinian, West Bank society is a young one; people aged between 0-14 makeup 40.4% of its total population.

Fertility rate is considered high in the West Bank although it has decreased in the last ten years (from 5.6% in 1997 to 4.6% in 2007)³⁹. This high rate, highlighted an expected decline in mortality of the average citizen, from 4.5% in 2008 to 3.8%, calculated per thousand, in 2015. This has contributed to a high growth rate of up to 2.65% per annum in 2008⁴⁰ and a life expectancy at birth of 71.6⁴¹ years during the same year.

The average density of the West Bank population in 2008 was estimated to be 427⁴² persons per km². The population is evenly distributed across the occupied Palestinian territories (oPt); the Southern Region of the West Bank comprises 29.2% of the total area, giving nearly 31% of the population an average density of 424 persons per km². The Northern Region comprises 39% of all land, with 39.7% of the total population and a density of 440 persons per km². The Central Region has 31.7% land, 29% of the population and a density of 496 persons per km² where Jerusalem is the most densely populated governorate, while Jericho respectively is the least, with 1075 and 73 persons per km² ⁴³.

Holding Sizes

Generally speaking, holding sizes are large enough and suitable for a variety of agricultural production scales. In total 62.9% of the landowners in the sample have holdings of more than 10 dunums (0.4% own land less than one dunum, 19.9% from 1 to 5 dunums and 16.8% have holdings of 5 to 10 dunums).

Analysis shows a relationship between sizes of holding with their geographical location within the West Bank. The existence of land fragmentation and small holding size (less than one dunum) were located mainly in the southern governorates namely Bethlehem and Hebron. Land holding size is fragmented with alternating generations of landowners, due to, subdivision of land holdings. The subdivision is

36. PCBS. Population, Housing and Establishment Census 2007. Main Indicators by Locality Type. 2009 Ramallah - Palestine.

37. PCBS (2009). On the Eve of International Population Day 11/7/2009.

38. PCBS, 2009. Statistical Abstract of Palestine, No. 10. Ramallah - Palestine.

39. PCBS, 2008. Population, Housing and Establishment Census 2007 Census Final Results in The West Bank - Summary (Population and Housing). Ramallah - Palestine.

40. PCBS, 2009. Statistical Abstract of Palestine, No. 10. Ramallah - Palestine.

41. Ibid

42. Ibid

43. Ibid

usually caused by the sharing of inherited land among beneficiaries. In addition, the high growth rate of population has made land holdings shrink in size and has resulted in creating extremely small parcels, or in some cases badly shaped parcels as farm management was not taken into consideration when subdivision took place. On one hand, small holding sizes are considered limitations and barriers in utilizing land in agriculture by the owners of small parcels. On the other hand, people who faced this problem were few and did not exceed 0.4% of the sample. Further analysis revealed that the holding sizes in the northern region of the West Bank are relatively large and show no tangible effect of land holding fragmentation. Many holdings proved to be remarkably large, which indicates some kind of monopolistic ownership of land through land consolidation.

Land Tenure

Many regulations on land, as well as, cadastral mapping were introduced in Palestine in the period between 1858-1928, modern Land Books were shaped in that era by the Ottomans (1858-1914) and the British Mandate authority (1920-1928). Starting with the rule of the Ottoman Empire, they enforced a well known land code known as the (1858 land code) which has had a long lasting effect. It resulted in governmental land registry (Tapu). Based on that, officials started issuing ownership documents, and Palestine land under the Ottoman land laws were categorized into six groups⁴⁴:

Mulk land: land which is subject to the use of a certain individual exclusively. Owners of these lands possess absolute ownership.

Miri land: Land owned by the state, while rights to utilization were given to citizens under certain conditions that ensure rent be paid to the state. In return, grantees had to cultivate the land and pay annual earnings to the state.

Waqf land: Waqf land is traditionally given away by its state owners to charity. Currently, this land is administered by the (Supreme Muslim Council for the Inspection of Waqf).

Public land: communal land such as pastures, grazing land, village and woodlands or roads.

Mewat land: This land is neither owned nor used by anyone. It is located about one and a half miles away from the surrounding localities. The right of possession of this land is given to the government, and permission to utilize it by individuals requires the issuing of a tithe deed (Kushan).

Musha land: Musha refers to undefined shares in a common land. In this case, land is owned by more than one person usually a village. Each share holder has a fractional share in the village, but has no distinctive parcel.

Registration of land in Palestine, according to the 1858 Tapu law, was a deeds system⁴⁵. Registration of documents was based on verbal description of the boundaries of properties⁴⁶, with no defining maps. Moreover, processing a deed was not a guarantee to ownership. In addition, many people were discouraged to register their land out of fear of being compelled to military service, or in an attempt to avoid adding additional taxes imposed on land registration. As a result, many people lost legal control of their patrimony⁴⁷.

After the fall of the Ottoman Empire by the end of the First World War and during the British mandate in 1920, the Department of Land Registries was formed in Palestine to take on all functions of the Tapu office of the former Ottoman government. The Department of Land Registries continued to use the registration of deeds system introduced by Ottomans until 1928 when the Torrens registration of title system was

44. Tamim, N.S.A., A Historical Review of the Land Tenure and Registration System in Palestine. An-Najah University Journal for Research (Natural Science), 1995. Vol.III(No.9): p. 84-99

45. Ibid

46. Kark, D.G.a.R., The cadastral mapping of Palestine, 1858-1928. The Geographic Journal, 1993. Vol. 159 (No. 1) : p. pp. 70-80

47. Stein, K.W., Palestine's Rural Economy, 1917 - 1939. Studies in Zionism, 1987.Vol. 8, no. 1

adopted. This system recognized each parcel of land as a separate unit. Therefore, a separate document was prepared for each land parcel documenting information relevant to each separate parcel or affecting it. Certificates were issued from the registrar to holders of titles that were indefeasible⁴⁸.

British authorities adopted both land registration systems; the deed and title system, with emphasis on the title system, especially for new transactions. The main categories of land tenure established during the Ottoman rule over Palestine remained without significant change; the only change made by the British mandate was, that unclaimed Mawat land was added to state lands⁴⁹.

During the Israeli occupation of the West Bank, land registration had to be done according to the Torrens registration of title system which has been adopted by Israel government. However, in 1980, Israeli government declared all land that was not registered or under cultivation as "State land", which facilitated confiscating all land that was deemed without an owner⁵⁰. Using this declaration, all Mawat lands and Miri lands which were not cultivated for 10 years or more became state lands and subject to confiscation at any time⁵¹.

In the time being, after the PNA started to securities ownership of some parts of the WB, the Palestinian Land Authority, which was established in 2002, is the official body responsible for surveying, registration and state land administration. Only 33% of the West Bank area is nowadays officially registered⁵².

The current process of land registration is cumbersome and time consuming. This, combined with the expensive services of lawyers and private surveyors has also promoted the use of other insecure titling' systems. Authentication and certificates proving ownerships in the WB at the present time are:

Tapu: it is recognized as the most official and accredited among the three. A Tapu is an official certificate issued from the Palestinian Land Authority Department as compelling evidence of ownership of a property. Tapu is the only formal proof for mortgages, and prevails over the others.

Maliyeh: A personal record that proves the right to use a parcel of land, but does not give the right to ownership. People who use land not personally owned by them can justify use by paying taxes. A personal record (Maliyeh) can be issued from the Property Tax Department proving that the land has been used by a certain holder. This document is issued for properties inside municipal boundaries, since no taxes for properties outside are paid. A Maliyeh could be used to either transfer the (right to use) or a means to formally apply for a Tapu. Yet the Maliyeh can be used to transfer the right to use among individuals.

Power of Attorney (Wakalah Dawriya): is a proxy written based on an application for a Tapu or a Maliyeh. This document requires a personal record to be issued from the Palestinian Land Authority supported by the Tapu or from the Property Tax Department based on the Maliyeh. It is initially issued in anticipation of land registration in the Tapu; land registration takes a lot of time and maybe expensive for some people. Thus, a power of attorney is issued to prove ownership until the buyer is able to complete the registration at the Tapu registration office. This document does not prove ownership; it remains valid for 15 years, during this period of time registration must be completed at the Tapu office. Otherwise, it will be regarded as an external contract showing a transaction, with no further validity to officially register the land.

External Contract: is a contract between two parties; a seller and buyer, without involving a third party, which is the Palestinian Land Authority or Property Tax Department. It does not give right to ownership of the land, yet it gives the holder the right to utilize it. Sometimes no written contract or document is required to gain the right to use of land; it is enough to have, at least two witnesses who can testify that a specific piece of land has been in use by a certain person for 15 years without any dispute. If the legal owner of the land has not been using it, the person taking advantage of the land has the full legal right to

48. Tamim, N.S.A., A Historical Review of the Land Tenure and Registration System in Palestine. An-Najah University Journal for Research (Natural Science), 1995. Vol.III(N0.9): p. 84-99

49. Ibid

50. World Bank Report on Economic Effects of Restricted Access to Land in the West Bank - Oct 2008

51. Tamim, N.S.A., A Historical Review of the Land Tenure and Registration System in Palestine. An-Najah University Journal for Research (Natural Science), 1995. Vol.III(N0.9): p. 84-99

52. Land Registration Study for the Ministry of Planning-by Land Equity International, May 2007 p. 28.

continue using it even if the owner wants to claim his or her land back. This law excludes Waqf land and land whose owner is proved to be absent for the entire period of time.

Most land users, to be specific (98%) in the areas studied are landowners. Few owners have faced difficulties in proving their ownership, represented by, 5.7% of the sample studied. Those facing difficulties were mainly located in Salfit, Jerusalem, Jenin and Hebron.

The study shows Tapu certificates are few in the West Bank, only 27% of land owners have a Tapu to prove ownership, most of which are located in Tubas and Jenin. The majority of lands in the targeted areas are not registered as Tapu, they are owned and utilized using Maliyeh. It is the formal document of 65.5% of the land in the sample. The remaining 7.5% of the lands are utilized using either power of attorney or an external contract.

Right to land is handed down from one generation to another based upon the prevailing kinship system. In the entire West Bank the land tenure applied is the Shar'i (based on Islamic Shari'a) sub-division of land holding. Under this division, one full share is given to the male beneficiary while half a share is given to the female. A married woman is, by virtue of her marriage, allocated one eighth of the land left by her husband, she can effectively exercise her rights through her male children. In cases where the widow did not conceive from her late husband, she is given one sixth of the total land.

Markets and Trading Procedures

Farmers were found to utilize more than one marketing channel to sell their produce; most of the farmers (67.2%) manage to sell and market their products independently; while 30.7% sell output at local markets and 19.5% simply sell their produce to wholesalers. A large number of farmers felt they had no real problems with selling or marketing their produce. Nevertheless, 32.2% did have issues with marketing; they also expressed that low prices and competition with Israeli products are two main obstacles in the face of better profit. Additionally, road blockades and check points imposed by Israeli occupying forces restrict mobility of farmers along with products. This is a constraint to effective trading, particularly in Jenin, Tubas Hebron and Bethlehem. This, combined with the poor conditions of roads, is considered a huge constraint to effective marketing.

The majority of farmers agreed that available markets are able to absorb the produce. The highest consumer market for Palestinian agricultural production is the local one. Around 92.1% of production in the targeted areas is either consumed by the household or traded internally within the West Bank. The remaining 1% goes to Gaza, 3% end up in Israel, 0.4% is exported through Israeli wholesalers and around 3.5% is exported without the intermediation of Israeli intermediaries.

In total, 43% of exports are either through, or, to Israel. This number was higher prior to 2000. The decline was caused by the deteriorating political situation, the strict newly imposed regulations and policies set by the Israeli government, preventing Israelis who used to shop in nearby Palestinian markets (competitive to Israeli markets) from doing so. Moreover, other restrictions imposed, prevent Arabs living in Israel – who's economic and social ties are very much connected to Palestinians in the West Bank- from traveling to the West Bank, to buy or transfer agricultural produce in to Israel. As a result, given the restrictions imposed on Palestinian trade, a higher supply in local markets has been created, thus, pushing the price of seasonal agricultural products further down.

The Role of Women

Palestinian women have always played a major role in agricultural production. In 2008 around 28%⁵³ of employed women in the West Bank worked in agriculture, of which 82.8% were unpaid family members, 15% self employed, 2.1% wage employed and 0.1% were employers⁵⁴.

Women in the sample studied, prove to play an integral role in agricultural activities; 81% of family members involved in the production process are made up of females. Female family members usually share with males many farm duties, this involves, irrigating, harvesting, planting, threshing and winnowing, transportation, and in some cases handling marketing.

53. PCBS, Percentage of Employees in Agriculture, Forest, Hunting and Fishing Activities from the Total Employees in Different Activities by Year, Sex and Region, 2004-2008. 2009

54. PCBS, Percentage Distribution of Employees in Agriculture, Forest, Hunting and Fishing Activities in the Palestinian Territory by Employment Status, Sex and Region, 2008. 2009

The dominant culture in rural areas of the West Bank does not encourage women to work away from home. Working outside the household is considered by most rural residents to expose women to danger, especially if movement among villages or cities is required. Furthermore, the dominant culture assigns women the role of (house wife), mainly involving child bearing and raising children, leaving her with little free time to peruse a career or even a part time job. The end result of such factors encourages women to look for employment in the agricultural sector. Women have always helped with agricultural projects and are considered a major component for the feasibility of labor intensive enterprises. Conveniently, farms are usually located close to homes, making them relatively safer places to work, when compared with other job opportunities in surrounding localities. In addition, the strategic location of farms gives women the ability to multitask, utilizing their time and fulfilling both the duties of their households, along with their job. Therefore, they can play the role of house wife and still financially support their family, even if it is just producing for domestic consumption.

Female household heads, in many cases, are the only income earners. In other cases; they receive some support from family members, through social safety nets internally existing within the local culture. Yet, women's income contributes significantly to the total monthly income of the household.

Overall Constraints and Priorities as Perceived by Farmers

Constraints on mechanical reclamation of abandoned land and increasing investment in the agricultural sector can be divided into three levels: household level constraints, specific abandoned land constraints and institutional constraints.

Household Level Constraints

Households lack capital to take on reclamation work, and, or buy inputs. Financial resources financing agricultural projects are scarce and unsystematic. Moreover, input prices have been escalating over the past years, especially livestock feed, the price of fertilizers and pesticides, which the average farmer can not afford.

The impracticality of some land holdings, their need for mechanical reclamation, or rehabilitation in some cases, combined with the lack of good infrastructure, are major obstacles in increasing total production, and income level, of households in the areas studied.

However, water scarcity, combined with, drought are top on the list of constraints. Both these phenomenons have played a major role in deteriorating agricultural land and production, mainly in the southeast region of the West Bank, due to its dry climate.

Many farmers randomly select the crops they produce. They often diversify crops to reduce risk, regardless of the markets demand that, sometimes, leads to excess in supply pushing down the price, or simply failure. Some farmers do not succeed when it comes to determining crops, as they do not take into consideration, the nature of the land or season.

Restrictions on mobility imposed by the occupying Israeli government are limiting the transportation of individuals along with agricultural goods. Accessibility to certain markets is limited, especially for fresh produce. Constraints are twice as bad when lands are located close to Israeli settlements; in such areas restriction on movement is extreme.

It is interesting to note that low return on agricultural production was not perceived as a very important constraint or set back by most farmers. The issue was mentioned by only 5.2 % of the farmers. In general, they do find the financial returns of agriculture to be low, but compared to other obstacles, it did not seem to be a major problem.



Specific Abandoned land constraints:

Lack of complete Cadastral maps; maps are currently being drawn up and developed in a very complex and dynamic environment. This has discouraged agricultural work to a great extent as certain parcels are not well identified. The existence of Musha land, undefined shares in a common land, has weakened the man-land relationship. Consequently, this has taken its toll on development, and has also contributed to soil erosion.

There has always been a question mark on agricultural work in classified (B) or (C), zones; mainly areas close to settlements. Restrictions enforced by Israeli Military are perceived as a means to discourage agricultural activity; this factor largely exists in targeted areas within Jenin and Salfit Governorates.

On one hand, the fear of land confiscation leading to total loss of agricultural assets including the capital invested has caused landholders to have second thoughts when investing in their land. This is evident in Salfit, Qalqilia, Ramallah and Jerusalem. Many Palestinian landowners have witnessed land confiscation by the occupying Israeli government. This has increased since 2002, when the occupying Israeli government started constructing the separation wall. On the other hand, it is worth noting that risk of confiscation was a motive for the majority of people facing this threat. Utilizing their land is considered a statement, to prove ownership on the ground and minimize risk.

Institutional constraints

As previously mentioned, there is lack in assisting the agricultural development sector. The agricultural sector has been given the least amount of aid, despite the fact that agriculture has proven to be a good shock absorber during crises, decision makers, donor community have marginalized the agriculture sector. Thus, institutions operating in the field were restricted accordingly.

Analysis revealed lack of coordination among institutions operating in this field. Areas of intervention were usually selected using criteria defined by the each institution individually. In many cases, intervention did not reflect the reality on ground, namely the political future of the land, suitability of lands and regions, commitment of beneficiaries or priorities of the landowners and users themselves. The lack of a comprehensive picture or plan for the need and intervention on ground has resulted in creating the same outcome in a number of cases or over serving one region while neglecting the other.

Service coverage of agricultural institutions is weak: 60% of respondents explained that their relationship with agricultural directories in the region is minimal or in some cases nonexistent. 80% hardly have direct connections to NGOs working in the field. This indicates that service coverage to farmers is partial and inconsistent.

The agricultural sector has become a major source of employment in the West Bank. As indicated above, comparing the high rate of agriculture in domestic employment generation with its very low share in development aid, highlights great inconsistency. Generally speaking, more donor support is needed to fund the agricultural sector, to restore its productive capacity, reduce unemployment, save remaining areas of land in the West Bank and eventually alleviating poverty.

So far donors have been active in areas where projects and programs are deemed most acceptable in the eyes of Israel. This gives priority to land with less conflict and accessibility, thus, marginalizing most disadvantaged areas of land; subject to confiscation. The danger of land confiscation is considered the biggest threat, exerting pressure to act through reclamation and rehabilitation. This danger is widespread in all governorates of the West Bank, while, high Midwest governorates seem to be the most at risk. Abandoned lands threatened by confiscation can be listed in the following order: high-risk areas include Salfit, Qalqilia, Ramallah, Jerusalem, medium-risk areas include Tulkarem, Tubas, Jenin, medium danger and low-risk areas include Bethlehem, Nablus and Hebron.

The urgent need to develop new water resources was acknowledged by all targeted areas. Constructing artesian wells, developing existing resources through spring and cistern upgrading and developing projects to maintain and control surface water where applicable were needed in all governorates.

The ultimate objective of land reclamation is the sustainable development of land, and enhancing the standard of living for beneficiaries. For this target to be met, lucid need, not only for mechanical reclamation, but also for relevant training, connections to financial sources and coaching at later stages are proved to be priorities.

Relevant training: there is a clear need for training among farmers and landowners whose land is subject to land reclamation. Areas of training mostly need were: adopting effective farming techniques, modern technology used in agriculture, proper use of fertilizers and pesticides, and choosing appropriate crops given the characteristics of land, agricultural seasons, and market demand.

Connection to financial sources: over the years, the cost embedded in agricultural work has been rising. The fact that mechanical reclamation is very expensive contrasting high poverty rate has played a big role in discouraging agricultural work and abandoning fertile land. More liquidity access has become crucial; linking farmers with specialized financial institutions, such as Microcredit institutions, and providing loan guarantees for new agricultural investment, should be the very next step after reclamation work is complete.

Coaching and support: at the micro level, there is a need for follow up by supporting organizations to insure the sustainability of reclamation work, in addition to, the success of new projects. There is a critical need for specialist support to provide advice on different levels of the production process, starting from planning and ending with marketing. This support could also include incubation options for new enterprises. At the macro level, there is a need for political and international support to enhance mobility of individuals and produce both inside and outside of the West Bank.

In spite of the key role women play in agriculture, investment in their empowerment has been scarce. Meanwhile, priority in agricultural training and development of skills is given to male farmers. Yet, it is of great necessity to enhance the agricultural productivity of women as part of a well needed long-term strategy. A decision needs to be made regarding the matter, empowering women, who are proved to be a main pillar in the agriculture sector, will eventually result in a sustainable and competitive, productive agricultural sector, and will improve the living and nutritional standards of women and their families'.

Reducing agricultural trade dependents on Israel; there is a need to develop new markets far from Israeli influence and control, such as enhancing accessibility to neighboring Arab countries. This would be a step forward in an attempt to reduce agricultural trade dependence on Israel. Moreover, there is a need for subsidizing the purchase of fertilizers and animal fodder, especially the locally produced animal fodder and for supporting local nurseries to enhance their production.

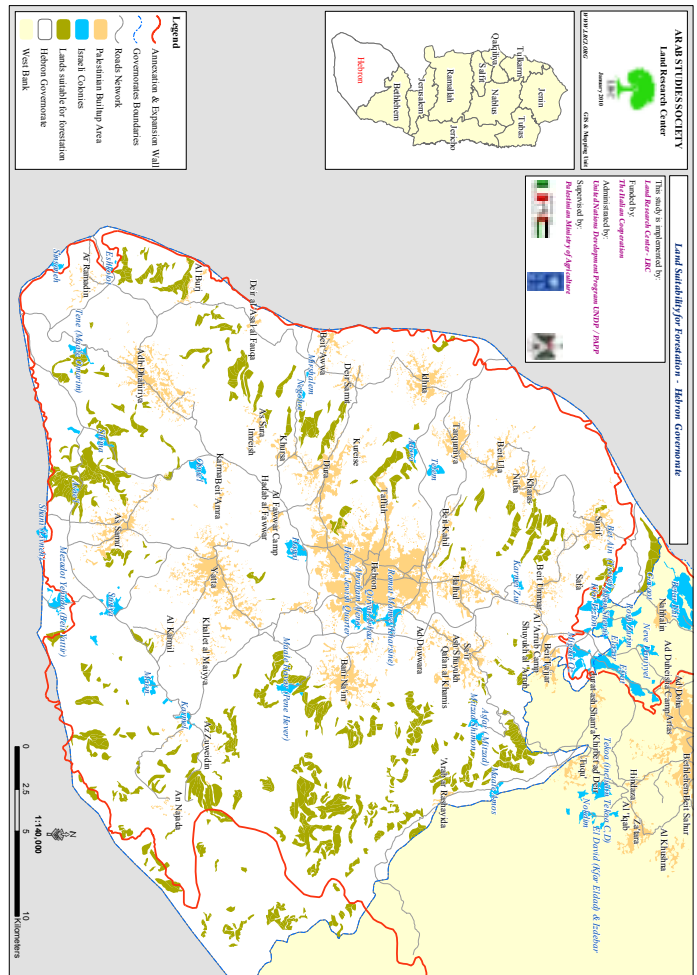
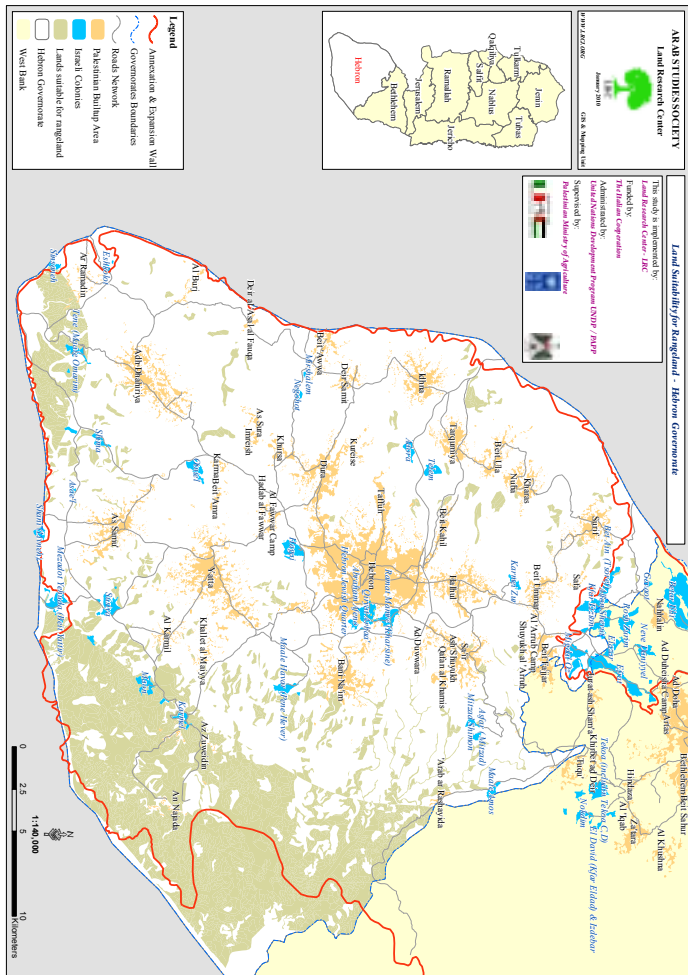
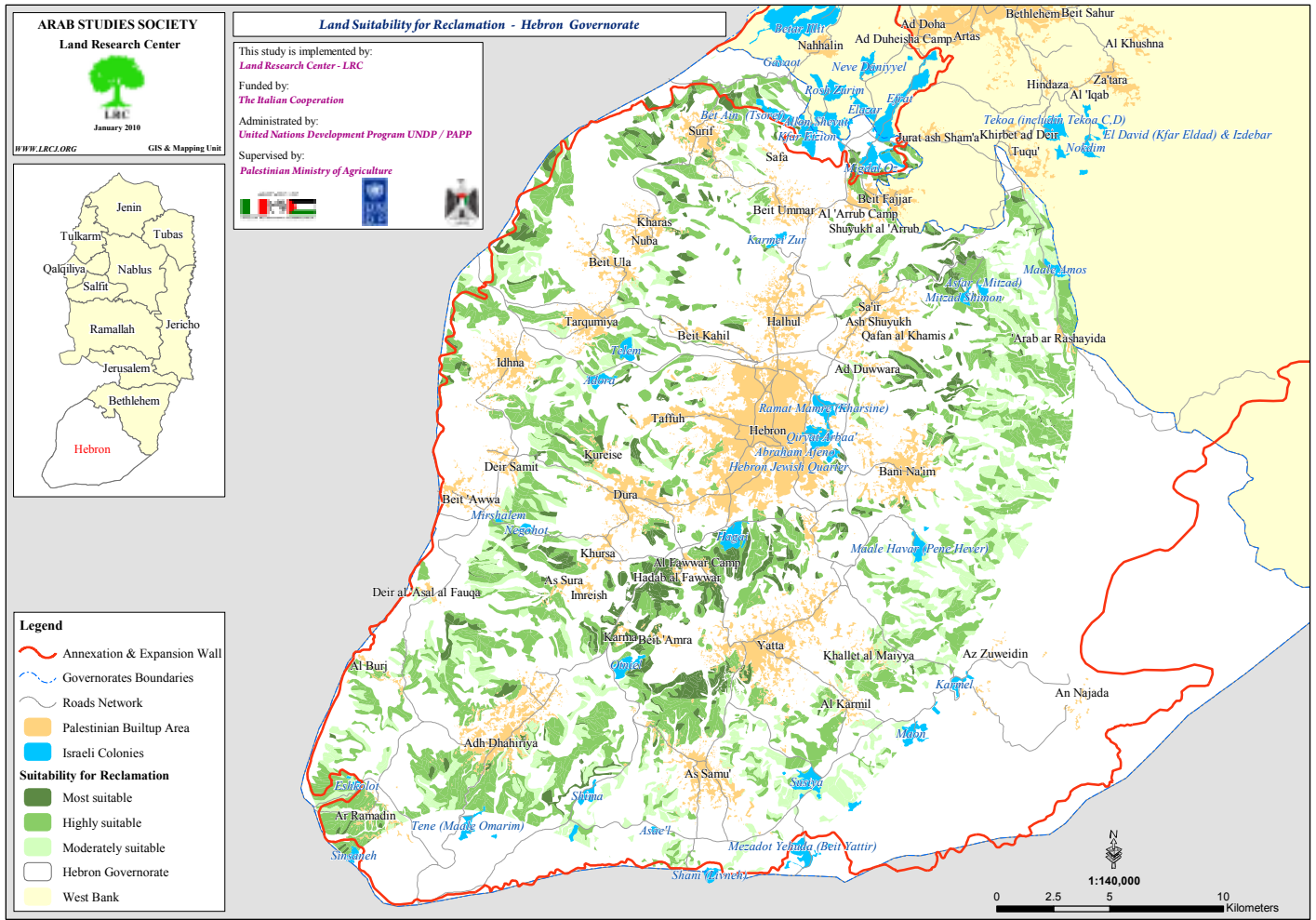
Finally, a comprehensive insurance system emerged as an urgent priority. Many respondents counted the numerous times they were struck by curfews and calamitous weather conditions and fatal diseases.

In the research area, there is a need to bridge two major gaps to ensure better development in the agricultural sector. First of all, the basic level of existing agricultural technology farmers have access to is basic. Moreover, their minimal outdated knowledge of agriculture depends, to a large extent, on inherited knowledge. An assessment of current technology used by the Palestinian farmer and possibilities of upgrades, combined with the level and basis of their knowledge, as well as, techniques used, is a constructive starting point in the field project development. Second of all, a study of land tenure in the West Bank, how to improve cadastral maps to strengthen the man-land relationship and impede land confiscation, is of pressing need under the current circumstances. Nevertheless, a remarkable phenomenon of collectivism; buying land on large-scales North of the West Bank, mainly by wealthy Palestinian businessmen and immigrants is largely witnessed, which confuses and worries landowners. Finally, a separate study may be conducted to further investigate this phenomenon, its dimensions and probable outcomes.

III.2 Governorate Level



III.2.1 Hebron Governorate (HG)



III.2 Governorate Level

The results will be displayed for all the governorates in the WB: Hebron, Bethlehem, Jerusalem, Jericho, Ramallah, Nablus, Salfit, Qalqilya, Tulkarm, Jenin and Tubas.

III.2.1 Hebron Governorate (HG)

III.2.1.1 Introduction

HG at a Glance

Hebron Governorate (HG) is located in the southern part of the West Bank. It is bordered by Bethlehem Governorate (BG) in the north and by the Green Line (1949 armistice line) in the south, east and west directions. The Governorate has an area of 1067 km² (comprising about 19% of the West Bank area)⁵⁵. Hebron city, the largest built-up area in the governorate, is located 36 km to the south of Jerusalem and 25 km to the south of Bethlehem.

HG is characterized by having four land systems with different climates, lithologies and topographies. Agricultural land comprises about 30% of the total Governorate area, the non-agricultural land comprises about 62% while the artificial surfaces (i.e. built-up and different construction areas) comprises about 8%.

The agricultural production of the governorate amounted to 172,473,000 US\$ in 2006/2007. This amount is distributed between livestock which was about 108,825,000 US\$ and cash crop production which was about 63,648,000 US\$⁵⁶.

Demographic Features

The total population of HG is about 562,350, which represents about 14.7% of the population in the oPt and 23.6% of the WB population. The population density is about 517 persons/km². HG has about 182 Palestinian built-up areas ranging from small hamlets with few tens of people to villages with hundreds of peoples, small towns with few thousands, big towns with more than 10,000 to cities of more than 20,000 inhabitants. The average household size is 7.2 which is higher than that of the oPt.

According to the PCBS classification in 2007 census for the types of the Palestinian communities, about 85.3% of the population in the HG live in urban areas and 12.1% of the populations live in rural areas (compared to 42% of the Palestinian communities were classified as rural in 1994) and 2.6% of the populations live in refugee camps. This indicates a quick and dramatic decrease of the rural population in the Governorate due to various reasons; some are social, economic, and most importantly political.

Economic and Social Conditions

In HG, the unemployment rate is 25.9% compared with 10% in 1999⁵⁷. The largest sector for absorbing employment in HG is agriculture (21.7% of the labour force), followed by mining, quarrying and manufacturing with 18.8%, whereas commerce, hotels and restaurants occupies 18.2% of employment and the least is devoted to construction with 14.7%⁵⁸.

The average daily per capita water consumption in HG does not exceed 84 liters, which is less than WHO standards that assign a minimum quantity of 100 liters of fresh water/capita/day.

The WFP Food Security survey in the year 2008, estimated that 32% households are food insecure and another 12.1% are vulnerable of becoming food insecure in HG compared with 21.5% food insecure and 10.1% of potential food insecure in the WB⁵⁹. HG is classified as one of the poorest among WB governorates. About 30.4% of the HG population are classified as poor compared with 19.5% of the WB people.

55. Hebron Governorate, Land and Population, Land Research Center, 2003.

56. PCBS, 2007.

57. Palestinian Central Bureau of Statistics, 2009. Labor Force Survey: Annual Report: 2008. Ramallah – Palestine.

58. Ibid.

59. WFP, 2008.

HG has the highest percentage (22.6%) of people suffering from disabilities and difficulties such as blind, deaf, physical and mental disabilities. The rate is 21% among females and 24% among males⁶⁰ which necessitates special attention to be paid for such different disabilities.

The number of schools in HG is 442 (379 governmental, 46 private and 17 UNRWA). The number of students is 171,370 (86,032 female and 85,338 male)⁶¹.

Infrastructure

The infrastructure in HG is one of the worst among Palestinian Governorates. This is because HG has the largest area amongst other Governorates, which is also accompanied by high level of inaccessibility and difficult trafficability to reach different areas in the HG. As a result of inaccessibility and trafficability, only 28.5% of the Palestinians are connected to electrical, water and sewage networks simultaneously⁶². This is lower than the average of the WB (33.7%). 38.6% are connected to electrical and water networks simultaneously which means that about 90% are without connection to sewage networks. Currently, 17% of the total population in HG is not connected to the water network. The people in these communities rely entirely on cisterns and water tankers for their domestic water uses.

Environmental Conditions

The environmental elements in HG suffer from the same threats and pressures similar to other governorates of the WB. The most important threat is the presence of about 28 Israeli colonies that exacerbated the deteriorated environmental status through discharging solid waste and wastewater either inside or nearby agricultural lands. Nearly 67% of the solid waste is collected in the HG and dumped into a 17 opened and uncontrolled dumping sites, while the remaining 33% of the solid waste is dumped into and burned on road sides and vacant lands.

Political Situation

HG is greatly suffering from the Israeli activities, especially those directed against Palestinian lands. There are 25 Israeli-declared “legal” colonies in addition to 15 “illegal” colonies and outposts established since 1996⁶³. The by-pass roads crossing the Governorate have been established after the start of the Oslo peace process with a total length of 117.1 km. Establishing these roads has led to Israeli control of 34.4 km² (about 3 % of the total area of HG). The construction of the Separation Wall led to the separation of the agricultural land behind the Wall, such land has been abandoned due to the inaccessibility by the Palestinians. The length of this abandoned land is 130 km with an area of 41.6 km². The land on the exact route of the Wall is about 10 km². Therefore, the establishment of this Wall resulted in a loss of 5% of the total HG area⁶⁴. In general, the total area of the land that is under Israeli control is about 38.5% of the total area of HG (Area C according to Oslo Agreement).



60. Palestinian Central Bureau of Statistics, 2008. Agricultural Statistics, 2006/2007. Ramallah - Palestine.

61. Data Collected from the Ministry of Education and Higher Education. Statistics about General Education in Palestine, 2007-2008.

62. Palestinian Central Bureau of Statistics, 2008. Population, Housing and Establishment Census 2007 Census Final Results in The West Bank – Summary (Population and Housing). Ramallah - Palestine.

63. www.poica.org.

64. Ibid.

III.2.1.2 Physical Features of HG.

As indicated in the methodology, the most important physical features of HG that affect the land suitability for reclamation are: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 245.6 km² which constitutes about 23.0% of the HG area. The above mentioned physical features would be described as follows:

Landform Elements' Classes

The landform element classes that are defined in the non-agricultural area (NA) of the HG are: slope, footslope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It has slope ranges from gently inclined (3-8%) to steep (18-32%). It covers an area of about 159.0 km² which is equivalent to 64.7% of the NA and 14.9% of the HG area. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

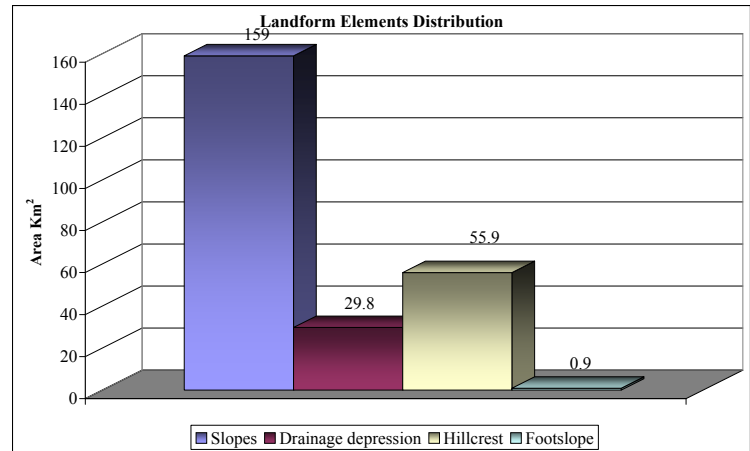


Figure 11: Landform elements in the NA of HG

Drainage Depressions: It has an area of about 29.8 km², which represents about 12.1% of the NA and 2.8% of the HG area. It represents spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 55.9 km² which represents about 22.8% of the NA and 5.3% of the HG area. It is composed of small spots that are sometimes cultivated. It is worth mentioning that not all the hillcrests in the HG are mapped because the areas of the hillcrest are small and cannot be shown at the map scale of this report.

Footslopes: It has a comparatively small area of about 0.9 km² which represents about 0.4% of the NA and less than 0.1% of the HG area. It is a transitional area between slope and plain with moderate or low percentage of rockoutcrop.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes and usually represents level area. It covers an area of about 8.9 km² which is equivalent to 3.6% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

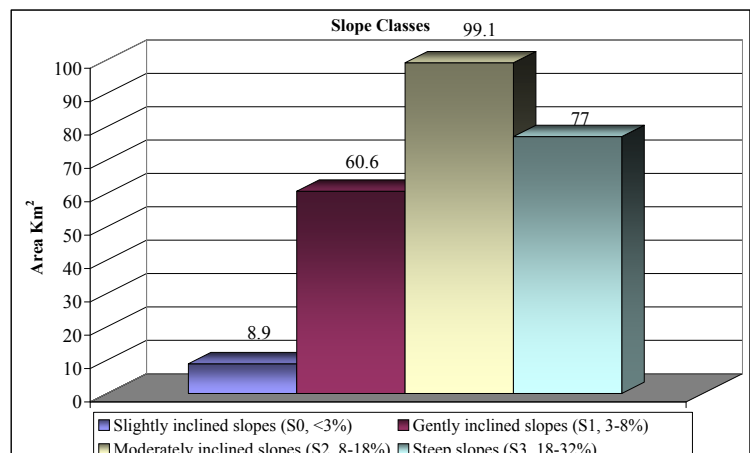


Figure 12: Slope classes in the NA of HG

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 60.6 km² which is equivalent to 24.7% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills. It covers an area of about 99.1 km² which is equivalent to 40.3% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills. . It covers an area of about 77.0 km² which is equivalent to 31.3% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop due to the excessive erosion processes taking place in such type of slopes.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates.

The aspect class data indicates that the non-oriented flat area with (0) aspect degree represents a small area (5.9%). It is composed mainly of flat hillcrests. In Palestine, areas with northern and western aspects (Mighian) are normally considered much better for agriculture than those with eastern and southern aspects (Mishmas). The first part has an area of about 19.9 % while the second part is about 29.6%.

Rockoutcrop Classes

The majority of the area (95.1%) has high rockoutcrop (>20%). The presence of large areas with high percent of rockoutcrop is an indication to the natural reason for non-cultivation rather than human reasons. Natural reasons can be attributed mainly to the slope steepness resulting in high rate of erosion, as well as the rainfall distribution.

Climate Classes

The total area of the arid class is 162.9 km², which is comprising about 66.3% of the NA; the area of the semi arid part is 66.1 km², which is comprising about 26.9% of the NA; and the sub humid area is 16.6 km², which is comprising about 6.8% of the NA. The following chart displays the three classes of the climate that exist in the study area with their conjugative descriptions:

The majority of the NA area is suffering from aridity and is occupying most of the area (about 93%). This degree of aridity put severe and diverse restrictions on utilizing this land for agriculture, especially in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl as a result of the high population growth rate and the wide range of population distribution; the same situation is applicable to the sub humid area (6.8%) which is heavily populated. The vast area of the arid climate provoked the salinization process, especially with the high rate of evaporation and the limited amount of rainfall, which are the main driving forces to desertification in this area.

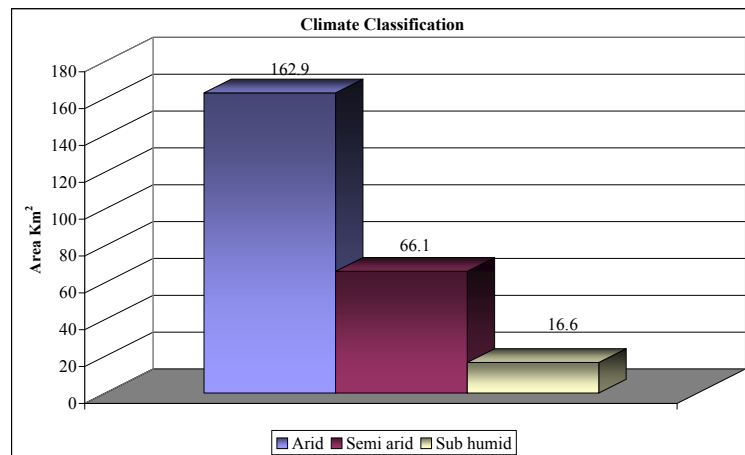


Figure 13: Climate classes in the NA of HG

III.2.1.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The analysis depends on the intersection of the different classes in the aforementioned four layers by using GIS.

The following map displays the land suitability classes for reclamation, rangeland and forestry in HG.

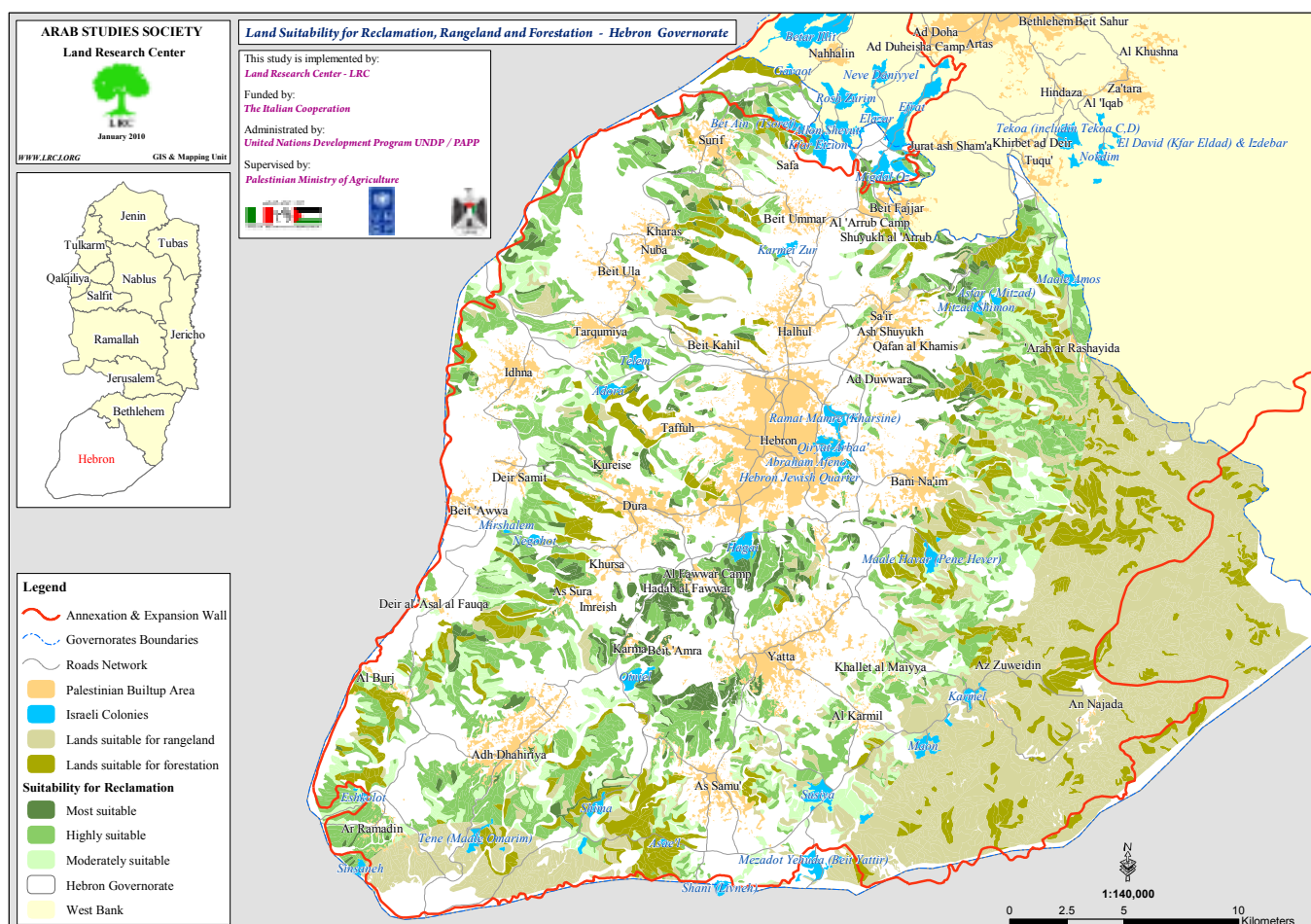


Figure 14: Classes of land suitability for reclamation, forests and rangeland in HG

The areas of the four classes for lands suitability for reclamation are shown in the following table:

Table 11 displays that lands with the most suitable class for reclamation represent the smallest percentage of the total area among all classes (12.7%). This class is mainly located in the central, northeastern and northwestern parts of HG. Most suitable classes of reclamation are closer to Halhul, Beit Ummar and Sair towns that are known with their relatively high agricultural productivity. The physical features of these parts indicated that there is comparatively high amount of precipitation and sub-humid climate. Also, the socio-economic analysis pointed out that the economic situation at these parts is relatively good, adding a positive driving force for reclamation processes to be successful through the financial share and cooperation of the peasants in these built-up areas. This result indicates that the work at the most suitable spots for reclamation should

Table 11: Classes for lands suitable for reclamation in HG.

Suitability classes	Area (km ²)	Area %
Most suitable	31.2	12.7
Highly suitable	149.5	56.6
Moderately suitable	68.0	27.7
Total	245.6	100

aim primarily at increasing the agricultural productivity throughout the improvement of the existing management and practices, rather than eradicating poverty or combating land degradation represented mainly by soil erosion. These moderately suitable parts are located at the eastern and southeastern parts of HG and at the western fringes of the central heights. The main characteristic of these parts is that they have a relatively high steepness of slopes.

Land Suitability for Forests and Rangeland

The total area in HG that is classified as suitable for forests and rangeland is estimated at about 227.3 km². This land is qualified for such classification as a result of the presence of one or more than one restriction of the slope, rockoutcrop and the climate. For example, lands suitable for forests should have 300 ml/year of rainfall or more, and the rockoutcrop should be less than 40%. As a result of this analysis, the total area of the lands that are classified as suitable for forestry is estimated at about 15.3 km² (see Figure 16). This area represents about 1.5 % of the HG area. This percent does not mean that this is the only land available and suitable for forestry but it means that this land acquired high suitability for forestry compared to other lands in the study area, and of course, after excluding the land suitable for reclamation. The percent land that is suitable for forestry from the total land suitable for forests and rangeland is small (6.7%).

The results indicated that the majority of the land in HG which is not suitable for reclamation is suitable for rangeland (93.3%). This result pointed out to the importance of rehabilitating rangeland for the promotion of livestock production in the HG.

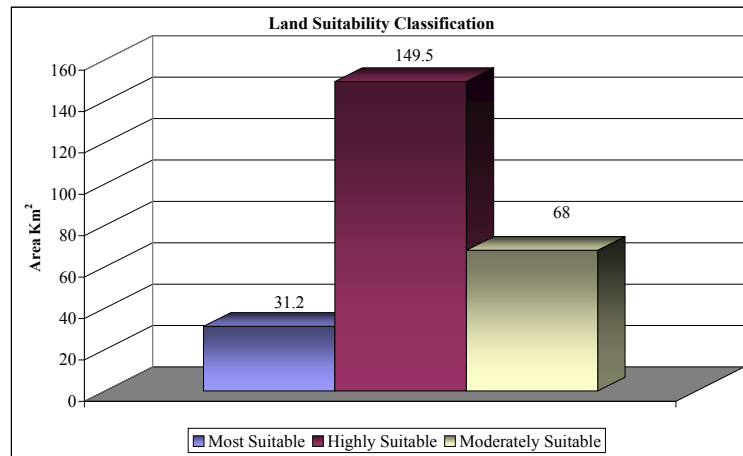


Figure 15: Chart of classes of land suitability for reclamation in HG

Table 12: The areas of the land suitable for forestry and rangeland in HG.

Suitability classes	Area (km ²)	Area %
Forestry	15.3	6.7
Rangeland	212.0	93.3
Total	227.3	100

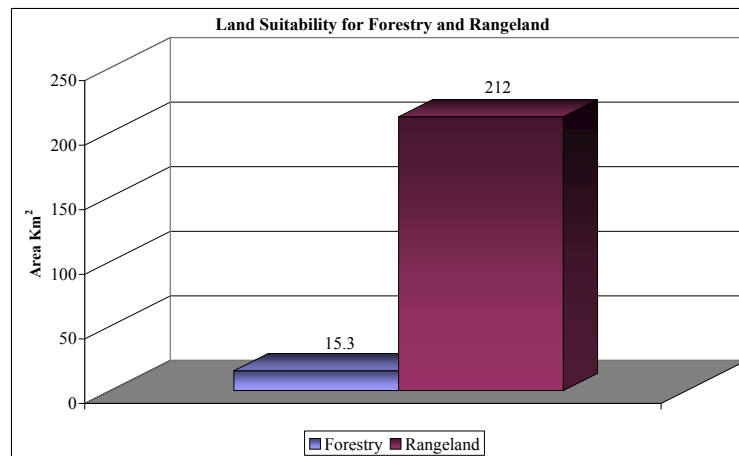


Figure 16: Chart of land suitability for forests and rangeland in HG

III.2.1.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in the HG is 6.1⁶⁵; where the corresponding average for the sample studied in the targeted areas of the governorate separately was 10.6. Although comparatively high, a large family size is highly desired and supported by the culture as more children means more support for parents in their old age. Moreover, mainly in tribal communities, larger families mean more political power as the children grow to adulthood. Most importantly, in agricultural societies, more children mean more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 3 members excluding the main farmer, comparing it to the average number of household members in the sample within the HG, almost 28% of the typical family get involved in agriculture, which reflects an agricultural society.

Analysis also revealed that the majority of farmers in the HG have a modest level of education. Table 13 shows that 65.6% had received some formal education up to high school, 24.8% of the sample are well educated and holding a higher degree than Tawjihi. This adequate level of education could be a fertile condition for providing and implementing future trainings or for the adoption of new techniques for production.

Table 13: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	25	9.7
Primary education	47	18.1
Secondary education	67	25.9
High school	56	21.6
Diploma	25	9.7
Bachelor's degree or above	39	15.1
Total	259	100.0

Remarkably, the average year of experience in agricultural work among respondents was 22 years. However, knowledge and experience in agriculture accumulated by farmers over the years highly depended on inherited experience as the main source of the (know-how) in agricultural production. 74.9% of the farmers depend only on what they have learnt from older family members who worked or are still working in agriculture and tips received from neighboring farmers, they neither attended short courses nor did they receive any technical training. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture and further development. The remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information such as attending short courses and studying agriculture at universities. The percentage of people considered educated professionals who graduated from universities with agricultural degrees and working in agriculture was not high and represented only 2.7% of the sample. Moreover, farmers who ever attended at least one short course in agriculture represented 17.8% of the sample. This indicates how tremendously agricultural work in the HG depends on non-scientific traditional techniques of production based on bounded-rational decisions when choosing crops, fertilizers or pesticides as clarified by respondents. This high dependency of inherited knowledge explains how outdated their knowledge about modern methods and technologies used globally, which reduces their efficiency, effectiveness and productivity.

According to the EC new definition of Small and Medium Enterprises (SMEs)⁶⁶, agricultural production is mainly dominated by micro-scale farms that generate about 98% of total production in the targeted area within the HG, while the rest 2% were small-scale farms. Moreover, most agricultural economic activities are classified under family businesses; 95% of the sample restricted farming labour to family members only. Only about 5% of the farmers go beyond family members to employ seasonal labour; these farmers employ 1.7 employees on average. These facts indicate that agricultural production in the HG is micro to small-scale and at the same time it is family-labour dependent. Like other governorate, farmers count mainly on family members of whom 99% are and considered self-employed.

65. PCBS, Main Indicators By locality Type. 2009

66. Commission, E., SME User Guide explaining the new SME definition

Unsurprisingly, 97% of the households studied were headed by males, given the paternal culture common in the oPt; the male is in charge of land and agricultural activities. Men manage the business by making crucial decisions, yet intensively counting on females in the family to help and do a major part of the field work. Since it is not common to count only on agriculture to guarantee an adequate standard of living; male members of families usually leave early in the morning leaving the field to be taken care of by females who are usually children as 49.7% of employed children in the WB are working in agricultural sector⁶⁷. Analysis showed that females represent 65% of family labour in the sample, which expresses the crucial role of female family members in the production process.

Analysis showed that 52.5% of the farmers are 51 years old and above. Therefore, one could infer from this result that farmers in HG are ageing, while young people prefer other kinds of employment if any. Agriculture is a second option for most young people who usually have other options and prefer other kinds of employment, which generate more income leaving agriculture for old farmers with fewer options.

Common Economic Activities and the Standard of Living

The most common activity in the targeted areas was farming and so constituting the main source of income for the households; the sample studied was made of owners of land suitable for reclamation and farmers working in this land. 88.6% of the sample in the targeted areas were farmers. Moreover, many people in the targeted areas have more than a single job. Other common jobs among landowners and farmers were working with livestock that represented 20%, followed by working as white and blue-collar employees with 13.4% and 9.6% respectively. 42% of the sample considered farming as the best job option among all others. This reflects that farming is positively perceived mainly by farmers who are attached to their land and showed a real interest in investing time and effort on developing further land. The rest of the sample preferred working with livestock, business and employment in jobs with a guaranteed salary respectively.

Working in agriculture has become less profitable as explained by all respondents. This is due to many reasons such as pests, diseases, drought and soaring input prices. Thus, many farmers in HG considered agriculture more as a secondary rather than a primary source of income. Analysis showed that 44.1% of the sample working in agriculture considered it as a major job, while 44.5% of the sample perceived farming as a secondary job. Nevertheless, agriculture in the studied areas of HG is considered as a major source of income regardless of all limitations.

Table 14: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	44.1	808 NIS
Farmer as secondary job	44.5	651 NIS
Farmers of total sample	88.6	730 NIS

As Table 14 shows a household's average income from agricultural work is 730 NIS, this number includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as a major occupation had an average income from agricultural work of 808 NIS. Based upon that, and according to the PCBS measures of living standards in southern WB⁶⁸, households counting solely on agriculture live under poverty line, these households represent 27% of the entire sample.

86.8% of the sample's monthly income is NIS 3,000 or less. Based on PCBS classification of poverty according to the household monthly income⁶⁹, households living under poverty line are estimated to be 74% in targeted areas. Monthly expenses exceed monthly income for the majority of the households, thus indicates dependency of households on savings, remittances, micro loans and/or cash through safety and social nets. Spending on basic physiological needs such as food represents the main category of expenditure, transportation and communication, and clothing were the second and third larger expenses respectively⁷⁰.

67. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah

68. PCBS, Poverty in the Palestinian Territory. 2007

69. Ibid

70. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah

Crop Diversification

The study shows a high dependency by farmers in HG on rain-fed fruit trees. As shown in Table 15 below, 85% of the farmers own rain-fed trees which have a key role in their economy and the food production basket. On the other hand, irrigated trees are the least planted; this could be explained by their high dependency on water which is scarce in the governorate and the fact that they yield fruits accompanied by little income on yearly bases, which makes planting them less profitable than other kinds of crops.

In addition to rain-fed trees, rain-fed vegetables were widely planted by 69.2% of the farmers, while 41.1% cultivated irrigated vegetables. Finally, field crops seem competitive among other kinds of crops with 63.6% of farmers cultivating them continuously.

Table 15: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	248	85.8
Vegetables depending on rainfall	200	69.2
Irrigated vegetables	119	41.2
Field crops	184	63.7
Irrigated trees	44	15.2

Evidently, most farmers use a minimizing-risk strategy by diversifying the types of crops they grow. Farmers cultivate a collection of 2-3 different kinds of crops which minimizes risk. The common fruit trees production in Hebron is grapes followed by olive and plum respectively. Common vegetables produced are mainly cucumber, tomato and cauliflowers. Field crops produced were mainly barely, wheat and vetch⁷¹.

Livestock

Generally speaking, livestock numbers in Hebron district have decreased significantly⁷². This was mainly as a result of confiscation of rangeland and farms in addition to blocking roads leading to them by Israeli army. Besides that, high incidence diseases, population pressure, and the soaring prices of livestock's fodder have discouraged agricultural production to a great extent. Nevertheless, the contribution of husbandry sector in HG is relatively high. In total 37.8% of the sample population raise livestock which reflects a good level of dependency of livestock in the HG; 20% of the household earn their living mainly from husbandry, while 17.8% of the sample raises livestock as a secondary source of income.

A clear relationship between farming and livestock rearing was evident and supported by 20% of the sample who were farmers, yet raising livestock. This interdependent relationship was explained as farming depends on animal manure as natural fertilizers, while plant residue after harvesting is used to feed livestock.

Machines, Equipment and Inputs

Generally speaking, HG is the richest in the number of agricultural machines and equipments. 38.8% of agricultural equipments owned by households in the WB are located in HG. These equipments mainly consist of four-wheel tractor, trailers, water tanks, cultivators, plough, leveling boxes, sprayers and others⁷³.

Table 16: Source of Seeds Used in HG

Source of seeds	Frequency	Percent
Local nurseries	221	57
Self-made	161	41
Israeli dealers	3	1
Agricultural organizations	3	1

71. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007

72. PCBS, Agricultural Statistics, PCBS, Editor. 2003/2004/2005/2006/2007, PCBS: Ramallah

73. PCBS. Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm

Local nurseries located in HG have formed the main source of inputs with 57% of population counting on them; nevertheless, there is a high percentage of farmers producing their own inputs of seeds forming 41% of the sample studied. This source of seeds has been developing as a result of the unhealthy plants they buy or receive as aid, price hikes or to maintain a certain species of high-quality local crops.

Water

The study shows that water reserves for agriculture were considered enough by only 8.2% of the farmers, while the rest considered it inadequate and scarce. Moreover, 71.6% of farmers in these areas considered lack of water as a very important constraint in the farming systems hindering irrigated agricultural projects.

The scarcity of water has clearly directed most agricultural production in the targeted regions within HG toward rain-fed crops. 13.8% of the sample did not use water at all, which supported cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from cisterns that collect rainfall in wells as shown in Table 17; the study shows that 59.9% of the farmers using water in production depend on this source as a main supply source of water. Nevertheless, farmers usually utilize more than one kind of water source either as a substitute or a complementary source.

Table 17: Percent Use of Water Source

Water source	Frequency	Percent
Cisterns wells	148	59.9
Spring water	18	7.3
Public network	83	33.6
Water tanks	71	28.7
Artesian well	2	0.8

The second source used was public networks, utilized by 33.6% of the sample. Although public networks come as a second source of irrigation water, they are still least used in HG compared to the central and northern parts of the WB⁷⁴. In the southern part of the WB very few households (almost 0%) utilize public network water for agriculture, on the contrary 0.3% of the households utilize it for breeding purposes while the rest goes for domestic use.

The third main source of water is water tanks; it is utilized by 28.7% of the targeted areas. Despite its high cost, it is preferred among other kinds of sources due to its availability. Water tanks are available on demand and can be conveyed to fields regardless of how far they are from villages or public networks. Moreover, this source is commonly used as a (last option strategy) where they generally consider it as a secondary source when they run short of the main ones. The fourth and fifth sources of water were spring water and artisan wells respectively as shown in Table 17 above.



74. PCBS. Percent Distribution of Households in the Palestinian Territory by Water Source and the Most Water Consumption Field and Region. 2003; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/WaterResources/tab4.aspx

Reasons Behind Underutilization of Land

Most land located in the targeted areas is currently utilized in agriculture. 87.3% of the households utilize their lands in agriculture, where 10.6% of the landowners are not utilizing it at all. The remaining households are using it for husbandry and construction with 1.4 and 0.7% respectively.

A total area of 48.6% of the land owned by the sample studied in HG is abandoned; reasons behind underutilization of land in agricultural activities can be summarized in order of importance for the sample as shown in Table 18:

Results reveal that the main reason for inefficient use of land by most households is the combination of inappropriate physical conditions of the land and the lack of financial capital. The physical preparation of land such as terraces, building retaining walls, roads, and leveling land is quite expensive relative to the insufficient savings by households, which represent an average of 2.4% of their income. Drought and lack of water is considered the second obstacle hindering the start of an agricultural initiative.

Other constraints stressed during meetings and interviews included the aggressive competition of the Israeli products that is usually of lower prices due to the use of high technology used and the large-scale production possibility with relatively lower cost. In addition to not understanding current demand of the market to produce the appropriate product and avoid excess supply, both have pushed down the prices and discouraged agricultural productions due to its low profitability.

It is worth noting that there was a shy agreement on an existing obstacle discouraging agricultural initiatives, it was the costly failures farmers have been through, which were due to the lack of knowledge of the good and modern ways of farming, they hardly admit their shallow knowledge in some fields of agriculture, believing that what they already know is enough regardless of the repeated failures. They hardly take into account how their production techniques are up-to-date, effective or efficient.

Generally speaking, the lack of attractiveness to agricultural production at large scales is mainly due to the modest profitability of agriculture and the poor infrastructures (water, roads...etc) mainly in rural areas which makes the bulk of agricultural areas in the HG. Moreover, agricultural production has been restricted by limited access to credit, modern technology farm inputs and inefficient use of resources.

Table 18: Reasons for not Utilizing Land in Agriculture

Reason	Frequency	Percent
Land needs reclamation	237	81.2
Lack of financial capital	201	68.8
Lack of water	197	67.5
Drought	159	54.5
No roads leading to it	69	23.6
No time to plant it	27	9.2
Closeness to settlements	20	6.8
Low profitability of agriculture	15	5.1
Israeli forces prevent reaching land	14	4.8
Land's nature is inappropriate for agriculture	10	3.4
Competition of Israeli products	8	2.7
Land size is small and not worth planting	6	2.1
Owned for investment reasons only	6	2.1
Owned for construction reasons only	5	1.7
No market for agricultural production	1	0.3
Lack of the (know how) to farm	1	0.3

Level of Acceptance for Reclamation

On the one hand, the sample showed a great willingness to invest in the available abandoned land for agriculture, 80.8% of the sample had in mind to plant this land as a future plan. 76% of the sample expressed their strong will to invest in agriculture and 78.1% considered it as an urgent priority.

On the other hand, the ability to contribute to the cost of reclamation was not high; the maximum contribution respondents are able to make is no more than 11.7% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 462.00 per dunum for his/her land reclamation. As mentioned above, one of the major obstacles facing further utilization of abandoned land was the lack of financial capital.

It is worth noting that not only farmers, but most other non-farmers villagers, as well, were very much willing to invest their available land in agriculture, mainly as a (for-profit investment) with expected future income and/or for domestic consumption respectively. The most three clusters of the strata willing to take risk and spend on reclamation work and investing in agriculture were retired villagers in the first place followed by businessmen and farmers respectively. Apparently, most of landowners willing to undertake agricultural work are looking for a second source of income, which is due to the low profitability of this business and the high risk involved. Moreover, it is noticeable that mostly old people are interested in investing and maintaining land; the ease to enter the market with no age restrictions –opposite to employment in other sectors- made agriculture their most attractive option besides doing other light works where elderly could invest their time to make some money. Finally, there is a clear positive relation between household size and willingness to invest and increase production. As agriculture is mostly considered a family business in HG as other governorates, farmers depend to a great extent on family members to help in the field, i.e. the larger the family is, the larger it is the will to invest in agriculture and the larger is the possibility to succeed.

As shown in Table 19, 81.9% of the households owning uncultivated land proclaimed to have serious future plans of investing land in agriculture. Moreover, 83.6% of the sample willing to invest in agriculture will plant the developed land themselves with the help of the family. Finally, 15.7% of the sample has gone through a reclamation program and 99% have been successfully planting their developed land. These overall results indicate a good potential for reclamation initiatives and directing landowners to invest in agriculture.

Table 19: Landowners' Future Plans for the Abandoned Land

Future plan	Frequency	Percent
Plant it	236	81.9
No plans	35	12.2
Sell it	10	3.4
Building site	6	2.1
Rent it out	1	0.4
Total land owners	288	100



Priorities as Perceived by Farmers

Generally speaking, land owners agreed on the mechanical land reclamation to be the main priority when it comes to reclamation. Table 20, demonstrates needs for reclamation according to the priorities classified by respondents, the most common need in targeted areas was the land need for physical adjustment mainly by providing heavy machines to level the land, build walls and partitions to ensure the appropriate physical conditions and to accommodate agricultural activities.

Table 20: Land's Need for Reclamation

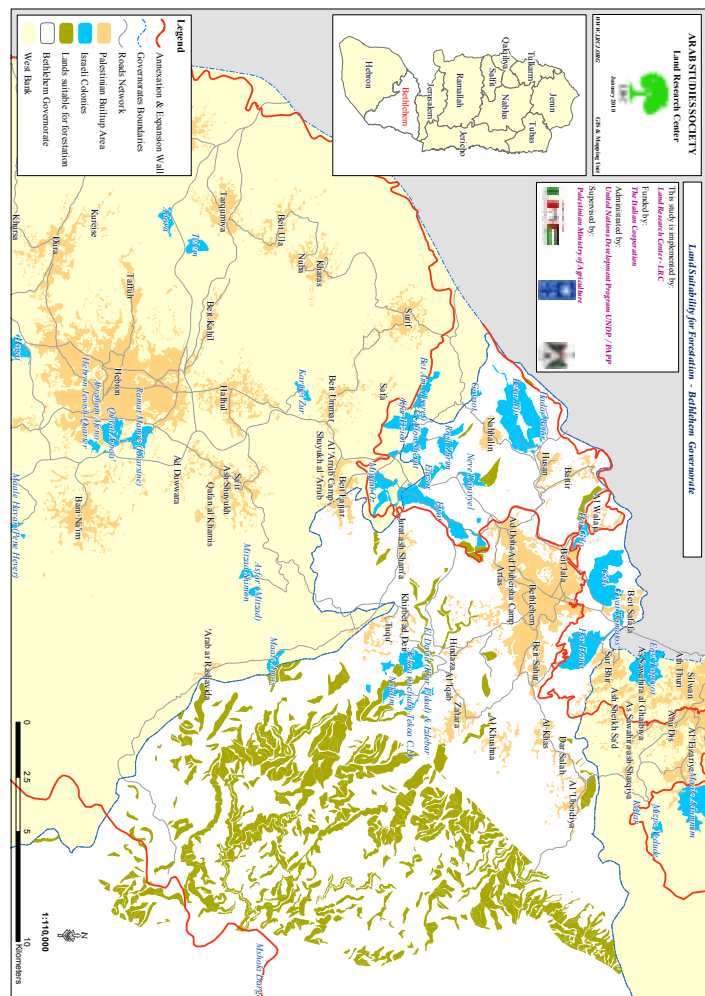
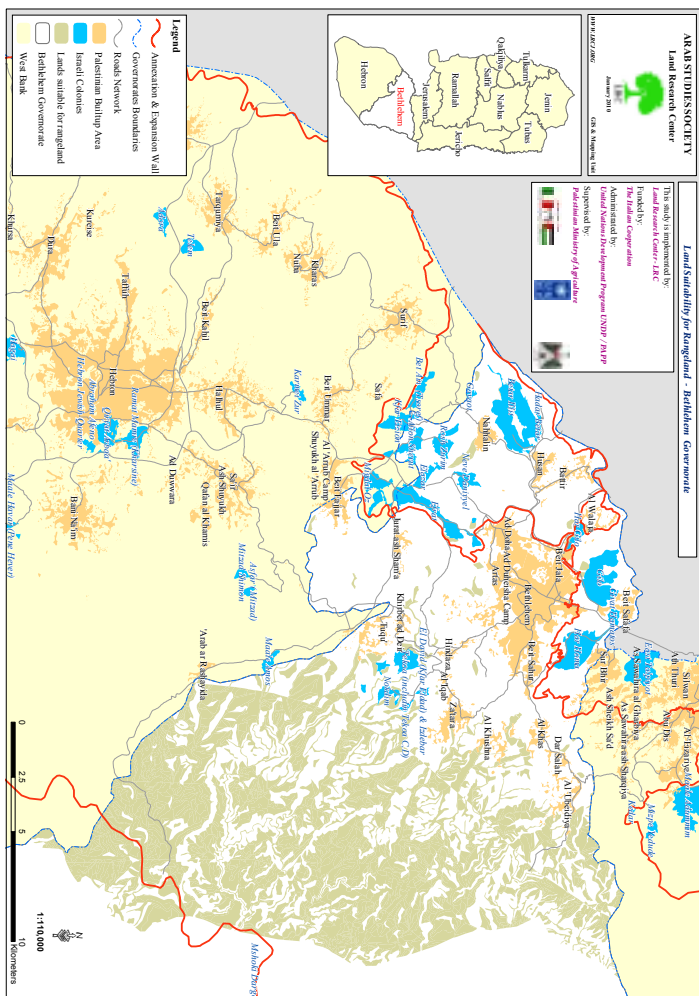
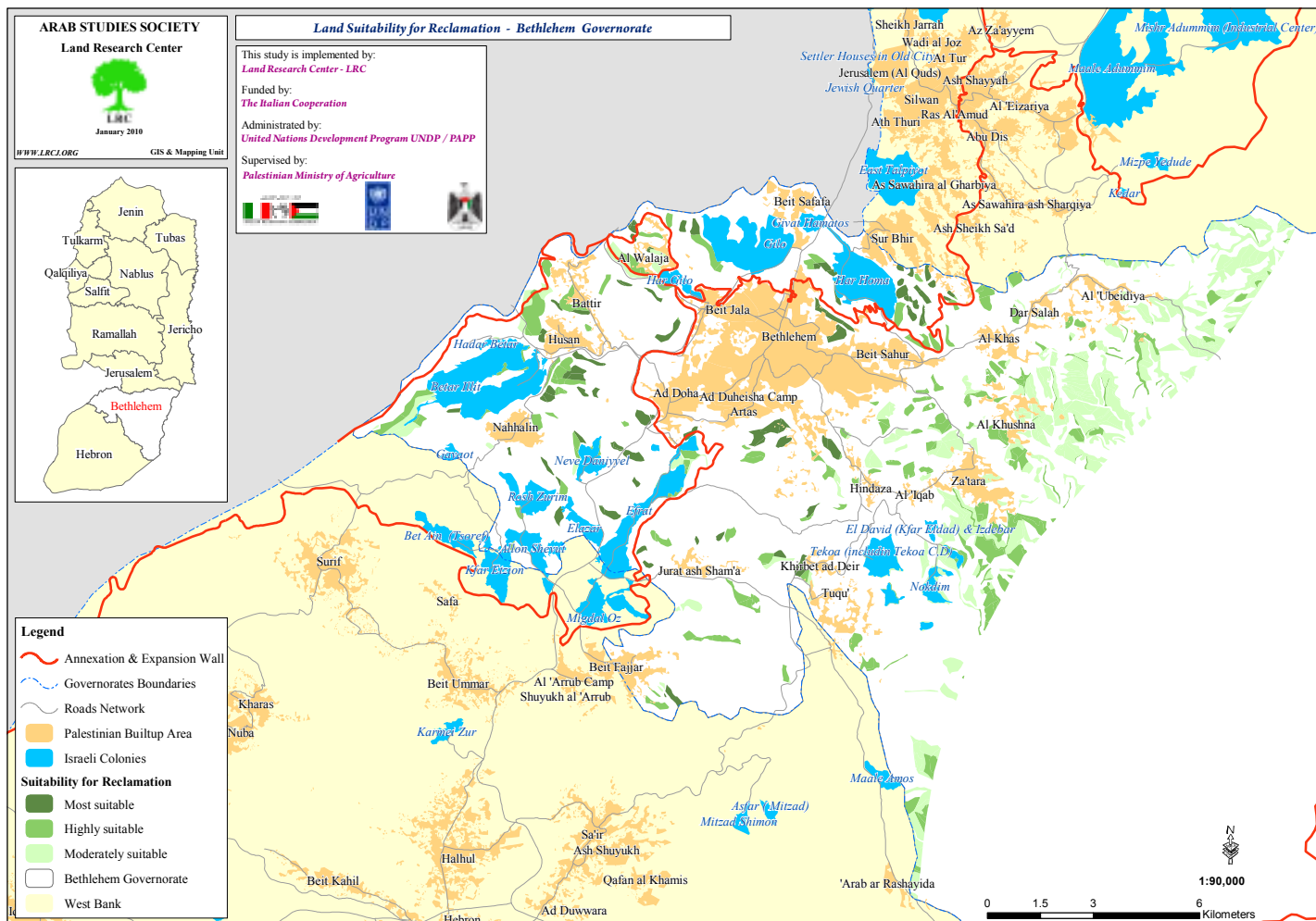
Need	Frequency	Percent
Heavy machines	263	80.8
Retaining walls	221	75.7
Supplies (seeds, fertilizers...)	159	54.5
Water source	138	47.3
Fertile soil	83	28.4
Financial aid	87	29.8
Labour	35	12
Harvest equipment	26	8.9

While physical preparation of land was the main concern for landowners, need for supplies especially seeds and fertilizers was the concern of 54.5% of the sample. This point was strongly stressed during interviews. The increasing number of failure trials to plant using seeds bought from local suppliers or even received as donations has pushed farmers-landowners to classify providing healthy seeds and appropriate fertilizers and pesticides to overcome pests as the second priority. It is worth noting that besides evaluating the need of supplies as an urgent need, respondents –mainly who work in agriculture as a second job- showed a timid need for some technical training on what, how and when to buy and plant different crops to go hand by hand with supplies. Finally, 47.3% of the sample indicated an urgent need for providing water when considering reclamation.





III.2.2 Bethlehem Governorate (BG)



III.2.2 Bethlehem Governorate (BG)

III.2.2.1 Introduction

BG at a Glance

BG lies in the southern part of the WB, some 9 Km south of Jerusalem. It is surrounded by HG from the south, Jerusalem from the north, Jerusalem desert and the Dead Sea from the east and the western slopes of the WB from the west. BG hosts the Church of nativity in Bethlehem city, the Shepherds Field in Beit Sahour, as well as a number of important religious sites that attract pilgrims from all over the world. Bethlehem along with neighboring Jerusalem became the focal point for pilgrimage to the Holy Land. This resulted in a constructive twinning between the two cities (Bethlehem and Jerusalem) throughout the history and went beyond to emerge in cultural, economic, and social ties.

BG total land area is 608 square km⁷⁵. It has been targeted by the Israeli occupation since 1967 when 18.1 km² of its land was unilaterally annexed by Israeli to the municipal boundary of Jerusalem.

The city of Bethlehem is located at the eastern slopes of the WB facing the desert and the Jordanian mountains to the east.

Demographic Indicators

BG is populated by approximately 176235, of whom 89743 males (50.9%) and females of about 86492 (49.1%).

Bethlehem population comprises 7.5% of the WB population⁷⁶. The number of localities in the governorate is 44 divided as 11 urban, 30 rural and 3 refugee camps. The population density is about 289 persons/km². The total number of households is 32667 and the average household size is 5.4.

The number of disabilities/difficulties of Palestinian population in the governorate is 8823 including, blindness (4696), deafness (2584), physical disability (3467), cognition (1197) and communication difficulties (1237)⁷⁷. The number of population, 5 years and over, attending schools in the governorate is 49272 representing about 27.9% of the total population, while the percentage of illiteracy is 7.5 which is the highest after HG⁷⁸.

Economic and Social Indicators

In BG, the labor force participating rate is 47.4% and the unemployment rate is 17.5%. The largest employment sectors in BG are construction (6.2% of the labor force), manufacturing (3.5%), whole sale and retail trade (2.7%), education (2.2%), public administration and defence (1.5%), transport, storage and communication (1.04%), health and social work (0.9%), and hotels and restaurants (0.4%)⁷⁹.

As shown above, manufacturing is the second largest employment sector in the governorate after construction due to the fact that much of the economies of this governorate, similar to Jerusalem, depend on tourism. Most of the Hand Crafts industry, particularly that related to tourism, olive wood icons and mother of pearl are concentrated in Bethlehem. In addition, a considerable number of hotels and travel agencies are available in BG. Textile and stone cutting are also important to the economies of BG. Agriculture in BG has been mostly affected by the wide scale confiscation of land, building settlements and Segregation Wall which strangulates Bethlehem from all sides, especially the city of Bethlehem itself which has become under a closed Ghetto.

Amongst the economic impacts of the construction of the Segregation Wall in the governorate are the Israeli continuous control over Palestinian trade and tourism, the increase of unemployment and poverty levels and the rise of land prices and reduction of investment opportunities. At the social levels, the

75. GIS unit at LRC

76. PCBS, 2007

77. PCBS-2007 census

78. Ibid

79. Ibid

wall construction has led to the cutting off of thousands of Palestinian citizens from their urban centers where health, education and social services are located, and cutting off social relations between Palestinian citizens living in both sides of the Wall. In addition, harsh measures were also imposed on Palestinian mobility and movement, and though transportation from or to the segregated areas is extremely difficult.

Infrastructure

According to PCBS, 2007 census, the number of establishments of various types in BG is 6305, of which 216 are temporarily closed, 35 under preparation, 169 are auxiliary activity units and 252 completely closed⁸⁰. Only 46% of the households are connected to water, electricity and sewage simultaneously⁸¹ in Bethlehem governorate.

According to PCBS, in 2007, there were 144 schools and 50362 students in the BG; 110 schools are run by the Palestinian, 7 by the United Nations Relief and Works Agency (UNRWA) and 27 are private schools. There are three universities in BG (Bethlehem University, Palestine Ahliya University and Al Quds Open University). There is one governmental hospital in BG, and many private hospitals and clinics.

Although BG contains the biggest underground water aquifer in the WB, its population are still suffering from the lack of water for domestic, agricultural and industrial uses due to the Israeli hegemony over water resources in the area. Bethlehem population receives less than 60 liters of water per person/day which is far below the World Health Organization's levels of a minimum of 100 liters per person/day⁸².

In the meanwhile, if the Israeli expansionist measures are continued on the ground, it will prevent any future possibility for the community to expand and will jeopardize sustainable development. The population densities in the urban areas (Bethlehem, Beit Jala, Beit Sahur, Al Doha, Al Khader and three refugee camps of Al Dihaishe, Aida and Al Aza) reached to nearly 6920 person/km² in 2005⁸³. With the creation of the Segregation Wall and the isolation of the open spaces, the population densities are projected to increase to about 8002 persons/km² in the coming five years.

Environmental Indicators

The environmental status in BG suffers from the same threats and pressures in the whole WB. The presence of about 19 Israeli colonies exacerbated the deteriorated environmental status through discharging solid waste and wastewater. In this sense, there will be no places for landfills or waste water treatment sites, natural resources will decrease, forests, pastures, open spaces and recreation areas will be extremely limited. In the mean time, desertification will increase and a distortion in wild life movement will occur as a result of cutting-off different types of animals from their natural habitat. The plan of the Segregation Wall is altering the Palestinian natural landscape, in addition, many archeological and historical sites related to the Palestinian cultural heritage will be segregated behind the Wall. After all, the Israeli colonial plan is a direct threat to natural resources and biodiversity in BG.

Political conditions

BG is greatly suffering from the Israeli activities against Palestinian land. There are 19 Israeli-declared "legal" colonies in addition to 18 "illegal" outposts established since 1996⁸⁴ with an estimated settler population of 77376 in BG. These colonies were built over an area of 18.094 km² (2.9% of the total area of the governorate).

The existing Israeli bypass roads stretch over 76 km in length in and around the governorate, while an additional 30 km long of bypass roads are planned within the governorate⁸⁵. The Segregation Wall in

80. PCBS, 2007

81. Ibid

82. Palestinian Hydrology Group.

83. Applied Research Institute (ARIJ) data base.

84. www.poica.org.

85. ARIJ data base, 2005.

BG extends for 52 km isolating about 73000 dunums of lands behind its path⁸⁶. The Wall lies 50.5 km (97% of the total) deep to the east of the green line inside BG, and 1.5 km on the green line. It penetrates to a depth ranging from 0 to 10.72 km inside BG⁸⁷. The Wall, also, confines the western rural villages of Battir, Husan, Nahalin, Wadi Fuqin and Al Walaja in a large canton, thus, incarcerates more than 18651 Palestinian residents.

On the whole, the segregation plan intends to keep more than 45% of the BG under the Israeli control in the eastern and western segregation zones. It aims at creating new demographic facts on the ground that will lead to forced migration among Palestinians who will lose their livelihood, and most importantly, the plan will severely affect the organic ties between Jerusalem and Bethlehem.

III.2.2.2 Physical Features of BG

As indicated in the methodology, physical features of BG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 25.1 km² which constitutes about 4% of the BG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of the BG are: slope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 18.0 km² which is equivalent to 71.7% of the NA and 3% of the BG area. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

Drainage Depressions: It has an area of about 1.4 km² which represents about 5.5% of the NA and less than 1% of the BG area. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 5.7 km², which represents about 22.8% of the NA and less than 1% of the BG area. It is composed of small spots of which some of them are sometimes cultivated. Not all the hillcrests in the BG are mapped because the area of those hillcrests is small and cannot be shown at our scale.

Slope Steepness Classes

The following slope classes, which have been identified in the BG, would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

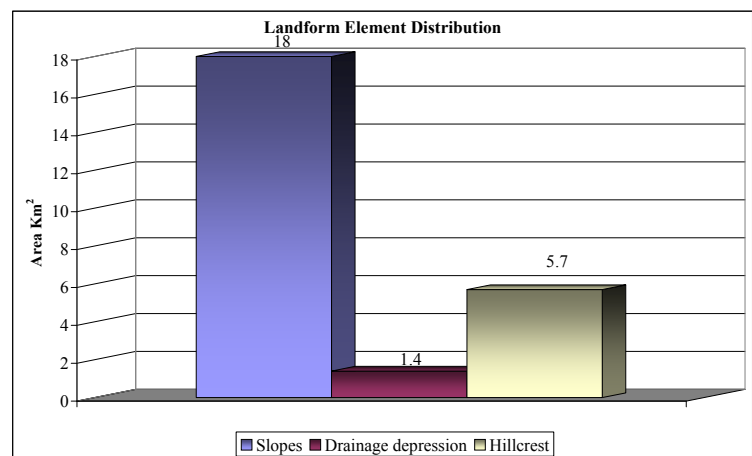


Figure 17: Landform elements in the NA of BG

86. Ibid

87. Ibid

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It usually represents leveled area. It covers an area of about 5.7 km² which is equivalent to 22.8% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 1.5 km², which is equivalent to 6.0% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 4.8 km², which is equivalent to 18.9% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 13.0 km², which is equivalent to 52.3% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

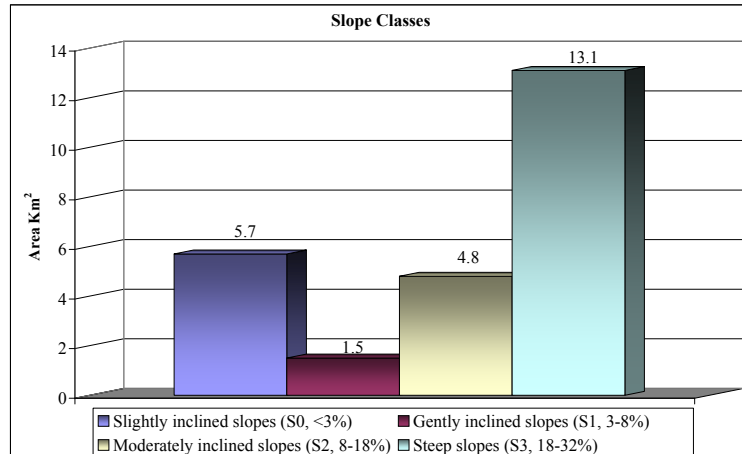


Figure 18: Slope classes in the NA of BG

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates.

It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents the largest area (22.8%). It is composed mainly of flat hillcrests. In Palestine, areas with northern and western aspects (Mighian) are normally considered much better for agriculture than those with eastern and southern aspects (Mishmas). The first part has an area of about 2.0 % while the second part is about 20.6%.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. More than half of the area (51.3%) has high percentage of rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The total area of the arid class is 19.6 km² that represents about 78.5% of the NA; the area of the semi arid part is 1.7 km² and it represents about 6.6% of the NA; the sub humid area is 3.8 km², which represents about 14.9% of the NA. The following chart displays the three climate classes with their conjugate area:

The majority of NA is suffering from aridity, which occupies most of the area. This degree of aridity imposes hard restrictions on utilizing this land for agriculture in the absence of control and special management.

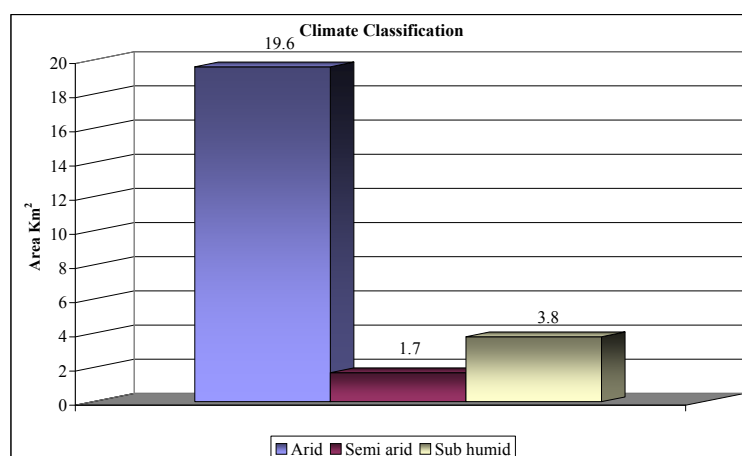


Figure 19: Climate classification of NA in BG

The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl according to the population distribution; the same situation is applicable to the sub humid area which is heavily populated.

III.2.2.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The following map displays the land suitability classes of reclamation in the BG.

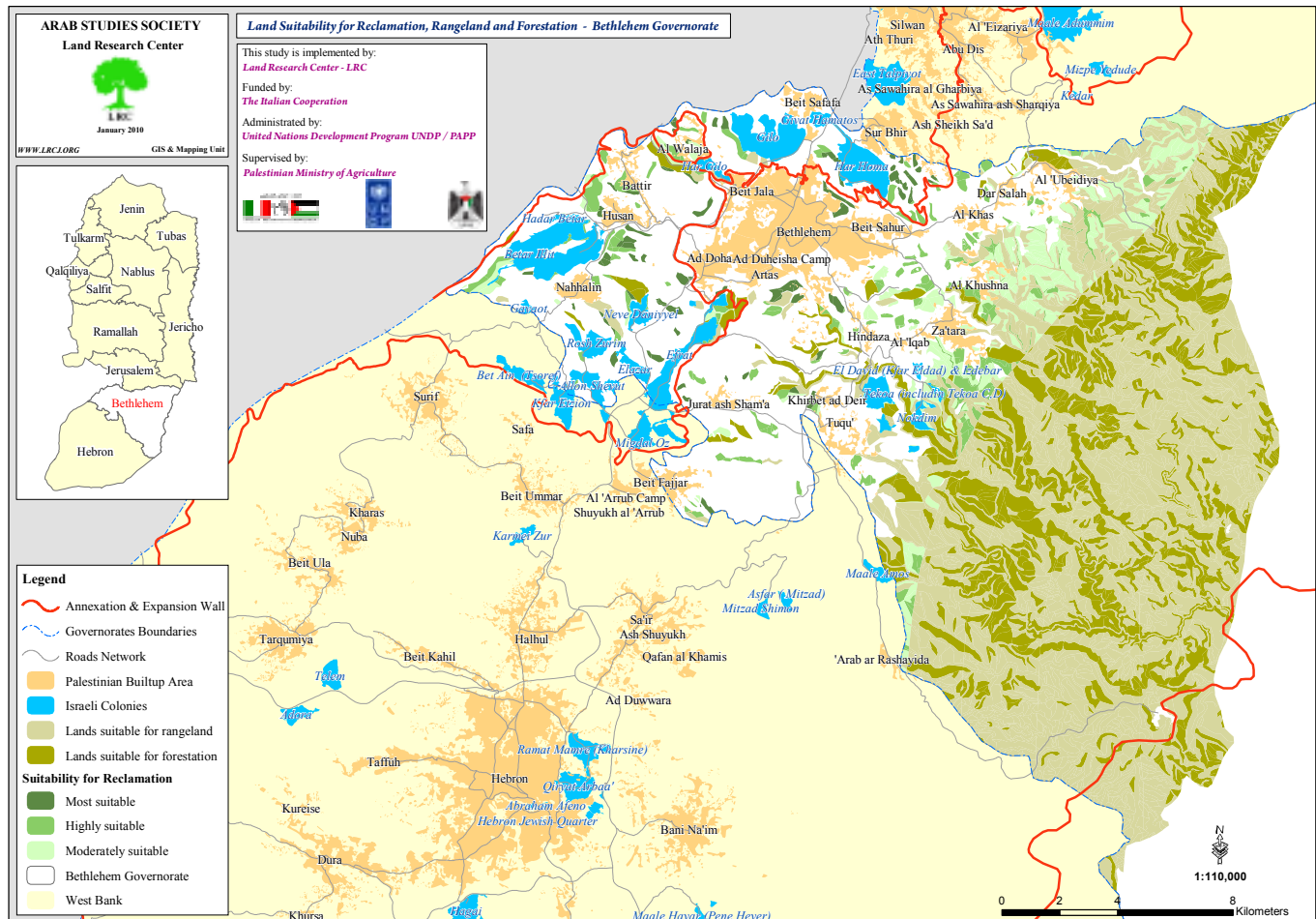


Figure 20: Classes of land suitability for reclamation, rangeland and forest in BG

The areas of the four classes are shown in the following table:

Focusing on the figures of different land suitability classes along with their distribution in Table 21 and Figure 21, one can conclude that the most suitable class for reclamation represent the smallest area percentage among all classes (3.2%) . This class is mainly located at the western parts of the Governorate. Most suitable classes of reclamation are closer to Battir, Husan, Al Ubeidiya and Za'tara towns. The first two are famous in relatively high agricultural productivity. The physical features of these parts indicated that in the western parts, there is comparatively high amount of precipitation and sub-humid climate. Also, the socio-economic analysis pointed out that the economic situation at these parts is relatively good. This

Table 21: Classes of suitability for reclamation in BG.

Suitability classes	Area (km ²)	Area %
Most suitable	0.8	3.2
Highly suitable	7.7	30.7
Moderately suitable	16.6	66.1
Total	25.1	100

result indicates that the work at the most suitable spots for reclamation should aim primarily at increasing the agricultural productivity rather than eradicating poverty or combating land degradation represented mainly by soil erosion.

Land Suitability for Forests and Rangeland

The total area in the BG that is classified as suitable for forests and rangeland is estimated at about 218.7 km². This land has acquired this classification as a result of attaining one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests from this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 71.2 km² (see Figure 22). This area represents about 11.7

% of the BG area. This percent does not mean that this is the only land suitable for forestry, but it rather means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of land suitable for forestry and rangeland are shown in the following table:

The results indicated that the majority of the land in BG which is not suitable for reclamation is suitable for rangeland and forests (89.7%).

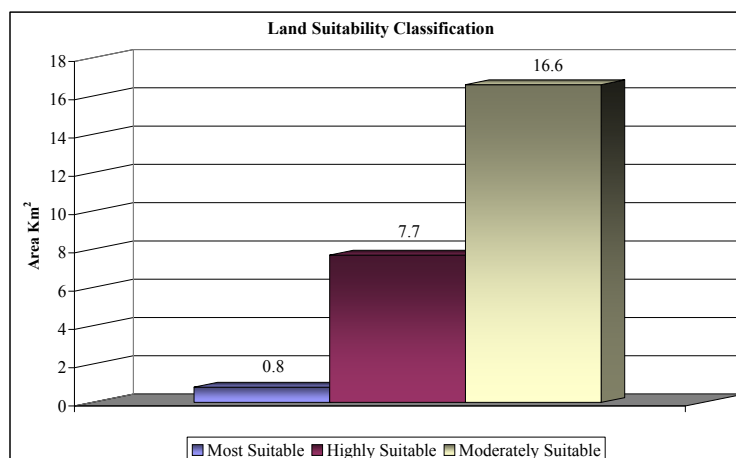


Figure 21: Classes of suitability for reclamation in BG

Table 22: Areas of land suitable for forests and rangelands in BG.

Suitability classes	Area (km²)	Area %
Forestry	71.2	32.6
Rangeland	147.5	67.4
Total	218.7	100

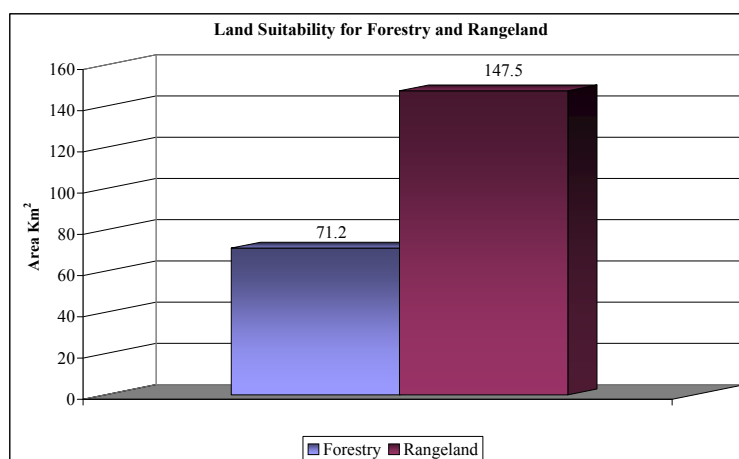


Figure 22: Land suitability for forestry and rangeland in BG

III.2.2.4 Land Suitability for Reclamation of the Non-agricultural Land Inside Land Classified as Agricultural

Since the land use/cover of the WB is built at a scale of 1:50,000, there will be spots inside the land classified as agricultural that would be considered as non-agricultural. The volume of this non-agricultural land is not negligible in addition to the fact that it is possible to reclaim or rehabilitate this land. As a result, there was a tendency to explore this situation for the purpose of utilizing this land. The area of the identified spots is 8.5 km². The physical features of this land would be displayed as follows:

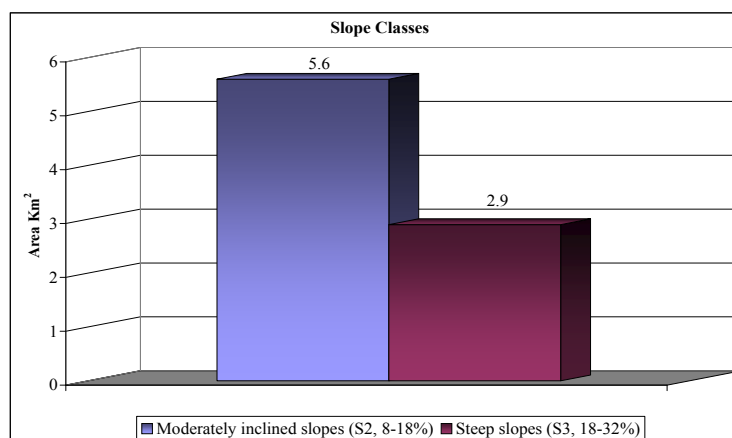


Figure 23: Slope classes of NA inside agricultural areas in BG

Landform Elements' Classes

The landform element class that is identified in this area is only slope which has an area of 8.5 km².

Slope Steepness Classes

The following slope classes would be described in this area:

Moderately inclined slopes - S2 – (8-18%): It covers an area of about 5.6 km², which is equivalent to 66.3% of this area.

Steep slopes - S3 - (18-32%): It covers an area of about 2.9 km², which is equivalent to 33.7% of the NA.

Table 23: Aspect classes of NA inside agricultural land in BG.

Aspect class (Degree)	Description	Area (km ²)	Area %
0	Flat (No)	0	0
0 - 22.5 And 337.5 - 360	North (N)	0.5	6.3
22.5 - 67.5	Northeast (NE)	0.5	6.3
67.5 - 112.5	East (E)	0.4	5.0
112.5 - 157.5	Southeast (SE)	1.1	12.4
157.5 - 202.5	South (S)	1.1	12.4
202.5 - 247.5	Southwest (SW)	1.6	19.3
247.5 - 292.5	West (W)	1.8	21.7
292.5 - 337.5	Northwest (NW)	1.4	16.7
Total		8.5	100

Aspect Classes

The statistical data derived from this map indicates the following area distribution among the aspect classes:

The northern and western aspects (Mighian), which are considered suitable for agriculture have an area of about 28.0%, whereas those with eastern and southern aspects (Mishmas) have a total area of about 17.4%. This indicates the potential of reclaiming this land as it sounds promising for being good agricultural land.

Rockoutcrop Classes

The rockoutcrop distribution in this area is shown in the following table. 10% class represents an area with moderately low rockoutcrop; this would exist in footslopes and gently inclined slopes. 20-40% classes represent an area with comparatively high rockoutcrop; these classes would exist in steep and very steep slopes. It is reasonable to have the majority of the area (90.0%) with high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural rather than human.

Table 24: Classes of rockoutcrop area and % NA inside agricultural land in BG

Rockoutcrop class (%)	Area	Area %
10	0.8	10.0
20	5.5	65.0
30	2.1	24.3
40	0.1	0.7
Total	21.6	100

Climate Classes

The total area of the arid class is 3.2 km², which is comprising about 37.4% of the identified area; the area of the semi arid part is 1.8 km², which is comprising about 21.3% of the identified area; and the sub humid area is 3.5 km², which is comprising about 41.3% of the identified area. The following chart displays the three classes of the climate that exist in this area:

The majority of the identified area is suffering from aridity and is occupying most of the area (about 60%). This degree of aridity put severe and diverse restrictions on utilizing this land for agriculture, especially in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl as a result of the high population growth rate and the wide range of population distribution; the same situation is applicable to the sub humid area (41.3%) which is heavily populated.

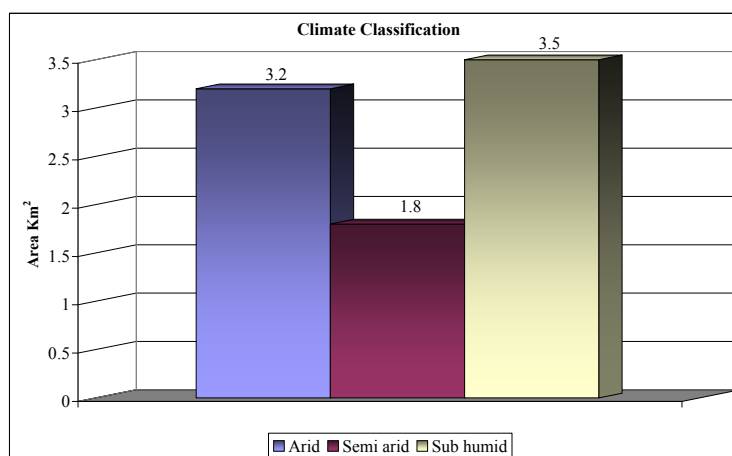


Figure 24: Climate classification of NA inside agricultural area in BG.

III.2.2.5 Socioeconomic Status

The Household Composition and Labor Force

Compared to the average number of household members in the BG, which is 5.4⁸⁸; the corresponding average for the sample studied in the governorate separately was 8.6. Although this number is comparatively high, it can be interpreted by the culture that supports it, more children means more support for parents in their old age. Moreover, mainly in tribal communities, larger families mean more political power as the children grow to adulthood. In agricultural societies, more children mean more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 2.7 members excluding the main farmer, comparing it to the average number of household members in the sample; almost 31.4% of the typical farming family gets involved in agriculture.

The sample studied was made of farmers and landowners; farmers represented 70% of the sample where 99% of them owned their land. The rest of the sample was made of non-farmers landowners. Analysis showed that the majority of farmers 55.8% are 51 years old or above. Thus, similar to other governorates, farmers are mostly aged people indicating that young population moves toward different careers than farming.

By studying farmers separately, analysis revealed that the majority of farmers in the BG have a modest level of education. Table 25 shows that 65.5%, which makes the majority of farmers, have received some formal education, 23% are well educated and holding a higher degree than Tawjihi. This could be a good condition for providing and implementing future trainings or the adoption of new techniques for production.

Table 25: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	13	11.5
Primary education	27	23.9
Secondary education	25	22.1
High school	22	19.5
Diploma	13	11.5
Bachelor's degree or above	13	11.5
Total	113	100.0

With regard to knowledge and experience in agriculture, respondents showed a great dependency on

88. PCBS, Main Indicators By locality Type. 2009.

inherited experience as the main source of knowledge in agriculture. 78.6% of the farmers depend only on what they have learnt from older family members who worked or are still working in agriculture and tips received from neighboring farmers, they neither attended short courses nor did they receive any technical training. Remarkably, the average year of experience in agricultural work among respondents was 25 years. The remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information, such as attending short course and studying agriculture at universities. The percentage of people considered educated professionals who graduated from universities with agricultural degrees and working in agriculture represents only 3.5% of the sample. Moreover, farmers who ever attended at least one short course in agriculture represented 24.8% of the sample. This indicates how tremendously agricultural work in the BG depends on non-scientific traditional techniques of production based on knowledge passed over generations through stories, rituals and experience. This shows how superficial their knowledge is about modern farming techniques and technologies used in developed industrialized agricultural economies, which reduces their efficiency and effectiveness in production.

According to the EC new definition of SMEs⁸⁹, agricultural production is mainly dominated by micro-farms that generate about 98.2% of total production in the BG, while the rest (1.8%) were small-scale farms. More than half of the agricultural activities are classified under family businesses; 56.8% of the sample restricts labor to family members only, whereas 72.1% of the family members working in agriculture are classified as self-employed. The remaining 43.2% of the farmers go beyond family members to employ seasonal or permanent labor; these farmers employ 1.9 employees on average, which reflects how small the agricultural sector provides job opportunities to the population living in targeted areas which is due to its small-scale nature.

Unsurprisingly, 99.1% of the households studied were headed by males, given the paternal culture common in the oPt; the male is in charge of land and agricultural activities. Men run the farm and make vital decisions, yet intensively counting on females in the family to help and do the large proportion of the physical work. Since it is not common to count only on agriculture to guarantee an adequate standard of living; male members of the families usually leave early in the morning to start a different job leaving the field to be taken care of by females. Analysis showed that females represent 76.8% of the family labor in the sample.

Moreover, family members usually participating in agriculture are mainly children⁹⁰ below 18 years old. This implies that young females have practically a higher contribution to agricultural production than males in the studied areas.

Analysis showed that 55.8% of farmers in targeted areas are above 50 years old. Therefore, one could conclude that farmers in targeted areas are mainly old people mainly. There are few new comers to this industry; young people prefer other kinds of employment if any due to many reasons that will be explained in the later section.

Common Economic Activities and Standard of Living

43.1% of the sample considered farming as the best job option among all others. This reflects that farming is positively perceived. Yet, the rest of the sample preferred having a private business, a job with a guaranteed salary or rearing livestock respectively.

Working in agriculture has become less attractive as explained by the respondents. This is due to the high risk involved in farming, soaring input prices and the negative competition of the Israeli products. Opposite to other governorate in the northern part of the WB, farming is a second source of income for the largest part of the sample. As shown in Table 26, a total of 70.6% of the sample are involved in agriculture. Yet, only 25% of the sample in targeted areas considered farming as their primary job and so a primary source of income. The remaining 45.6% of the sample were farming their land as a second source

89. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14.

90. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah.

of income or for other reasons such as saving land or producing for personal consumption; in addition, they have fulltime jobs in the city, work in Israel, handicraftsmen or run a private business.

As Table 26 shows, household's average income from agricultural work is 551 NIS, this figure includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as major occupation had an average income from agricultural work of 910 NIS. Based upon that, and according to the PCBS measures of living standards in southern WB⁹¹, households counting solely on agriculture live under poverty line, these households represent 18.8% of the entire sample. Thus, given the relatively high level of prices in the governorate, such a monthly income is sufficient for households that depend on farming as the only main job.

91.5% of the sample's monthly income is NIS 3,000 or less. Based on PCBS classification of poverty according to the household monthly income⁹² it is estimated to have 91.5% of the households in targeted areas living under poverty line. Spending was more than monthly income, indicating the dependency of some households on transfers, micro loans and/or cash through safety nets. Spending is mainly on basic physical needs such as food which represents the main category of expenditure, transportation and communication, and clothing were the second and third larger expenses for this group respectively⁹³.

Crop Diversification

The study shows a high dependency by farmers on rain-fed fruit trees. As shown in Table 27, 84.6% of the farmers own rain-fed trees. On the other hand, irrigated trees are the least planted, which is explained by their high dependency on water which is scarce in the governorate, in addition they bear fruits accompanied by little income on yearly bases. Thus, planting irrigated trees is not as feasible as other kinds of crops.

On one hand, farmers living in targeted areas have limited production of rain-fed vegetables; instead, they concentrate on planting irrigated vegetables, which have a key role in their economy and food basket production regardless of the water scarcity. On the other hand, field crops seem to be the least competitive among other kinds of crops with 6.5% of the farmers cultivating them.

Table 27: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	104	84.6
Irrigated vegetables	64	52.0
Vegetables depending on rainfall	17	13.8
Irrigated trees	17	13.8
Field crops	8	6.5

Evidently, most farmers use a minimizing-risk strategy by diversifying the types of crops they grow. 61.9% of farmers cultivate a collection of at least 2 different kinds of crops which minimizes risk. The common fruit trees production in the BG are grapes and olive respectively. Common vegetables produced are mainly tomato, cucumber, cauliflowers and eggplant. Field crops mainly produced were wheat and barley⁹⁴ constitute the main two field crops.

Livestock

Husbandry in targeted areas is relatively low high when compared with the rest of targeted areas in other governorates of the WB. In total 6.9% of the sample population raise livestock which reflects a very low

91. PCBS, Poverty in the Palestinian Territory. 2007

92. Ibid

93. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah

94. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007

level of dependency on livestock in these areas. Generally speaking, the number of livestock numbers in the BG have decreased significantly since 2003, more specifically goats and sheep⁹⁵, as a result of high incidence diseases, population pressure, and the soaring prices of input.

Agricultural Machines, Equipment and Inputs

Generally speaking, the BG is ranked as the eighth among other governorates in regards to the number agricultural machinery each one has. 2.4% of agricultural machinery in the WB are located in the BG, these equipments mainly consist of four-wheel tractor, plough, trailers, water tanks, sprayers and others⁹⁶.

Table 28: Source of Seeds Used in BG

Source of seeds	Frequency	Percent
Local nurseries	95	90.48
Self-made	10	9.52
Agricultural organizations	2	1.90

Local nurseries located in the BG have formed the main source of inputs with 90% of farmers counting on them. The remaining percentage of farmers either produce seeds themselves or buy them from agricultural organizations.

Water

The study shows that water reserves for agriculture were considered enough by 17.8% of the farmers, while the rest considered it inadequate and scarce. Similar to other governorates, the majority of farmers (65.1%) in these areas considered lack of water as a very important constraint in the farming systems hindering irrigated agricultural projects.

The scarcity of water has clearly directed most agricultural production in the targeted areas within the GB toward rain-fed crops. 19.6% of the sample did not use water at all, which was explained by the scarcity of water sources that led to cultivating rain-fed crops. Farmers who use water in farming explained that most of the scarce water used for irrigation comes from public networks as shown in Table 29; the study shows that 49% of farmers using water in production depend on this source as a main supply source of water. Although public networks come as the main source of irrigation water, Yet, when compared with the center and the north of the WB, the southern governorates of the WB are the least using public networks in irrigated agriculture⁹⁷.

Table 29: Percent Use of Water Source

Water source	Frequency	Percent
Public network	50	49.0
Cisterns wells	25	24.5
Spring water	14	13.7
Water tanks	2	2.0
Artesian well	0	0.0

The second and third sources of water the sample count on are Cisterns wells, and spring water which represent 24.5 and 13.7% of the total consumption respectively. It is worth noting that spring water is relatively considered as a big source in targeted areas when compared with other governorates. Purchasing water tanks is used by only 2% of the sample. Despite its immediate availability, its high cost has made it the least preferred among other kinds of sources.

Reasons Behind Underutilization of Land

A small part of land located in the targeted areas is currently utilized in agriculture. 24.2% of households utilize their lands in agriculture, where 60.6% of the landowners are not utilizing it at all. The remaining households are using it for husbandry and industrial uses with 1.5 and 0.8% respectively.

A total area of around 52.2% of the land owned by the sample studied in the BG is abandoned; reasons

95. PCBS, Agricultural Statistics, PCBS, Editor. 2003/2004/2005/2006/2007, PCBS: Ramallah.

96. PCBS, Agricultural Statistics, PCBS, Editor. 2003/2004/2005/2006/2007, PCBS: Ramallah.

97. PCBS, Percent Distribution of Households in the Palestinian Territory by Water Source and the Most Water Consumption Field and Region. 2003; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/WaterResources/tab4.aspx

behind underutilizing land for agricultural purposes can be summarized in descending order of importance for the sample as shown in Table 30:

Results revealed that the main cause of inefficient use of land by most households is the scarcity of financial capital accompanied by an inappropriate physical conditions of the land and. The physical preparation of land such as building retaining walls, roads, and leveling land is quite expensive relative to the insufficient savings by households in targeted areas which represent an average of 1.8% of their income. Lack of water and drought are considered the second obstacle hindering the start of any agricultural initiative considering the fact that the majority of the areas is of dry nature.

It is worth noting that lack of roads is a strong factor slowing investment in these areas. Another constraint stressed was the low profitability of agricultural production, low profitability in the BG is caused by three main reasons: first of all, the aggressive competition of the Israeli products that are usually of lower prices. The second is the small-scale production accompanied with small profits if any; and the third is the increase of commodity prices such as water, labor, intestacies and seeds.

This lack of attractiveness in agricultural production at large scales is due to the modest profitability of agriculture side by side with the poor infrastructure (water, roads...etc), which is mainly concentrated in rural areas that make the bulk of agricultural areas in the BG. Moreover, agricultural production has been restricted by limited access to credit, modern technology farm inputs and inefficient use of resources.

Level of Acceptance for Reclamation

On one hand, the sample showed a great willingness to include available but abandoned land to agriculture, 95.8% of the sample had in mind to plant this available land as a future plan. 50.7% of the sample expressed their strong will to invest in agriculture and 69.5% considered it as an urgent priority.

On the other hand, the ability to contribute financially to the land reclamation process was not high; the maximum contribution respondents are able to make is no more than 15.4% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 663.8 per dunum for his/her land reclamation. As mentioned before, one of the major obstacles facing further utilization of abandoned land was the lack of financial capital.

It is worth noting that not only farmers, but most other non-farmer villagers, as well, were very much willing to invest their available land in agriculture, mainly as a (for-profit investment) or for domestic consumption. Moreover, the most three clusters of the strata willing to take risk, spend on reclamation work and investing in agriculture were retired villagers in the first place followed by employees and farmers respectively. Analysis showed that most of landowners willing to undertake agricultural work are looking for a second source of income, which is mostly due to the low profitability of the business and the high risk involved. Moreover, it is noticeable that particularly old people are interested in investing and developing their land. The ease to enter the market with no age restrictions –opposite to employment in other sectors- made agriculture the most attractive option besides running groceries and other light works where elderly could invest their time and to make some money.

It is noticeable that 95.8% of households owning abandoned land proclaimed to have serious future plans of investing land in agriculture. The rest had simply no future plans. Moreover, 92.7% of the sample

Table 30: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Lack of financial capital	139	95.2
Land needs reclamation	107	73.3
Lack of water	95	65.1
Drought	28	19.2
No roads leading to it	26	17.8
Low profitability of agriculture	21	14.4
Closeness to settlements	17	11.6
No time to plant it	11	7.5
No market	11	7.5
Competition of israeli products	10	6.8
Israeli forces prevent reaching land	6	4.1
Lack of the (know how) to farm	5	3.4
No intention to plant it	1	0.7

who are willing to invest in agriculture will plant the developed land themselves with the help of the family, which expresses a practical seriousness in their behavior to benefit the prospective developed land. Finally, 15.6% of the sample has a previous reclamation experience and 94.7% of the cases still successfully plant their developed land. These overall results indicate a good potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed on the mechanical land reclamation to be the main priority when it comes to reclamation. Table 31 demonstrates needs for reclamation according to the priorities classified by respondents, the most common need in the targeted area is the land need for physical adjustment mainly by building retaining walls, providing heavy machines to level the land, and creating a solid infrastructure to ensure the appropriate physical conditions to accommodate agricultural activities.

While physical preparation of land was the main concern for land owners, the need for supplies especially seeds input and fertilizers was the concern of 87.5% of the sample.

The last two major needs on the priority list of the sample were labour and water supply, despite the relatively high average number of households, farmers find labour inside the family to be insufficient where. For water, 65.1% of the farmers suffer from water scarcity, the need for new water sources has become a common need to overcome drought and reduce the effect of the dry nature of the governorate and allow new farming opportunities.

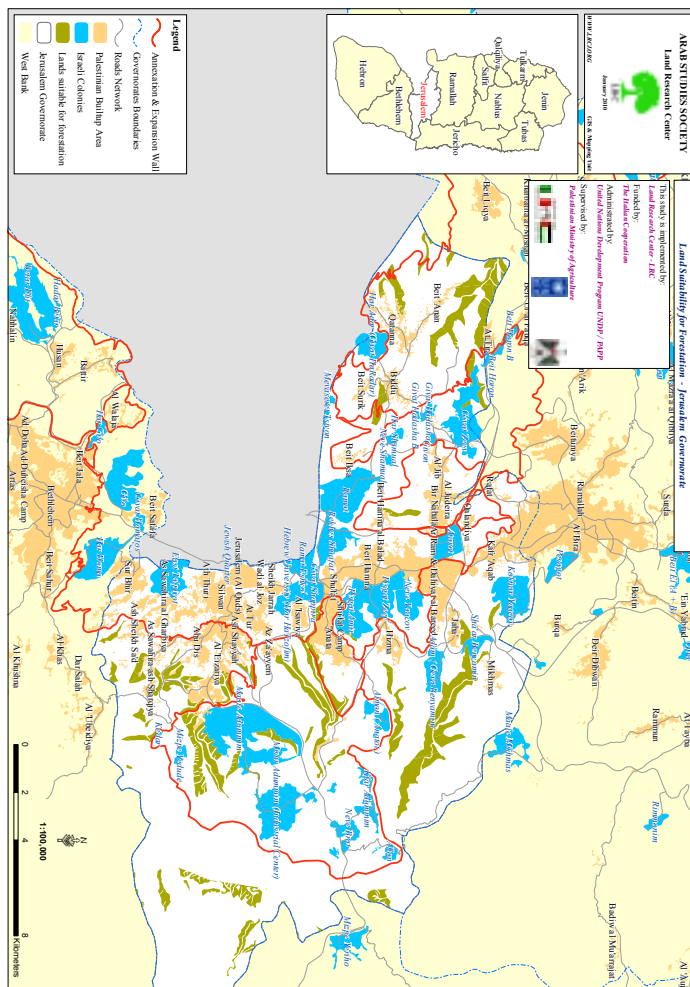
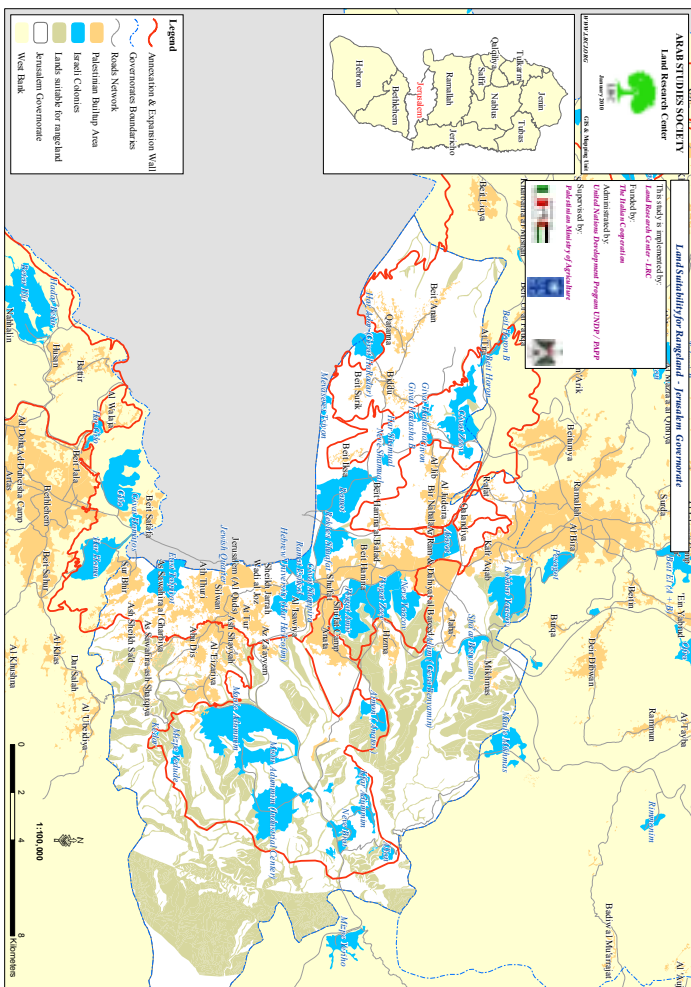
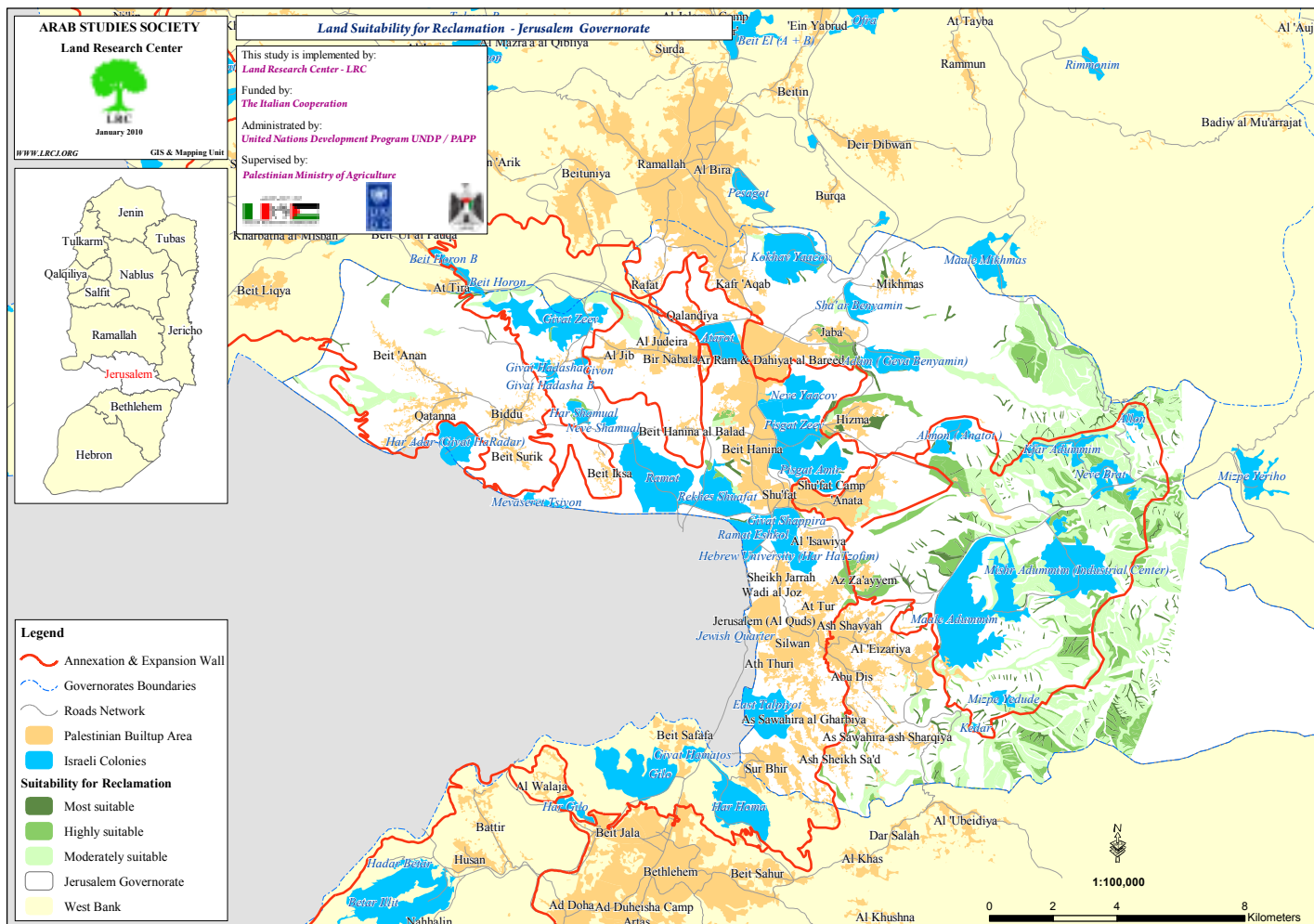
Table 31: Land's Need for Reclamation

Need	Frequency	Percent
Retaining walls	131	91.0
Heavy machines	127	88.2
Supplies (seeds, fertilizers...)	126	87.5
Labour	111	77.1
Water source	108	75.0
Financial aid	47	32.6
Fertile soil	28	19.4
Harvest equipment	3	2.1





III.2.3 Jerusalem Governorate (JerG)



III.2.3 Jerusalem Governorate (JerG)

III.2.3.1 Introduction

JerG at a Glance

JerG is located at the middle part of the WB and extended to the east bordering the Ghor. It is surrounded by the BG from south, the RG from north, the JeriG from east and the western slopes of the WB from west. JerG hosts Alaqsa Mosque, Dome of the Rock and Sepulcher Church. Jerusalem along with neighboring Bethlehem became the focal point for pilgrimage to the Holy Land. This resulted in an important twinning between the two cities (Bethlehem and Jerusalem) throughout the history and went beyond to emerge in cultural, economic, and social ties.

JerG total land area is 354 square km⁹⁸. The city of Jerusalem is located at the middle of the governorate in Western part of the WB and has been annexed by Israeli Occupation.

Demographic Indicators

JerG is populated by approximately 363649 Palestinians that represents 15.5% of the WB population⁹⁹. The Palestinian population density is about 1027 people/km². Adding to this the Israeli colonizers, JerG would be considered as heavily populated area.

Political conditions

East Jerusalem is under the administrative and military control of the Israeli Occupation Authorities. It was annexed by Israel immediately after the Six-Day War in 1967, nevertheless, the Palestinian residents of Jerusalem are participating in the Palestinian National Authority elections.

III.2.3.2 Physical Features of (JerG)

As indicated in the methodology, physical features of JerG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 55.5 km² which constitutes about 16% of JerG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of JerG are: slope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 31.8 km² which is equivalent to 57.4% of the NA and 9.0% of the JerG area. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

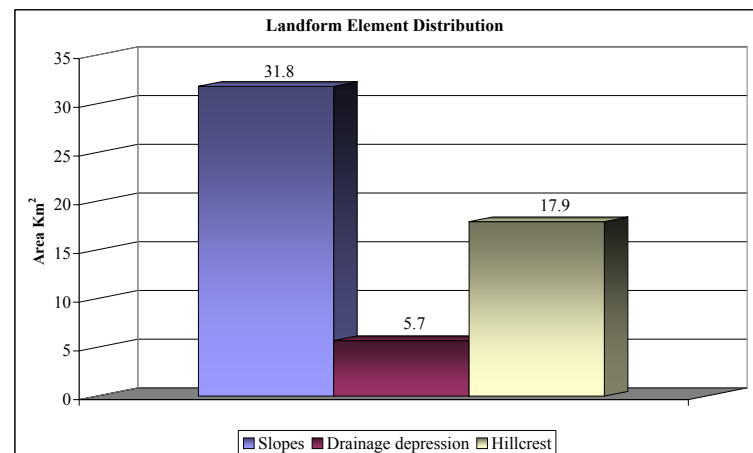


Figure 25: Landform elements in the NA

98. GIS unit at LRC

99. PCBS, 2007.

Drainage Depressions: It has an area of about 5.7 km² which represents about 10.4% of the NA and 1.6% of the JerG area. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 17.9 km² which represents about 32.3% of the NA and 5.1% of the JerG area. It is composed of small spots sometimes cultivated. Not all the hillcrests in the JerG are mapped because the area of those hillcrests is small and cannot be shown at our scale.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It usually represents level area. It covers an area of about 17.9 km², which is equivalent to 32.3% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

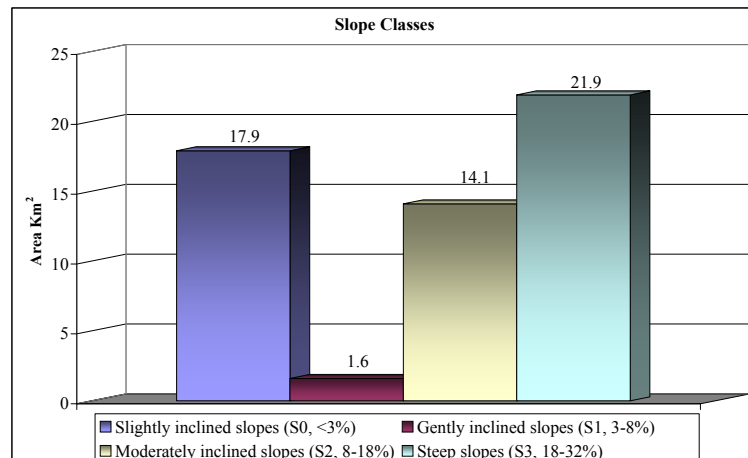


Figure 26: Slope classes in the NA

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 1.6 km², which is equivalent to 2.9% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 14.1 km², which is equivalent to 25.4% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 21.9 km², which is equivalent to 39.5% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates.

It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents the largest area (32.3%). It is composed mainly of flat hillcrests. The northern and western aspects (Mighian) have an area of about 19% and are normally considered much better for agriculture than the eastern and southern aspects (Mishmas), which constitute about 26.7%.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. Less than half of the area (48.9%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is human as well as natural factors.

Climate Classes

The total area of the arid class is 43.8 km², which comprises about 79.0% of the NA; the area of the semi arid part is 8.5 km² and comprises about 15.3% of the NA; the sub humid area is 3.1 km², which is comprising about 5.7% of the NA. The following chart display the three climate classes with their conjugate area:

The majority of the NA is suffering from aridity and occupying most of the area (94%). This degree of aridity imposes hard restrictions on utilizing this land for agriculture in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl according to the population distribution; the same situation is applicable to the sub humid area (5.7%) which is heavily populated. The vast area of arid climate provoked the salinization process which is the main driving force to desertification in this area.

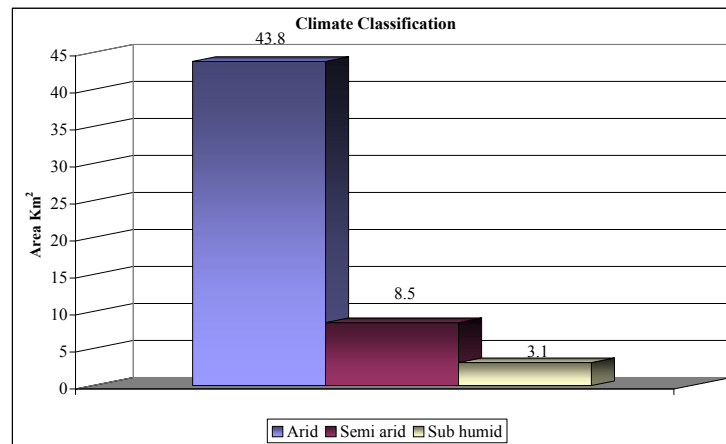


Figure 27: Climate classes of JerG



III.2.3.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map for the NA. The following map displays the land suitability classes of reclamation in JerG.

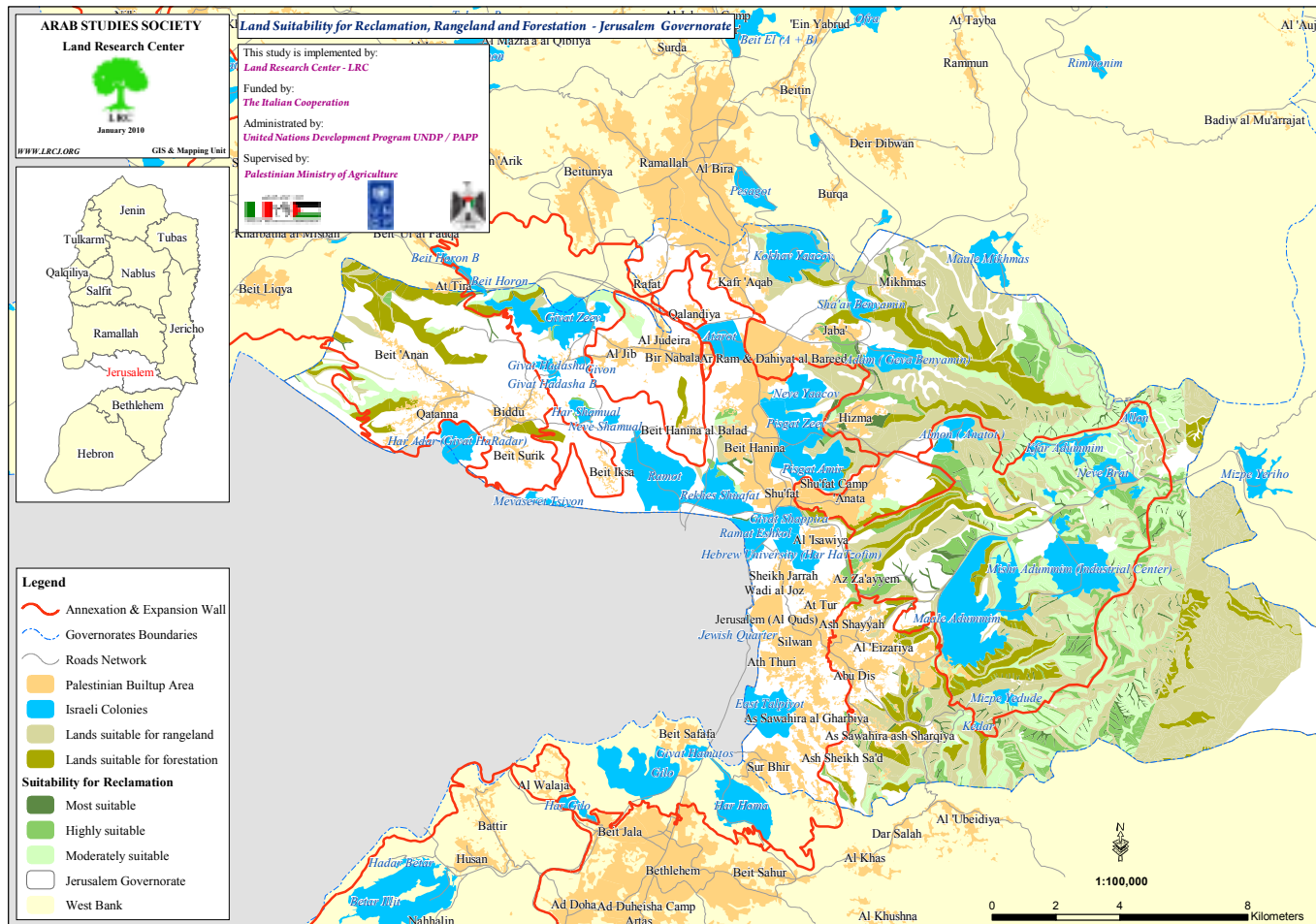


Figure 28: Classes of land suitability in JerG.

The areas of the four classes are shown in the following table:

Figure 29 reveals that the least suitable class for reclamation represent the smallest area percentage among all classes (0.1%). The most suitable class (8.4%), which is relatively small, is mainly located at the central, northeastern and northwestern parts of the Governorate.

The physical features of these parts indicate that there is comparatively high amount of precipitation and sub-humid climate. This result indicates that the work at the most suitable spots for reclamation should aim primarily at increasing the agricultural productivity rather than eradicating poverty or combating land degradation represented mainly by soil erosion.

Table 32: Area of suitability classes in JerG.

Suitability classes	Area (km ²)	Area %
Most suitable	4.6	8.4
Highly suitable	14.6	26.4
Moderately suitable	36.2	65.2
Least suitable	0.1	0.1
Total	55.5	100

Land Suitability for Forests and Rangeland

The total area in JerG that is classified as suitable for forests and rangeland is estimated at about 97.1 km². This land have had this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests in this area, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 24.4 km² (see Figure 30). This area represents about 6.9 % of the JeruG area.

This percentage does not mean that this is the only land suitable for forestry but it rather means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of the land suitable for forestry and rangeland are shown in the following table:

The results indicated that the majority of the land in JerG, which is not suitable for reclamation, is suitable for forestry and rangeland (63.6%).

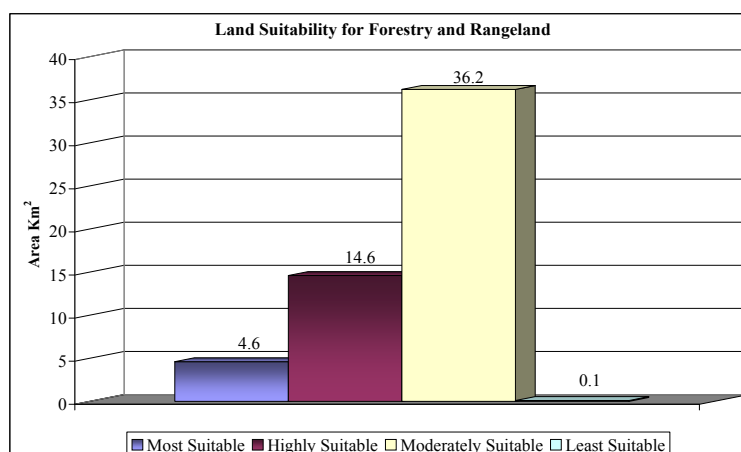


Figure 29: Suitability classes of JerG

Table 33: Area of land suitable for forestry and rangeland of JerG.

Suitability classes	Area (km ²)	Area %
Forestry	24.4	25.1
Rangeland	72.7	74.9
Total	97.1	100

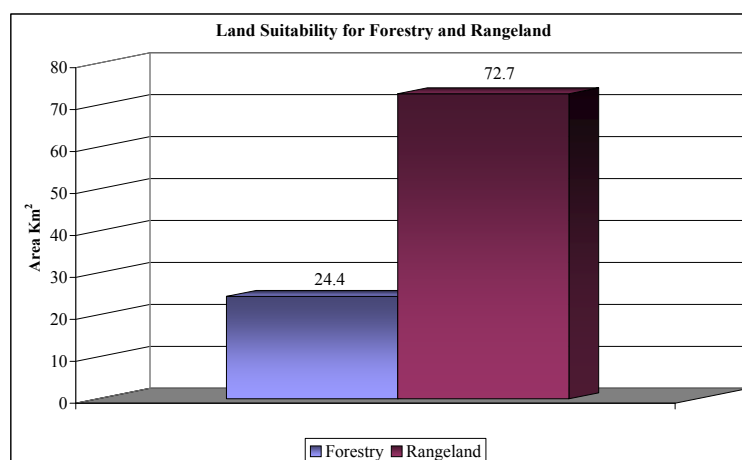


Figure 30: Land suitability of forestry and rangeland of JerG

III.2.3.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in the JerG is 5.2¹⁰⁰; where the corresponding average for the sample studied in Jerusalem district separately was 9.8. This high number was highly desired and supported by the culture, more children means more support for parents in their old age. Moreover, mainly in tribal communities, larger families mean more political power as the children grow to adulthood. In agricultural societies, more children mean more workers, which is being translated to economic and food security. The average number of family members helping in agricultural work was 3.3 members excluding the main farmer, comparing it to the average number of household members in the JerG; almost 33.7% of the typical family gets involved in agriculture which reflects an agricultural society.

100. PCBS, Main Indicators By locality Type. 2009

Analysis also revealed that the majority of the farmers in the JerG have a modest level of education. Table 34 shows that 72.9% had received some formal education up to high school, 21.3% of the sample are well educated and holding a higher degree than Tawjihi. This level of education is an adequate condition for providing and implementing future trainings or the adoption of new techniques for production.

Focusing on farmers with respect to their knowledge and experience in agriculture, the sample showed a great dependency on inherited experience as the main source of the (know-how) in agricultural production. 75% of the farmers depended only on what they have learnt from older family members who worked or are still working in agriculture and tips received from neighboring farmers, they neither attended short courses nor did they receive any technical training.

Remarkably, the average year of experience in agricultural work among respondents was 27.2 years. This high number of years of experience may compensate, to some extent, for the lack of training on the proper ways of farming and using modern technology, but this lack of training is still forming a barrier to a successful agricultural experience and further development. The remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information, attending short course and studying agriculture at universities. The percentage of people who are considered educated professionals and graduated from universities with agricultural degrees and are working in agriculture was not high and represented only 2.8% of the sample. Moreover, farmers who ever attended at least one short course in agriculture represented 19.4% of the sample. This indicates how tremendously agricultural work in the JerG depends on non-scientific traditional techniques of production based on bounded-rational decisions when choosing crops, fertilizers, insecticides or pesticides as clarified by respondents. This high dependency of inherited knowledge explains how outdated the farmers' knowledge about modern methods and technologies that are being used globally, which reduces their efficiency and effectiveness in production.

According to the EC new definition of SMEs¹⁰¹, agricultural production is mainly dominated by Micro-scale farmers who generate about 59.3% of the total production in the JeruG. Moreover, most agricultural economic activities are classified under family businesses; 98.7% of the sample restrict labor to family members only. Barely 41.3% of the farmers go beyond family members to employ seasonal labor; these farmers employ 2.1 employees on the average. These facts reveal how agricultural production is of a small-scale nature in this governorate counting mainly on family members who are usually children, where 49.7% of employed children in the WB are working in agriculture sector¹⁰². Analysis showed that 99% of the family members are considered self-employed.

Unsurprisingly, all households studied were headed by males, given the paternal culture common in the oPt; the male is in charge of land and agricultural activities. Analysis shows that males commonly run the farm by making decisions, yet intensively counting on females in the family to help and do a major part of the physical work. Since it is not common to count only on agriculture to guarantee an adequate standard of living; male members of families usually leave early in the morning to start their other usually main job or attend school, leaving the field to be taken care of by females. Analysis showed that females represent 95.1% of family labor in the sample, which expresses the crucial role of female family members in the production process.

Analysis showed that 51% of the farmers are 50 years old and older. Therefore, one could infer from this result that farmers in the Jericho Governorate are ageing, while young people prefer other kinds of employment if any. Agriculture is a second option for most young people who have other options and prefer other kinds of employment, which generates more income, though leaving agriculture for old farmers with fewer options.

Table 34: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	9	5.8
Primary education	27	17.4
Secondary education	55	35.5
High school	31	20.0
Diploma	10	6.5
Bachelor's degree or above	23	14.8
Total	155	100.0

101. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14

102. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah

Common Economic Activities and the Standard of Living

81.5% of the sample in targeted areas is involved in agricultural works. Thus, farming is the most common activity in the targeted areas, hence, making the main source of income for many households. Yet, as it is common in other governorates, heads of households usually work in more than one job to achieve a better standard of living; rearing livestock followed by handcrafts with 32.1% and 30.1% respectively were the most common economic activities after farming in the region.

Farming is a very well accepted career in the prevailing culture, 73.5% of the sample considered farming as the best job option among all others. This reflects that farming is positively perceived mainly by farmers and non-farmers who are attached to their land and interested in investing time and effort on developing further land.

Working in agriculture has become less profitable as explained by all respondents. This is due to many reasons such as spreading of diseases, drought and soaring input prices. Most farmers in the JeruG considered agriculture as a secondary rather than a primary source of income. Analysis showed that 12.2% of the sample working in agriculture considered it as a major job, while 69.9% of the sample perceived farming as a secondary job. Nevertheless, agriculture in the studied areas of the JerG is considered a major source of income regardless of all limitations.

As Table 35 shows, household's average income from agricultural work is 1165 NIS, this amount includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as major occupation had an average income from agricultural work of 1652 NIS. Based upon that, the household average size and according to the PCBS measures of the standards of living in the southern WB¹⁰³, households counting solely on agriculture live under poverty line, these households represent 27% of the entire sample. Based on the PCBS classification of poverty and according to the household monthly income¹⁰⁴, households living under poverty line are estimated to be 64.3% in the targeted areas. Spending was more than monthly income, which was a common practice in the region indicating the dependency of some households on transfers, micro loans and/or cash through safety nets. Spending is mainly on basic physical needs such as food, which represents the main category of expenditure, transportation and communication, and clothing were the second and third larger expenses for this group respectively¹⁰⁵.

Table 35: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	12.2	1652 NIS
Farmer as secondary job	69.9	1135 NIS
Farmers of total population	82.1	1165.NIS

Crop Diversification

The study showed a high dependency by farmers in the JerG on rain-fed fruit trees. As shown in Table 36, 85% of the farmers own rain-fed trees, which have a key role in their economy and agricultural production. On the other hand, irrigated trees are the least planted; this could be explained by their high dependency on water, which is scarce in the governorate, and also due to the fact that they bear fruits accompanied by little annual income, which makes planting irrigated trees less profitable than other kinds of crops.

Table 36: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	100	91.7
Field crops	72	66.1
Vegetables depending on rainfall	32	29.4
Irrigated vegetables	29	26.6
Irrigated trees	10	9.2

103. PCBS, Poverty in the Palestinian Territory. 2007

104. Ibid

105. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah

Field crops are widely cultivated in these areas as 66.1 % of the farmers cultivate them. On the other hand, rain-fed vegetables were planted by 29.4% of the farmers, while 26.6% of the farmers cultivated irrigated vegetables making almost one third of the agricultural production.

Evidently, most farmers use a minimizing-risk strategy by diversifying the types of crops they grow. Farmers cultivate a collection of 2-3 different kinds of crops which minimizes risk. The common fruit trees production in Jerusalem is plum, grape and olive. Common type of vegetables produced is tomato. Field crop that is being produced by the farmers is mainly wheat¹⁰⁶

Livestock

In total 31.8% of the sample population raise livestock which reflects a good level of dependency on livestock, 16.7% of the household earn their living mainly from husbandry, while 15.4% of the sample raises livestock as a secondary source of income. The common practice among inhabitants of joining agriculture with livestock raising is not as strong as in other governorate; only 14.1% of the samples were farmers, yet raising livestock.

Agricultural Machines, Equipments and Inputs

Generally speaking, JerG is the poorest in the number of agricultural machines and equipments. Less than one percent of agricultural equipments owned by households in the WB are located in Jerusalem, these equipments mainly consist of four-wheel tractor, water tanks, trailers and plough¹⁰⁷.

Table 37: Source of Seeds Used in JG

Source of seeds	Frequency	Percent
Local nurseries	69	64.5
Self-made	64	59.8
Agricultural organizations	16	15.0
Israeli dealers	1	0.9

Local nurseries located in the JerG have formed the main source of inputs with 64.5% of population counting on them. Nevertheless, there is a high percentage of farmers producing their own inputs of seeds forming 59.8% of the sample studied. This source of seeds has been developing as a result of the unhealthy plants they buy or receive as aid, price hikes or to maintain a certain species of high-quality local crops.

Water

The study shows that water reserves for agriculture were considered enough by only 9.4% of the farmers, while the rest considered it inadequate and scarce. Moreover, 68.2% of the farmers in these areas considered lack of water as a very important constraint in the farming systems hindering irrigated agricultural projects.

The scarcity of water has clearly directed most of the agricultural production in the targeted regions within Jerusalem district toward rain-fed crops. 16.8% of the sample did not use water at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from rainfall cisterns wells and public networks as shown in Table 38; the study showed that 38.3% and 37.4% of the farmers using water in the agricultural production depended on these two sources as a main supply of water. Nevertheless, farmers usually utilize more than one kind of water source either as a substitute or a complementary source.

Table 38: Percent Use of Water Source

Water source	Frequency	Percent
Cisterns wells	41	38.3
Public network	40	37.4
Water tanks	24	22.4
Spring water	1	0.9

The third main source of water is purchasing water tanks; it is utilized by 22.4% of the targeted areas. Despite its high cost, it is preferred among other kinds of sources due to its availability. Water tanks are available on demand and can be conveyed to fields regardless of how far they are from villages or public networks. Moreover, this source is commonly used as a (last option strategy) where farmers generally consider it as a secondary source when they run short of the main source. The fourth and fifth sources of water were spring water and artisan wells respectively as shown in the table above.

106. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007

107. PCBS, Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm

Reasons Behind Underutilization of Land

Most land located in the targeted areas is currently utilized in agriculture. 70.4% of households utilize their lands in agriculture, whereas 25.7% of the landowners are not utilizing it at all. The remaining households are using it for husbandry and construction with 2% each.

A total area of 55.9% of the land owned by the sample studied in the JerG is abandoned; reasons behind that can be summarized in order of importance for the sample as shown in Table 39:

As shown by the results, the main reason for inefficient use of land by most households is the lack of financial capital. Reclamation and investing in land is quite expensive relative to the insufficient savings by households in the targeted areas, which represents an average of 4% of their income. The second obstacle was the lack of an adequate infrastructure of water, physical preparation and constructing roads to reach the land. Repetition of drought over years has restricted agriculture and discouraged farmers to invest in agriculture without a sustainable source of water.

Other prevailing constraints were caused by the Israeli existence in the neighboring areas; the continuous intervention of Israeli forces in restricting mobility and limiting reaching one's land. Moreover, another reason was the existence of nearby settlements that limits or prevents accessibility to the land. The high competition of the Israeli products has contributed to abandoning agriculture as they have pushed down the prices, and so causing low profitability and discouraged agricultural productions.

This lack of attractiveness in agricultural production at large scales is due to the lack of financial capital, poor infrastructures; mainly water, and the Israeli restrictions imposed on land accessibility.

Level of Acceptance for Reclamation

The sample showed a great willingness to invest available abandoned land in agriculture, 98.1% of the sample had in mind to plant this land as a future plan. 81.7% of the sample expressed their strong will to invest in agriculture and 86.8% considered it as an urgent priority.

The ability to participate in agriculture was relatively high; the maximum financial contribution respondents are able to make is no more 22.6% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 762 per dunum for his/her land reclamation. As mentioned above, one of the major obstacles facing further utilization of abandoned land was the lack of financial capital.

It is worth noting that not only farmers, but most other non-farmers villagers, as well, were very much willing to invest their available land in agriculture, mainly as a (for-profit investment) with expected future income and/or for domestic consumption respectively. Moreover, the most three clusters of the strata willing to take risk and spend on reclamation work and investing in agriculture were farmers in the first place, followed by employees and handy men respectively. Apparently, most of landowners willing

Table 39: Reasons for not Utilizing Land in Agriculture

Reason	Frequency	Percent
Lack of financial capital	131	85.1
Lack of water	105	68.2
Land needs reclamation	74	48.1
No roads leading to it	38	24.7
Drought	37	24.0
Israeli forces prevent reaching land	36	23.4
Closeness to settlements	29	18.8
Competition of israeli products	17	11.0
No market	9	5.8
No time to plant it	7	4.5
Low profitability of agriculture	5	3.2
Owned for construction reasons only	5	3.2
No intention to plant it	2	1.3
Land's nature is inappropriate for agriculture	1	0.6
Land size is small and not worth planting	1	0.6
Owned for investment reasons only	1	0.6

to undertake agricultural work are looking either for a second source of income, this is mostly due to the low profitability of the business and the high risk involved.

There is a clear positive relation between household size and willingness to invest and increase production. As agriculture is mostly considered a family business in the JeruG as other governorates, farmers depend to a great limit on family members to help in the field, i.e. the larger the household is, the larger it is the will to invest in agriculture and the larger is the possibility to succeed.

Impressively, 98.1% of the households owning the underutilized land proclaimed to have serious future plans of investing land in agriculture. The rest keep it for construction purposes or not decided yet. Reclamation experiences have been taken by some of the sample, 14.4% of the sample has previous reclamation experience and 88.5% have been successfully planting their developed land. These overall results indicate a good potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed on the mechanical land reclamation to be the main priority when it comes to reclamation. Table 41, demonstrates needs for reclamation according to the priorities classified by respondents, the most common need in the targeted area was the land need for physical adjustment mainly by providing heavy machines to flatten the land, and build retaining walls to ensure the appropriate physical conditions to accommodate agricultural activities.

While physical preparation of land was the main concern for land owners, need for supplies, especially seeds input and fertilizers, was the concern of 88.3% of the sample. It is worth noting that besides evaluating the need of supplies as an urgent need, respondents have requested some technical training on what, how and when to buy and plant the different crops to go hand by hand with supplies.

There is an urgent need for providing water when considering reclamation; water supply in the JeruG was on the top list of the reasons hindering agriculture, so it was a priority for the majority of the households, remarkable financial aid was not of the top of the list although lack of financial capital is the main obstacle not to depend on agricultural activities. Harvest equipment and labor were demanded opposite to other governorates.

Table 40: Landowners' Future Plans for the Wild Land

Future plan	Frequency	Percent
Plant it	154	98.1
No plans	2	1.3
Building site	1	0.6
Total land owners	157	100

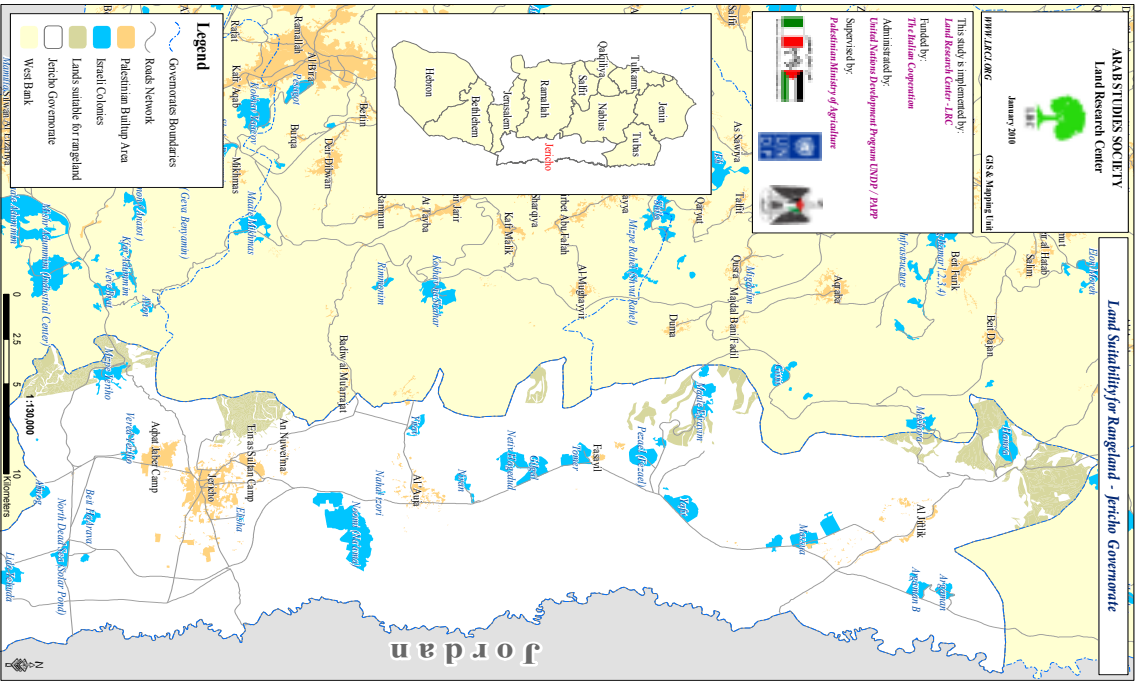
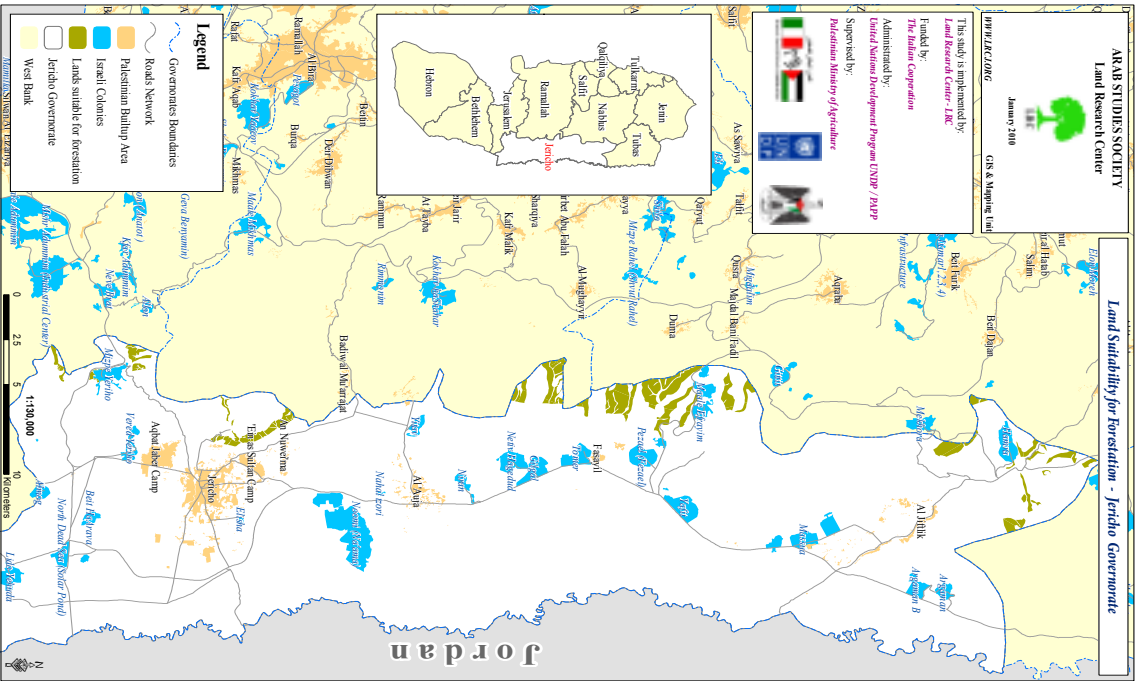
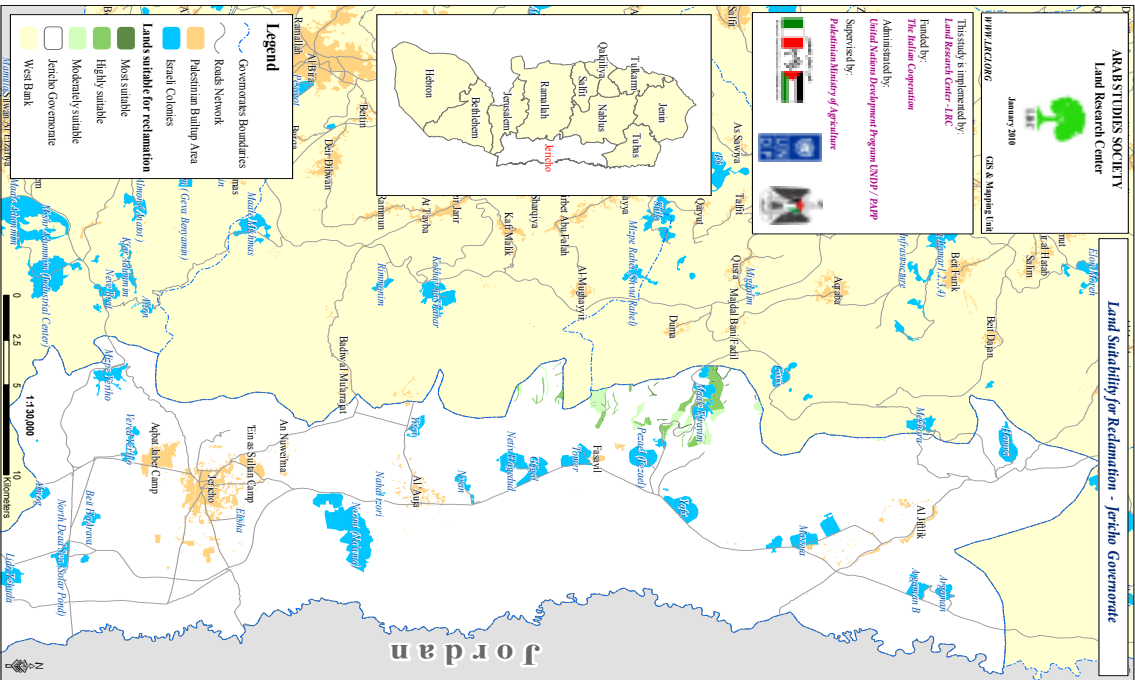
Table 41: Land's Need for Reclamation

Need	Frequency	Percent
Heavy machines	151	98.1
Supplies (seeds, fertilizers...)	136	88.3
Retaining walls	130	84.4
Water source	99	64.3
Financial aid	35	22.7
Harvest equipment	27	17.5
Labour	20	13.0
Fertile soil	7	4.5





III.2.4 Jericho Governorate (JeriG)



III.2.4 Jericho Governorate (JeriG)

III.2.4.1 Introduction

JeriG at a Glance

The JeriG is located along the eastern areas of the WB extending from the northern part of the Dead Sea and to the northern part of the Jordan River valley that is bordering Jordan. The Governorate spans west to the mountains east of Ramallah and the eastern slopes of Jerusalem, including the northern edges of the Jerusalem Desert. JeriG is situated below sea level (300m below) on an east-west route of about 16 kilometers north of the Dead Sea, Jericho city is the lowest permanently inhabited site on earth. It is also believed to be one of the oldest continuously inhabited cities of the world. Its many historic and archaeological sites attract numerous tourists to the area.

Jericho governorate has an area of 609 km² with a built up area of 7.9 square km¹⁰⁸. On November 7, 1927, a major earthquake epic entered near Jericho, which lies on the Great Rift Valley, killed 350 people and caused major damage in Palestine.

Demographic Indicators

According to PCBS, 2007, the population of the Jericho Governorate is estimated to be 42320, including approximately 6,000 Palestinian refugees in the Governorate's camps (Aqabat Jaber and Ein as Sultan)¹⁰⁹. JeriG's population comprises about 1.8% of the population in the WB¹¹⁰. Out of this population, there are 21187 males (50%) and 21133 females (49.9%). The number of households is 7615 and the mean household size is 5.6¹¹¹.

The number of disabilities/difficulties of Palestinian population in the governorate is 1876 including, blindness (1011), deafness (471), physical disabilities (678), cognition (248) and communication disabilities (228)¹¹². The number of population of 5 years and over that is attending schools in the governorate is 6421, which is representing about 15% of the total population, while the percentage of illiteracy is 6.7%¹¹³.

Economic and Social Indicators

In JeriG, the labor force participating rate is 48.7% which is the highest in the WB due to its location as a major border crossing point and main agricultural activities. The unemployment rate is 9.8%, which is the lowest amongst the WB governorates for the same aforementioned reasons. The largest employment sectors in Jericho governorate are agriculture (8.2% of the total population), manufacturing (2%), construction (1.4%), whole sale and retail trade (2%), public administration and defence (3.5%) and hotels and restaurants (0.7%).

Agriculture is important to the economy in the governorate, especially in the valley near Jericho. Ein el-Sultan which is one of the three largest springs in the governorate is an oasis in the Jericho Governorate that is famous of planting orchards, palm groves and banana plantations. It produces 1,000 gallons of water per minute (3.8 m³/min), irrigating some 2,500 acres (10 km²) through multiple channels and feeding into the Jordan River 6 miles (10 km) away from the spring outlet. Annual rainfall in the governorate is 6.4 inches (160 mm), mostly concentrated between November and February.

108. GIS unit at LRC

109. PCBS, 2007

110. Ibid.

111. PCBS-2007 census

112. PCBS-2007 census

113. Ibid

Infrastructure

According to PCBS, 2007, the number of households which are linked to water and electricity in Jericho governorate was 6052 (83% of the total households in the governorate mostly in Jericho city)¹¹⁴, while the percentage of households which are linked to sewage is 0.04%.

According to the PCBS, in 2006, there were 25 schools and 10902 students in JeriG; 16 schools are run by the Palestinian Ministry of Higher Education, 4 schools are being run by the United Nations Relief and Works Agency (UNRWA) and 5 are private schools. There are no universities in Jericho governorate except the branches of Al Quds Open university. There is one governmental hospital in the governorate , and a number of private clinics. There is one five star hotel in the city (Jericho Intercontinental) and Jericho tourist village.

Environmental Indicators

The arid climate of Jericho area makes it rich in its agriculture and tourism potential. Currently the economy of JeriG is dominated by agriculture and agriculture related businesses.

Many parts of the WB including Jericho suffer from water scarcity, and at the same time from the phenomenon of salinization of ground water. Drought and heavy exploitation in the JeriG have led the water table to decline, concentrating the salt left from high evaporation rates into the wells of the area. This is restricting the future utilization of the agricultural land in the area.

The environmental status in the governorate suffers from the same threats and pressures in the whole WB. The presence of about 29 Israeli colonies in which 5110 settlers¹¹⁵ live illegally exacerbated the deteriorated environmental status through discharging solid waste and wastewater into and nearby agricultural lands.

Political conditions

JeriG is greatly suffering from the Israeli activities against Palestinian land. There are 29 Israeli-declared settlements and settlement outposts¹¹⁶ occupying about 23.4 square km (6.7% of the total area of the governorate). In addition to this, the Israeli army established military bases in JeriG over an area of 10 km² (2.8% of the governorate's total area). The above figure clearly indicates that the concentration of Israeli military bases is along the Jordan Valley area; Tubas and Jericho Governorates where substantial areas were seized for the construction of military bases; in order to consolidate Israeli existence at that area where Israeli settlements and settlers least exist. Furthermore, the Israeli Occupation Authorities deny the Palestinian right to get a share in the Dead Sea water which is part of the JeriG. Palestinian access to the Dead Sea has been restricted since the year 2000.

Most damaging for the future of the JeriG is the plan of the Eastern Segregation Zone (Wall plan) stretching along 200 Km north-south the governorate and cutting off 1664 km² (29.4% of the WB) along the Jordan Valley and the western shores of the Dead Sea.

III.2.4.2 Physical Features of JeriG.

As indicated in the methodology, physical features of JeriG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is about 6.5 km², which constitutes about 1.1% of the JeriG area. The physical features would be described as follows:

114. Ibid

115. LRC settlement data base

116. LRC settlement data base

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of the JeriG are: slope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 4.5 km², which is equivalent to 68.8% of the NA and less than 1% of the JeriG area.

Drainage Depressions: It has an area of about 1.1 km², which represents about 16.6% of the NA and less than 1% of the JeriG area.

Hillcrests: It has an area of about 0.9 km², which represents about 14.6% of the NA and less than 1% of the JeriG area. Not all the hillcrests in the JeriG are mapped because the area of those hillcrests is small and cannot be shown at the small map scale of this report.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests. It usually represents leveled area. It covers an area of about 0.9 km², which is equivalent to 14.6% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 - (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 1.5 km², which is equivalent to 23.0% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 4.1 km², which is equivalent to 62.4% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

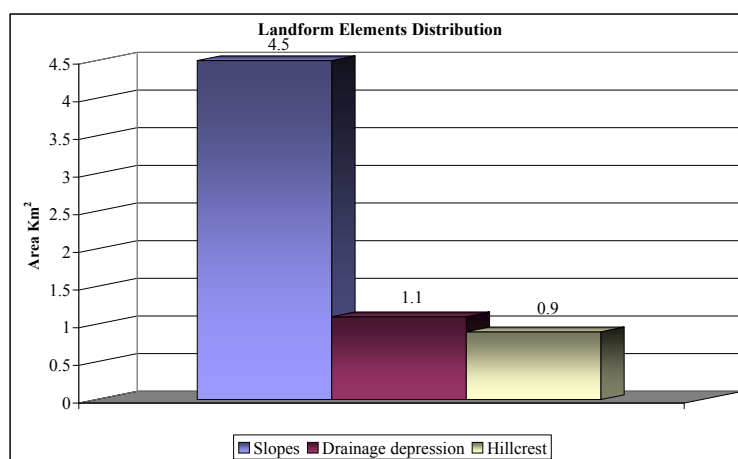


Figure 31: Landform elements in the NA of JeriG

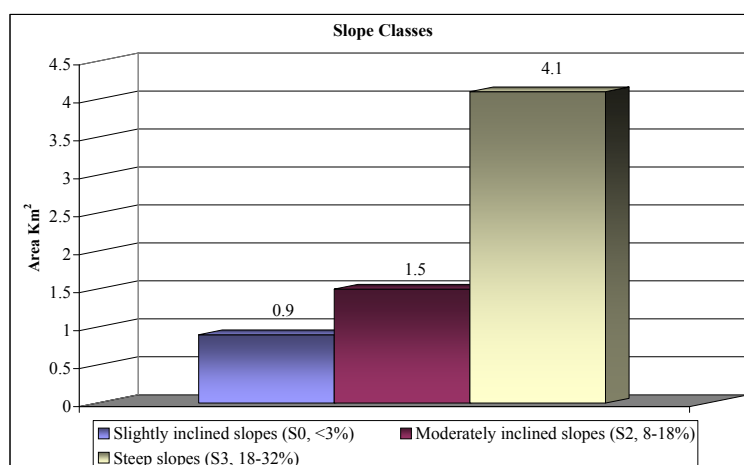


Figure 32: Slope classes in the NA of JeriG

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates. It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents the largest area (16.9%). It is composed mainly of flat hillcrests. In Palestine, areas with northern and western aspects (Mighian) are normally considered much better for agriculture than those with eastern and southern aspects (Mishmas). The first part in the JeriG has an area of about 21.5 % while the second part is about 39.1%.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. Most of the area (99%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The total area of the arid class is 4.5 km² which comprises about 69.7% of the NA; the area of the semi arid part is 2.0 km² which comprises about 30.3% of the NA. The following table and chart display the two types of climate with their conjugate area:

All of the NA is suffering from aridity (100%). This degree of aridity imposes hard restrictions on utilizing this land for agriculture, especially in the absence of control and special management. The vast area of arid climate provoked the salinization process which is the main driving force to desertification in this area. This situation is very clear in JeriG.

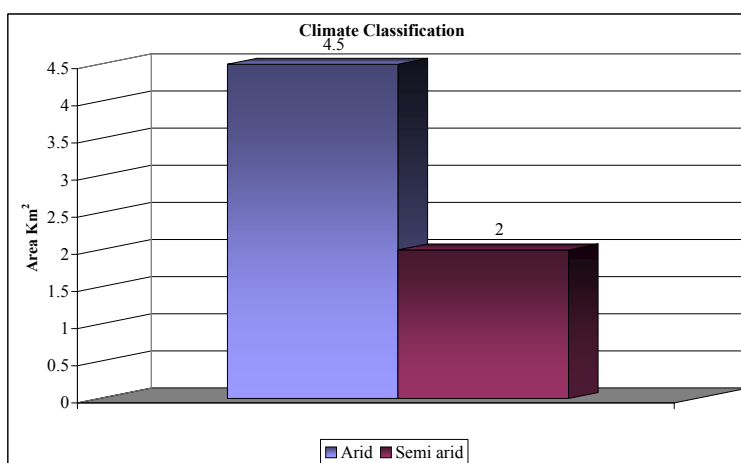


Figure 33: Climate classes of JeriG

III.2.4.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The following map displays the land suitability classes for reclamation and land suitable for rangeland and forestry in the JeriG.

The areas of the four classes are shown in the following table:

From figure 35, it is clear that the least suitable class for reclamation represent the smallest area percentage among all classes (0.2%). These parts are located at the eastern and southeastern parts of the JeriG and at the eastern fringes of the central heights. The main characteristic of these parts is the relatively high slope steepness.

Table 42: Area of land suitability for reclamation classes of JerG.

Suitability classes	Area (km ²)	Area %
Most suitable	0.4	5.6
Highly suitable	3.2	49.3
Moderately suitable	2.9	45.0
Least suitable	<0.1	0.2
Total	6.5	100



The most suitable class (5.6%) is mainly located at the central, northeastern and northwestern parts of the Governorate. Most of the land that is considered suitable for reclamation are located at the mid-western part of the Governorate between Fasayel and Majdal Bani Fadel villages. Also, the socio-economic analysis pointed out that the economic situation at these parts is relatively good. This result indicates that the work at the most suitable spots for reclamation should aim primarily at increasing the agricultural productivity rather than eradicating poverty or combating land degradation represented mainly in soil erosion.

Land Suitability for Forests and Rangeland

The total area in the JeriG that is classified as suitable for forests and rangeland is estimated at about 49.97 km². This land has this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests out of this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of the land that is classified as suitable for forestry is estimated at about 14.5 km² (29% of the total area suitable for forestry and rangeland) (see Figure 36). This percent does not mean that this is the only land suitable for forestry but it means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of the land suitable for forestry and rangeland are shown in the following table:

The results indicated that the majority of the land in the JeriG, which is not suitable for reclamation, is suitable for rangeland (71%).

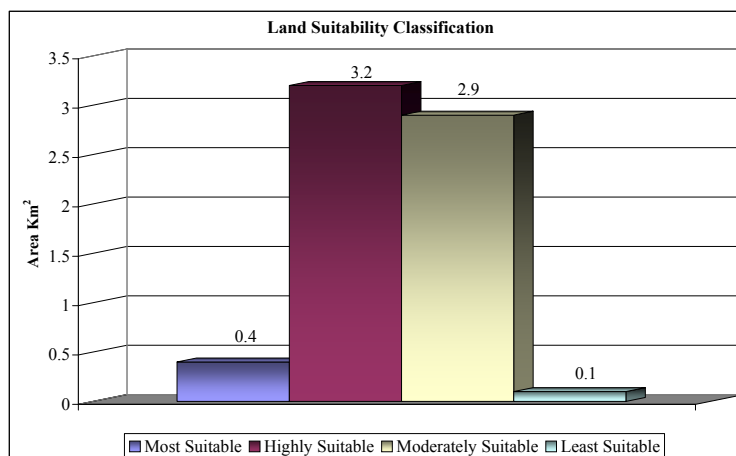


Figure 35: Land suitability for reclamation classes of JeriG

Table 43: Area of land suitable for forestry and rangeland in JeriG.

Suitability classes	Area (km ²)	Area %
Forestry	14.5	29
Rangeland	35.4	71
Total	49.9	100

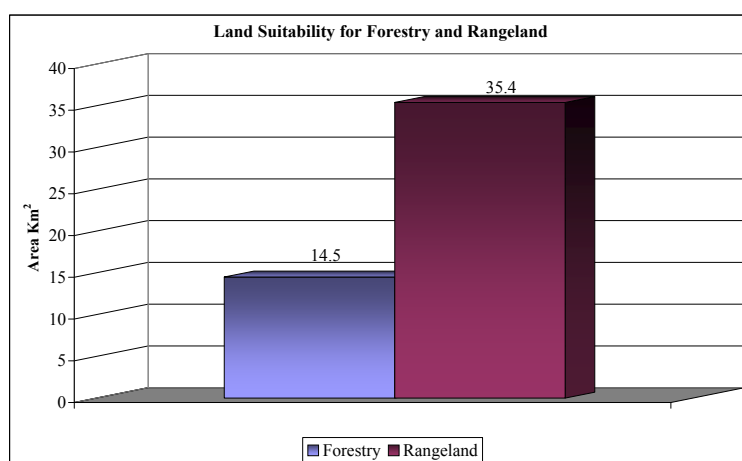


Figure 36: Land suitability for forestry and rangeland of JeriG

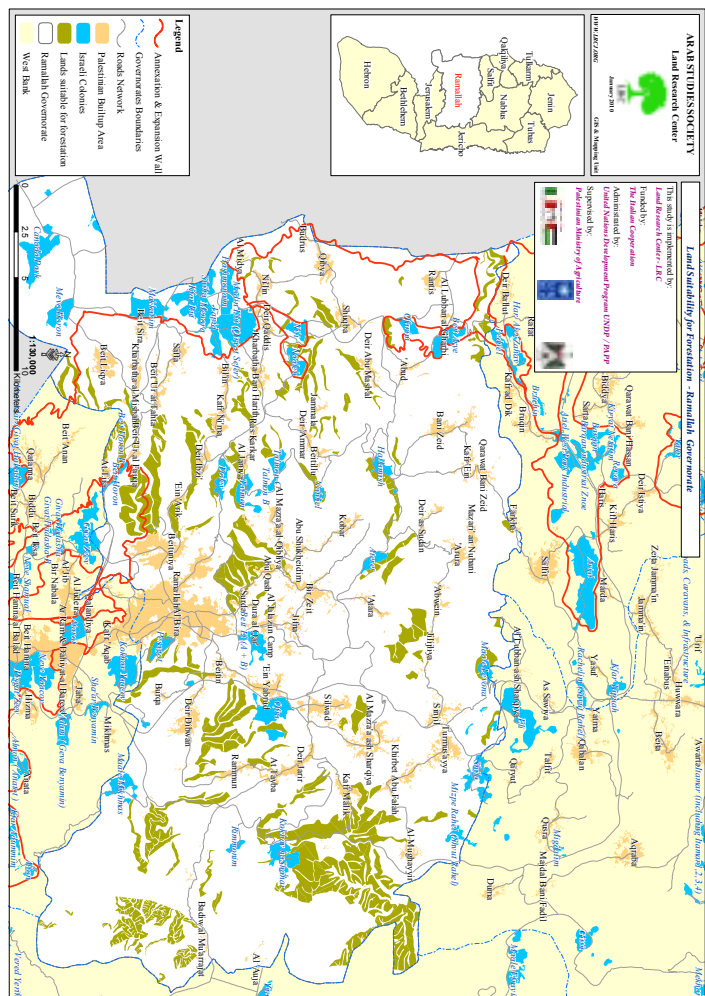
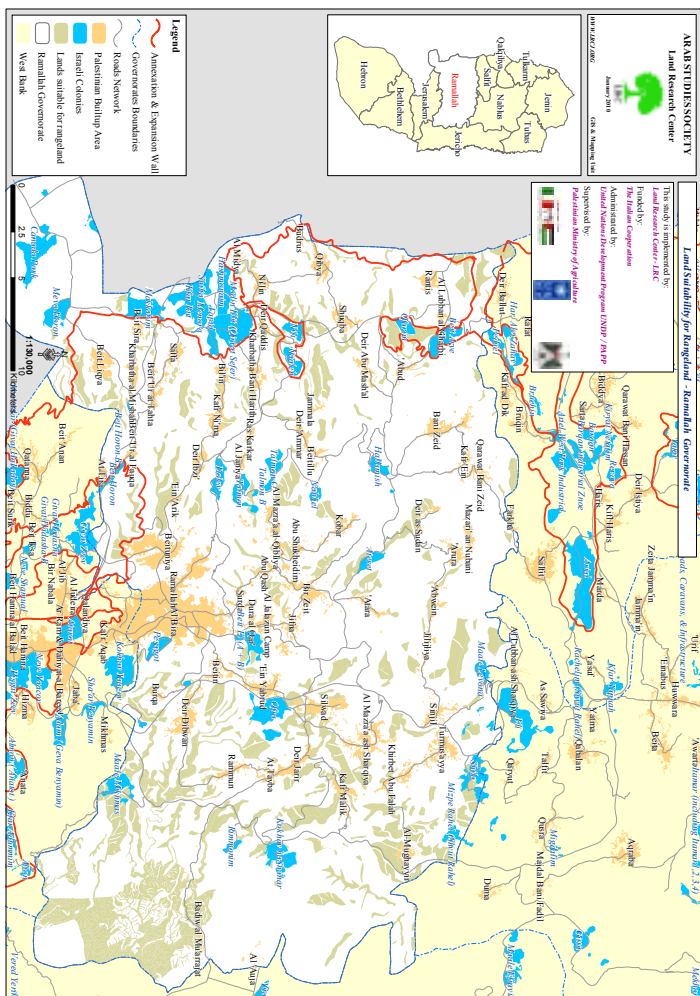
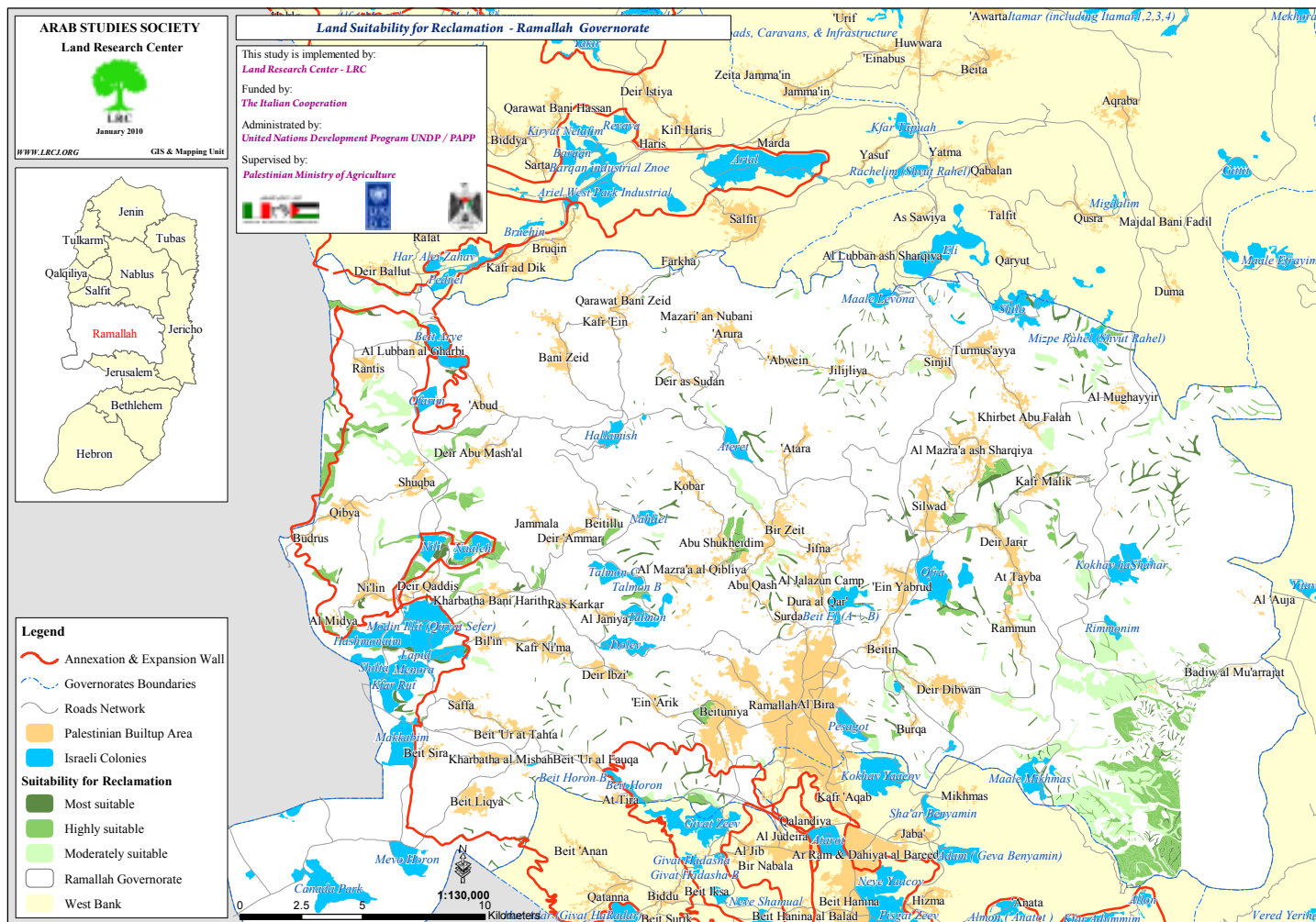
III.2.4.4 Socio-economic Status

Socio-economic aspects have not been investigated in the JeriG as there are no close urban communities to the land classified as suitable for reclamation.



III.2.5 Ramallah Governorate (RG)





III.2.5 Ramallah Governorate (RG)

III.2.5.1 Introduction

RG at a Glance

RG lies in the central high land parts of the WB and is considered one of the largest governorates in the WB. It has an area of 849 km² (15%) of the WB area, including a total of 47.9 km² built up area¹¹⁷. It is bordered by JerG from the south, Jericho and the Jordan valley from the east, Nablus and Salfit governorate from the north and the green line (armistice line of 1949) from the west.

According to Oslo interim agreement between the PLO and Israel, about 101.731 km² of RG were classified as zone A (areas under Palestinian control), 210.738 km² were classified as zone B (areas under Palestinian civil administration but under Israel security), while 536.359 km² were classified as zone C (areas under full Israeli control)¹¹⁸.

Demographic Indicators

RG is populated by approximately 297,730 comprising 11.9% of the population in the West Bank¹¹⁹. Out of this number, about 140,827 males (50.3%) and 138,903 females (49.6%)¹²⁰. The population density is about 326 persons/km². It has about 75 Palestinian built-up areas (localities) ranging from small hamlets with few tens of people to villages with hundreds of peoples, small towns with few thousands, big town with more than 10,000, and cities of more than 20,000 inhabitants. These localities are divided as followed: 14 are located in urban areas, 56 in rural areas and 5 refugee camps. The number of households in RG is 52,834 and the average household size is 5.3 which is moderate in comparison to other governorates¹²¹.

The number of disabilities/difficulties of Palestinian population in the governorate is 11955 including, blindness (6598), deafness (3449), physical disability (4398), cognition (1772) and communication difficulties (1661)¹²², while the percentage of illiteracy is 6.0%, which is moderate in comparison to other governorates¹²³.

At the social levels, the Wall construction has led to the cutting-off of thousands of Palestinian citizens from their urban centers where health, education and social services are located, and cutting-off social relations between Palestinian citizens living on both sides of the Wall. In addition, tough measures were also imposed on Palestinian mobility and movement, transportation from or to the enclosed area by the segregation wall are extremely difficult. The Wall, also, places many Palestinian towns and villages in geographically disconnected and segregated enclaves or ghettos.

Economic and Social Indicators

In RG, the labor force participating rate is 44.2% and the unemployment rate is 11.2%, which is one of the lowest in the WB due to the fact that the city of Ramallah has become the main commercial and business center in the WB. The largest employment sectors in the governorate are construction (21.2% of the labor force), whole and retail sale (16.2%), public administration and defence (11.3%), manufacturing (11.3%), and education (10.8%)¹²⁴.

The RG is characterized by the concentration of the pharmaceutical industry; it contains the biggest 5 factories out of the existing 8 in the oPt. Another important industry in the city is the food processing

117. PCBS, 2007

118. ARIJ data base.

119. PCBS, 2007.

120. Ibid

121. Ibid

122. Ibid

123. Ibid

124. Ibid

where 25% of total number of business involved in food and beverage industry is located in RG. Most of the big companies in this industry, with few exceptions, are concentrated in the area, where the products of such companies can found their way to external markets. In the last 15 years, the service sector has been growing in this area in an increasing rate. The most important financial institutions in the WB are established in this area. In addition to the educational institutions as well as a number of the PNA Ministries and other governmental institutions, which are located in this area, including the presidential compound and the parliament headquarters.

With regard to the economic impacts of the Israeli construction of the Segregation Wall settlements, and the associated land confiscation in the governorate, all of these measures caused severe damage to the Palestinian agricultural sector and to the Palestinian farmers as a result of land confiscation, the restraints imposed on mobility, and restrictions imposed on marketing. In addition, they lead to an increase of unemployment and poverty levels, as well as a rise in land prices and reduction of investment opportunities.

Infrastructure

Only 30.3% of the Palestinians in the RG are connected to electrical, water and sewage networks simultaneously¹²⁵. This is lower than the average of the West Bank (33.7%). The number of schools in RG is 215 divided into 165 governmental, 39 private and 11 run by the UNRWA. The number of students is 78780 (39589 female and 39191 male)¹²⁶. There is one governmental hospital and many private hospitals in the city of Ramallah. Birzeit University is located in the northern suburbs of the Ramallah City.

Environmental Indicators

The environmental status in RG suffers from the same threats and pressures similar to what is existing in the whole WB. The presence of about 30 Israeli colonies exacerbated the deteriorated environmental status through discharging solid waste and wastewater. In this sense, there will be no places for landfills or waste water treatment sites. In the mean time, desertification is increasing and a distortion in wild life movement as a result of cutting-off different types of animals from their natural habitat due to the segregation wall. The Segregation Wall plan is altering the Palestinian natural landscape, in addition, many archeological and historical sites related to the Palestinian cultural heritage will be segregated behind the Wall. After all, the Israeli colonial plan is a direct threat to natural resources and biodiversity in RG.

Political conditions

RG is suffering from a high concentration of Israeli illegal colonies where there are 83 Israeli-declared "legal" and "illegal" colonies and outposts established since 1967¹²⁷. These colonies, which occupy an area of 31.3 km² (about 3.6% of the total governorate's area), are inhabited by 78100 settlers¹²⁸. In addition to this, the Israeli army built a number of military camps over an area of 6.6 km² (about 0.7% of the total governorate's area) and erected 101 road barriers and military checkpoints within the governorate¹²⁹. The consecutive Israeli governments have also worked to link the established colonies with each other and, consequently, with Israel by creating a network of Bypass roads with a length of 182.8 km (23%) in and around the governorate¹³⁰.

The Separation Wall in the governorate extends along 78.8 km and entering through 23 Palestinian villages and towns, and isolating others as in the case of Beit Nuba village and some parts of Al Judaira. The Wall ended up by encompassing 14 Israelis settlements and isolating 99.1 km² (11.6%) of the total governorate's area behind its path.

125. Palestinian Central Bureau of Statistics, 2008. Population, Housing and Establishment Census 2007 Census Final Results in The West Bank – Summary (Population and Housing). Ramallah - Palestine.

126. Data Collected from the Ministry of Education and Higher Education. (Statistics about General Education in Palestine, 2007-2008).

127. www.poica.org.

128. Ibid

129. Ibid

130. Ibid

Talking about the impacts of the Wall construction in the governorate from the political point of view, it will redraw the political boundary of the governorate, redefine the political balance of the governorate with more than 12% of the governorate area enclosed toward Israel, and though it will severely affect the relations between the RG and other Palestinian governorates.

Despite international denunciation, Israel is proceeding with its colonial plans in RG, which eventually, will cause the Palestinian communities to be completely surrounded by a complex of walls, colonies and roads that will eliminate any future possibility for the Palestinian community to expand and, thus, jeopardize sustainable development.

III.2.5.2 Physical Features of RG

As indicated in the methodology, physical features of RG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rock outcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 59.7 km² which constitutes about 7% of the RG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of RG are: slope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 32.6 km² which is equivalent to 54.7% of the NA and 3.8% of RG area. It is mainly part of the uncultivated hills with high percentage of rock outcrop.

Drainage Depressions: It has an area of about 14.3 km², which represents about 24.0% of the NA and 1.7% of RG area. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

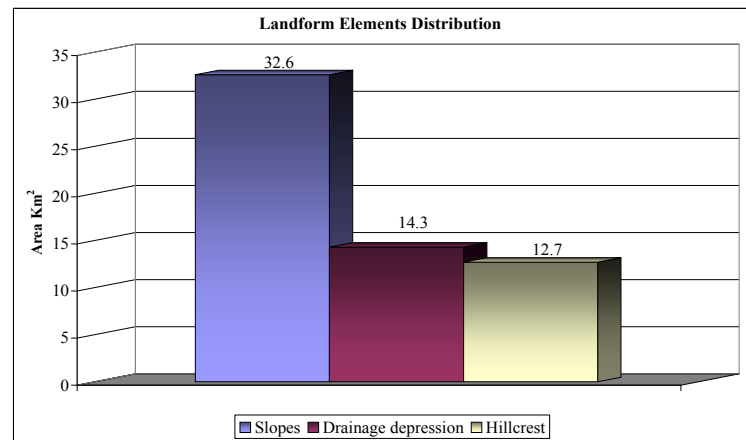


Figure 37: Landform elements in the NA of RG

Hillcrests: It has an area of about 12.7 km², which represents about 21.4% of the NA and 1.5% of RG area. It is composed of small spots sometimes cultivated. Not all the hillcrests in the RG are mapped because the area of those hillcrests is small and cannot be shown at our scale.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests. It usually represents level area. It covers an area of about 12.7 km², which is equivalent to 21.4% of the NA. It is mainly part of the uncultivated hills with low percentage of rock outcrop.

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills as a landform pattern. It covers an area of about 21.6 km², which is equivalent to 36.3% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 25.3 km², which is equivalent to 42.4% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

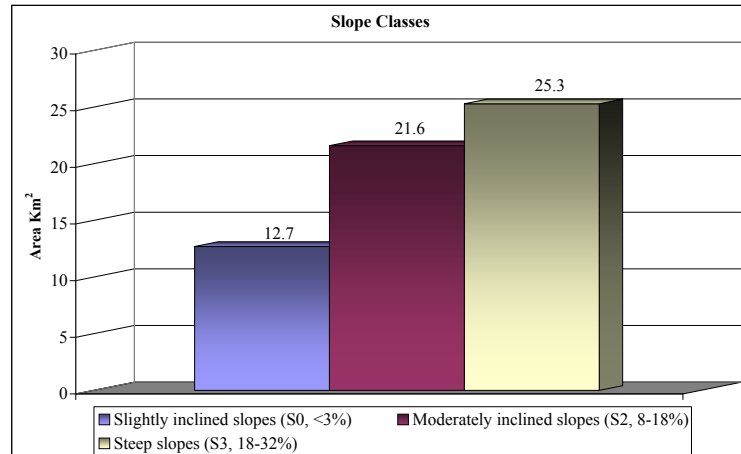


Figure 38: Slope classes in the NA of RG

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates. It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents the largest area (21.4%). It is composed mainly of flat hillcrests. The northern and western aspects (Mighian) areas are about 15.1%, whereas those with eastern and southern aspects (Mishmas) are about 25.8%.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. Less than half of the area (43.4%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is human.

Climate Classes

The total area of the arid class is 26.2 km², which represents about 44.0% of the NA; the area of the semi arid part is 19.1 km², which comprises about 32.1% of the NA; the sub humid area is 14.3 km² which comprising about 24.0% of the NA. The following chart displays the four climate classes with their conjugate area.

The majority of NA is suffering from aridity and occupying most of the area (76%). This degree of aridity imposes hard restrictions on utilizing this land for agriculture in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl according to the population distribution; the same situation is applicable to the sub humid area (24%) which is heavily populated.

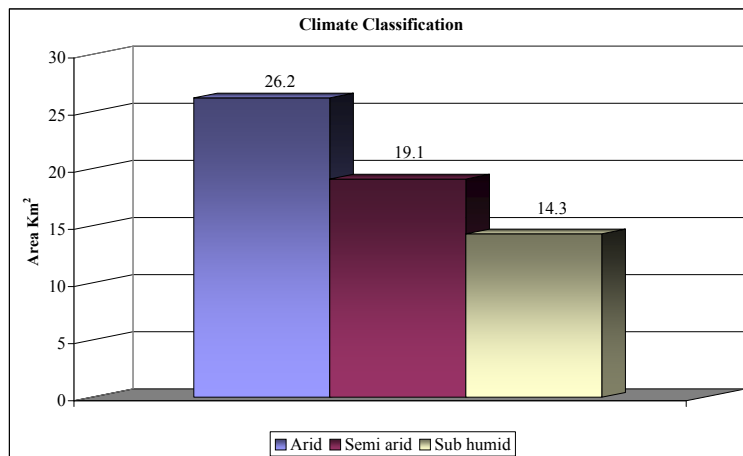


Figure 39: Climate classes of the NA in RG

III.2.5.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The following map displays the land suitability classes of reclamation in RG.

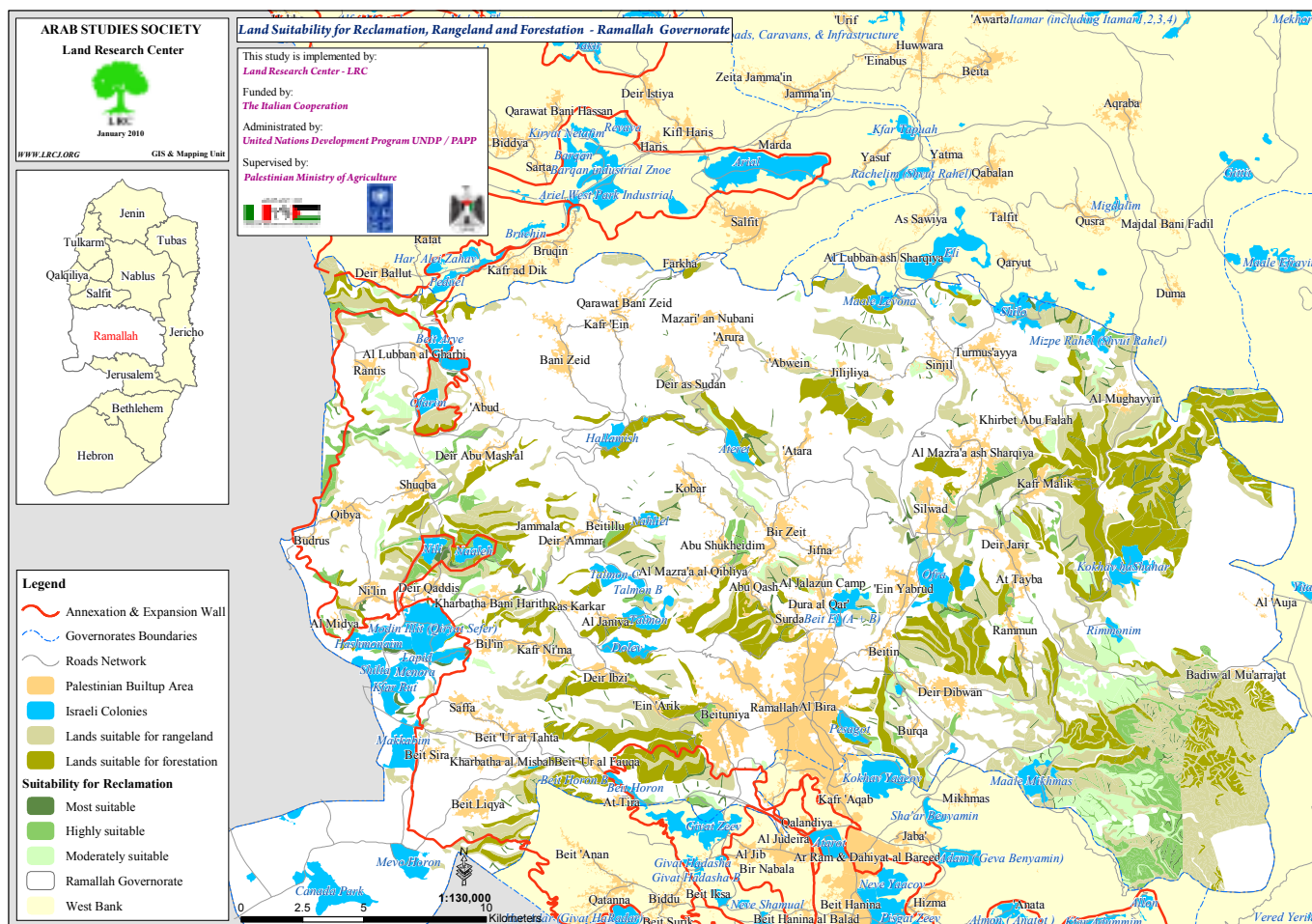


Figure 40: Areas of land suitable for reclamation, forestry and rangeland in RG

The areas of the four classes are shown in the following table:

Table 44: Classes for land suitability for reclamation of RG.

Suitability classes	Area (km ²)	Area %
Most suitable	11.9	20.0
Highly suitable	24.0	40.3
Moderately suitable	23.7	39.7
Total	59.7	100

Figure 41 shows that the most suitable class for reclamation represent the smallest area percentage among all classes (20.0%). This class is mainly located at the central, northeastern and northwestern parts of the Governorate. Most suitable classes of reclamation are distributed almost evenly all over RG. However, there is a comparatively larger cluster suitable for reclamation at the eastern part of RG east to Rammun and Deir Dibwan. The physical features of these parts indicated that there is comparatively high amount of precipitation and sub-humid climate. This result indicates that the work at the most suitable spots for reclamation should aim primarily at increasing the agricultural productivity rather than eradicating poverty or combating land degradation represented mainly in soil erosion.

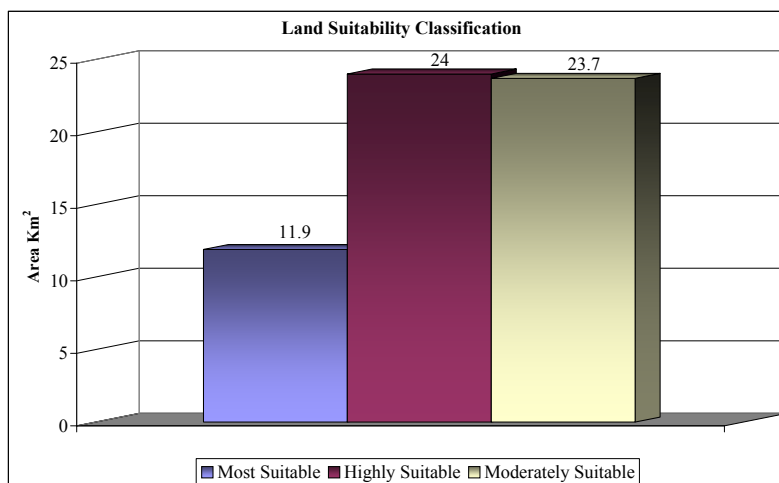


Figure 41: Classes for land suitability for reclamation of RG

Land Suitability for Forests and Rangeland

The total area in RG that is classified as suitable for forests and rangeland is estimated at about 207.2 km². This land has been qualified for this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate).

To consider the land suitability for forests from this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 42.0% (see Figure 42). This area represents about 10.3 % of RG area. This percent does not mean that this is the only land suitable for forestry but it means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of the land suitable for forestry and rangeland are shown in the following table:

Table 45: Area of the land suitable for forestry and rangeland of RG.

Suitability classes	Area (km²)	Area %
Forestry	87.1	42
Rangeland	120.1	58
Total	207.2	100

The results indicated that the majority of the land in RG which is not suitable for reclamation is suitable for rangeland (58%) while that suitable for forestry is 42%.

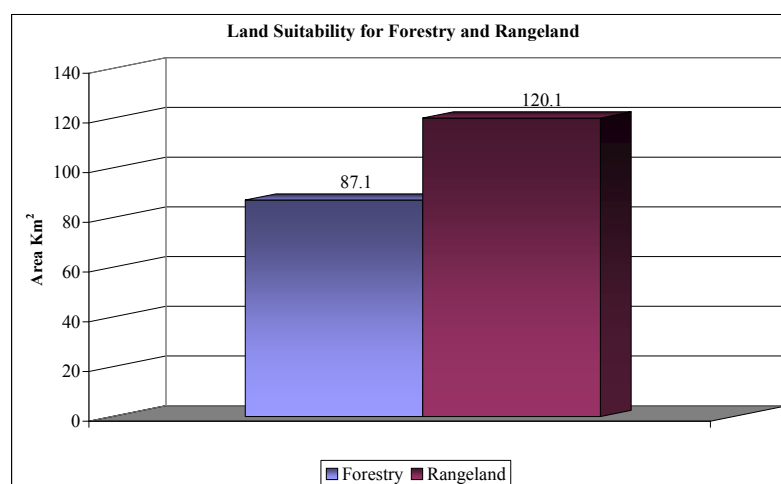


Figure 42: Land suitability for forestry and rangeland of RG

III.2.5.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in RG is 5.3¹³¹; where the corresponding average for the sample studied in RG district separately was 8.4. This high number is highly desired and supported agricultural societies, more children means more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 3.8 members excluding the main farmer, comparing it to the average number of household members in the sample; almost 44.7% of the typical family gets involved in agriculture, which reflects an agricultural society.

Analysis also revealed that the majority of farmers in RG have a modest level of education. Table 46 shows that 73.9% have received some formal education up to high school, 22% of the sample are well educated and holding a higher degree than Tawjihi. This adequate level of education could be an appropriate condition for providing and implementing future trainings or the adoption of new techniques for production.

In regards to knowledge and experience in agriculture, as the case of other governorates, respondents showed a great dependency on inherited experience, with 24.4 years experience on average, as the main source of the (know-how) in agricultural production. 87.7% of the farmers depended only on what they have learnt from older family members who worked or are still working in agriculture and through seeking guidance from neighboring farmers, they neither attended short courses nor did they receive any technical training. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture. Yet, the remaining part of the sample have learned how to farm from inherited experience in addition to other sources of information, attending short course and studying agriculture engineering. The percentage of people considered educated professionals who graduated from universities with agricultural degrees and working in agriculture was not high and represented only 1.8% of the farmers. Moreover, farmers who ever attended at least one short course in agriculture were 5.5%. This indicates how tremendously agricultural work in RG –as other governorates- depends on non-scientific traditional techniques of production based on bounded-rational decisions when choosing crops, fertilizers or pesticide as clarified by respondents. This high dependency of inherited knowledge explains how outdated their knowledge about modern methods and technologies used globally, which reduces their efficiency and effectiveness in production.

Table 46: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	8	4.1
Primary education	28	14.4
Secondary education	46	23.6
High school	70	35.9
Diploma	24	12.3
Bachelor's degree or above	19	9.7
Total	195	100

According to the EC new definition of SMEs¹³², Agricultural production is mainly dominated by micro-businesses, which generate about 94.5% of total production in RG, the rest are of small-scale nature. Agriculture in areas located within RG has a distinguished pattern of employment; opposite to other districts, agricultural activities have relatively fewer family businesses. 54.5% of the sample restrict labor to family members, where 43.2% of the family members working in agriculture are classified as self-employed. The remaining 45.5% of the farmers go beyond family members to employ seasonal or permanent labor; these farmers employ 0.7 employees on average, which reflects how little the agricultural sector provides job opportunities to the population living in targeted areas, hence, given it a small-scale nature.

Households studied were 99.2% headed by males, given the paternal culture common in the oPt; the male is in charge for the land or agricultural activities. Males run the farm by making decisions, yet intensively counting on females in the family to help and do a large portion of the physical work as shown by the data gathered. Females working in agriculture –mainly children females¹³³ - represent 83.5% of labor among family members, and though reflecting the key-role females play in agriculture.

131. PCBS, Main Indicators By locality Type. 2009

132. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14

133. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah

Analysis showed that 50% of the farmers are 51 years old and above. Therefore, one could conclude that main farmers in RG are getting old, while young people prefer other kinds of employment if any. As will be shown later, working in agriculture is a secondary job for 49.4% of the sample, the lack of attractiveness in this field due to many reasons which will be explained in the later section

Common Economic Activities and the Standard of living

The most common activity in the targeted areas was farming and so making the main source of income for most households, the sample studied was made of owners of land suitable for reclamation and farmers working in this land. 83.1% of the sample in targeted area were farmers. Moreover, many people in the targeted areas have more than a single job. There were other kinds of common activities among the inhabitants of the targeted localities; 37.7% of the sample is employed as blue or white-collar employee and 14% run different kinds of businesses. Households did not seem very satisfied with working in agriculture as 58% considered other economic activities as private business and different kinds of employment to be a better option. Those who expressed their satisfaction of working in agriculture were mainly farmers.

Despite the high involvement in agriculture, many farmers in the RG consider it more as a secondary rather than a primary source of income. Analysis showed that 33.7% of the sample working in agriculture considered it as a major job, while 49.4% of the sample perceived farming as a secondary job. As Table 47 shows, household's average income from agricultural work is 744 NIS; this number includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as major occupation had an average income from agricultural work of 1,090 NIS. Based upon that, and according to the PCBS measures of standards of living in southern WB¹³⁴, households counting solely on agriculture live under poverty line, these households represent 33% of the entire sample.

Table 47: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	33.7	1,090 NIS
Farmer as secondary job	49.4	600 NIS
Farmers in sample	83.1	744 NIS

Based on PCBS classification of poverty, household monthly income, and average family size, it is estimated that 74% of the sample in RG is living under poverty line. Spending was mainly on basic physical needs such as food cash expenditure, which represents the main category of expenditure, clothing, and transportation and communication were the second and third larger expenses for this group respectively¹³⁵.

Crop Diversification

The study showed a very high dependency by the farmers on rain-fed fruit trees. Almost all farmers own rain-fed trees. 92.2% of the sample own rain-fed trees which are very productive in the region that provides the appropriate climate.

Conversely, irrigated trees are the least planted, which is explained by their high dependency on water, which is scarce in the governorate, and the fact that they bear fruits accompanied by little income annually. Thus, planting them is not feasible as other kinds of crops. In addition to rain-fed trees, farmers living in targeted areas have a moderate production of rain-fed and irrigated vegetables and rain-fed field crops.

Table 48: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	202	92.2
Vegetables depending on rainfall	67	30.6
Irrigated vegetables	50	22.8
Field crops	32	14.6
Irrigated trees	21	9.6

134. PCBS, Poverty in the Palestinian Territory. 2007

135. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah

Evidently, most farmers use a minimizing-risk strategy by diversifying the types of crops they grow. 96.8% of farmers cultivate a collection of at least 2 different kinds of crops, which minimizes risk. The common fruit trees production in RG are olive and grapes respectively. Common vegetables produced are mainly tomato and squash. Field crops mainly produced are wheat and barley¹³⁶.

Livestock

Generally speaking, Households living in targeted localities depend primarily on farming with little focus on livestock. Husbandry in RG is relatively low. In total 10.5% of the sample population raise livestock, which reflects light intensity and small reliance, 3.2% of the household earn their living mainly from husbandry, while 7.3% of the sample raises livestock as a secondary source of income.

Agricultural Machines, Equipment and Inputs

In general, RG is the poorest, in terms of machines numbers, when compared to other governorates as it possess 0.4% of agricultural machinery in the WB. These equipments mainly consist of four-wheel tractor, trailers and cultivators¹³⁷.

Table 49: Source of Seeds Used in RG

Source of seeds	Frequency	Percent
Local nurseries	149	70.0
Self-made	44	20.7
Agricultural organizations	8	3.8
Israeli nurseries	1	0.5

Local nurseries located in RG have formed the main source of input seeds with 70% of the farmers counting on them; nevertheless, there is a moderate percentage of farmers producing their own inputs of seeds. This source of seeds has been developing as a result of the unhealthy plants they buy or receive as aid, price hikes or to maintain a certain species of high-quality local crops. Agricultural organizations were relatively inactive in this governorate, yet they supply 3.8% of the sample with required seeds.

Water

The study shows that water reserves for agriculture were considered enough by only 18.8% of the farmers, while the rest considered it inadequate and scarce. Moreover, 72.7% of the farmers in these areas considered lack of water as a very important constraint in the farming systems that is hindering irrigated agricultural projects and land reclamation.

The scarcity of water has clearly directed most agricultural production in the targeted localities within RG toward rain-fed crops. 47% of the sample did not use water for irrigation at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from cisterns' wells with 43% of farmers using such source.

Table 50: Percent Use of Water Source

Water source	Frequency	Percent
Cisterns wells	49	43.4
Public network	36	31.9
Spring water	21	18.6
Water tanks	10	8.8

The scarcity of water has clearly directed most agricultural production in the targeted regions within RG toward rain-fed crops. 47.7% of the sample did not use water at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes in the first place from rainfall cisterns wells and secondly from public networks as shown in Table 50; the study shows that 43.4% and 31.9% of farmers using water in production depended on these two sources as a main supply of water. Nevertheless, farmers usually utilize more than one kind of water source, where the second is either a substitute or a complementary source.

Spring water is utilized by 18.6% of the sample, which makes it relatively high when compared to other governorates, and though RG is coming in the second rank after Jenin in using spring water. Water tanks

136. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007

137. PCBS, Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm

are the least used and it is utilized by 10% of the targeted areas. Despite its high cost, it is preferred among other kinds of sources due to its availability. Water tanks are available on demand and can reach to fields regardless of how far they are from villages or public networks. Moreover, this source is commonly used as a (last option strategy) where they generally consider it as a secondary source when they run short of the main source. The fourth and fifth sources of water were spring water and artisan wells respectively as shown in the table above.

Reasons Behind Underutilization of Land

Most localities located in the targeted areas are currently utilizing their land in agriculture. 69.4% of the households utilize their lands in agriculture, where the rest of the landowners are not utilizing it at all. A total area of 63.8% of the land owned by the sample studied in Ramallah is still bare; reasons behind not utilizing land in agricultural activities can be summarized in order of importance for the sample as shown in Table 51:

Results indicate that the inefficient use of land by most households is caused by a combination of lack of financial capital, lack of water, the lack of a supportive infrastructure and the inappropriate physical condition of the land.

Table 51: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Lack of financial capital	195	79.6
Lack of water	178	72.7
Land needs reclamation	108	44.1
No roads leading to it	51	20.8
Israeli forces prevent reaching land	45	18.4
Closeness to settlements	22	9.0
No time to plant it	6	2.4
Low profitability of agriculture	5	2.0
Land's nature is inappropriate for agriculture	4	1.6
Owned for investment reasons only	3	1.2
Drought	3	1.2
Owned for construction reasons only	3	1.2
No intention to plant it	1	0.4

Obtaining a sound infrastructure including sustainable water source, roads, mechanical reclamation of land such as leveling, building retaining walls, and constructing roads is quite expensive relative to the insufficient monthly savings by households in targeted areas where the average monthly saving was 3.3% of their income.

A second factor increasing bare land is the existence of settlements around these lands and the restrictions Israeli forces impose on mobility. Farmers in the studied localities have been facing a serious problem caused mainly by restrictions on mobility imposed by Israeli forces to secure settlements, which caused villagers to alternate their roads to other less convenient and longer roads, this discouraged them to visit their land or investing it in agriculture, which needs continuous visits and trouble-free mobility.

Level of Acceptance for Reclamation

Farmers in RG are very willing to participate in reclamation and invest in agriculture, the sample showed a great willingness to invest available bare land in agriculture, 97% of the sample had in mind to plant the available land as a future plan. 75.9% of the sample expressed their strong will to invest in agriculture and 90.3% considered it as an urgent priority.

Table 52: Landowners' Future Plans for the Wild Land

Future plan	Frequency	Percent
Plant it	239	96.4
Building site	5	2.0
No plans	2	0.8
Sell it	1	0.4
Rent it out	1	0.4
Total land owners	248	100.0

The ability to participate in agriculture was relatively high; the maximum contribution respondents are able to make is 17.7% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 382 per dunum for his/her land reclamation.

The desire to invest the remaining land in agriculture was shared by almost all farmers. 96.4% of households owning the abandoned land proclaimed to have serious future plans of investing land in agriculture. Moreover, 91.7% of the sample will plant the future developed land themselves and/or with the help of the family member, this shows a great commitment and a real will. Finally, a large wedge of the sample, more specifically 6%, has gone through a reclamation program and 92.3% have been successfully planting their developed land. These overall results indicate that Ramallah is the governorate with the best potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed that establishing of an infrastructure is the main priority when it comes to reclamation. Table 53, demonstrates needs for reclamation according to the priorities classified by respondents, the most common need in the targeted area was the land need for physical adjustment mainly by providing heavy machines to flatten the land and build retaining walls to ensure the appropriate physical conditions to accommodate agricultural activities.

While mechanical reclamation of land was the main concern for land owners, the need for a sustainable water resource emerged. Respondents indicated an urgent need for water when considering reclamation, in addition to some financial aid to start the cultivation process.

The high prices of seeds, fertilizers and pesticides, in addition to the defect seeds and plants bought, which affects the successfulness of the physical condition of their land, all of these reasons made supplies, especially seeds input and fertilizers, the concern of one third of the sample that are demanded for reclamation.

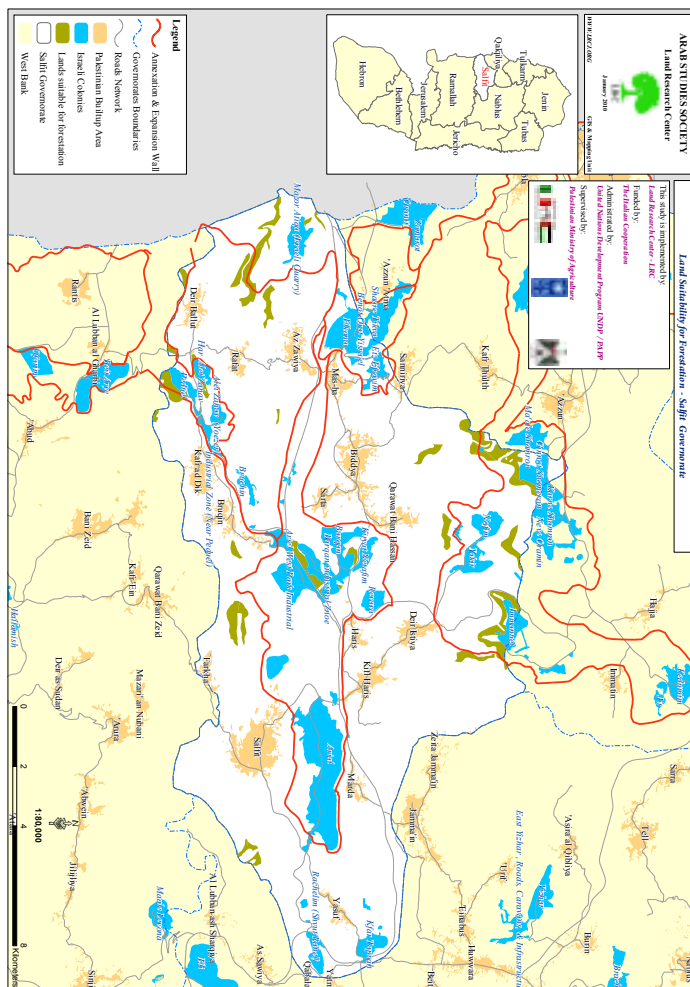
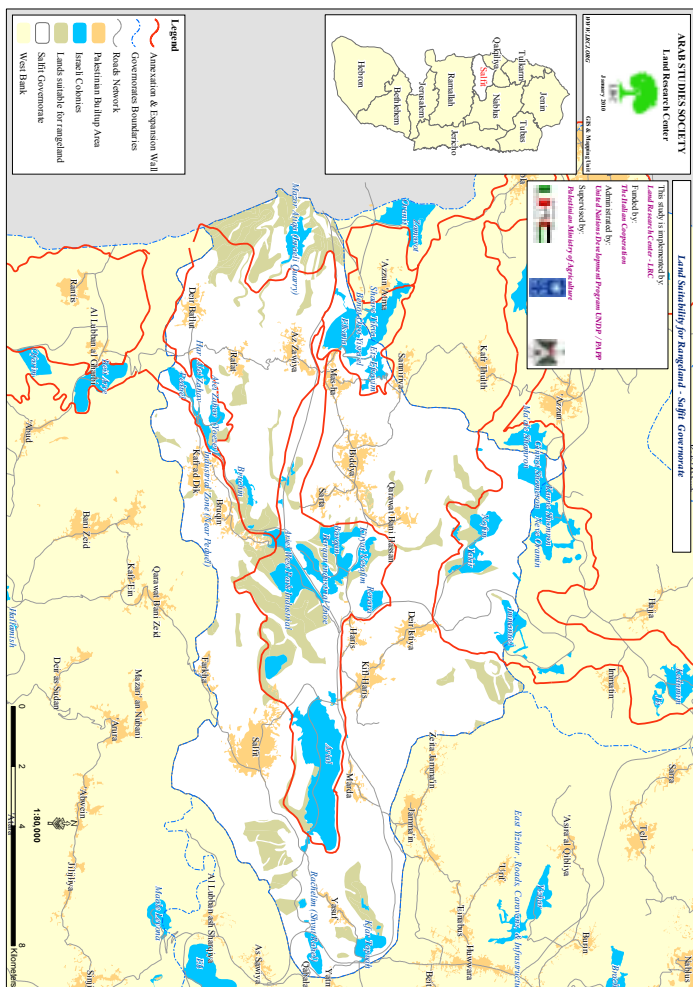
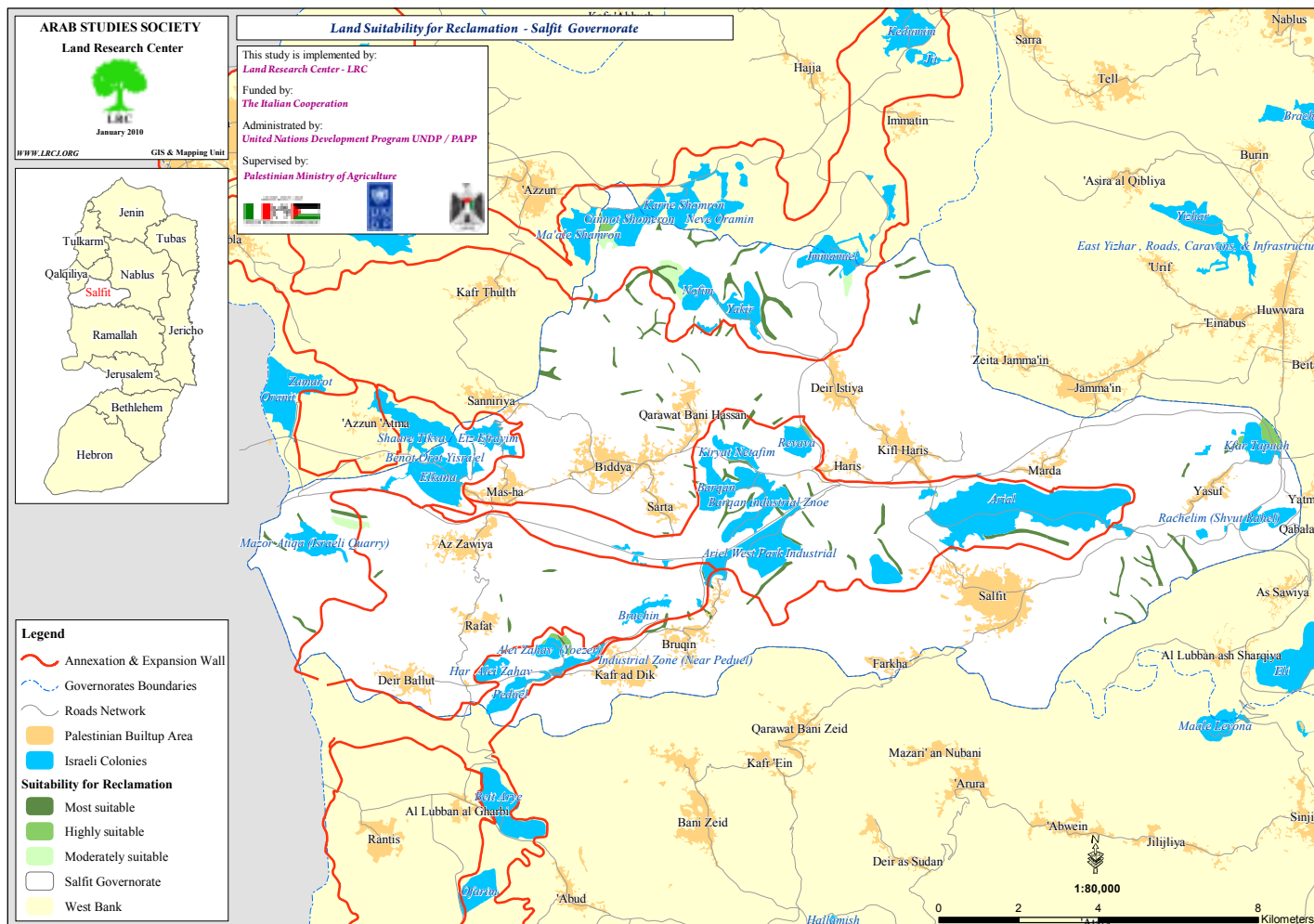
Table 53: Land's Need for Reclamation

Need	Frequency	Percent
Heavy machines	201	81.4
Retaining walls	182	73.7
Water source	133	53.8
Financial aid	101	40.9
Supplies (seeds, fertilizers...)	83	33.6
Fertile soil	30	12.1
Labor	8	3.2





III.2.6 Salfit Governorate (SG)



III.2.6 Salfit Governorate (SG)

III.2.6.1 Introduction

SG at a Glance

SG is located in the middle of the northern part of the WB around 20 kilometers southwest of the City of Nablus. The boundaries of the Governorate start from the area of Za'atara (on the Nablus-Ramallah Road) in the east, the village of Kufr Qasem in the west, Qana Valley (which separates the Governorate from the Governorates of Nablus and Qalqilia) in the north and Surda valley (which separates the Governorate from the Governorate of Ramallah) in the south. The total area of the Governorate is 202 Km².

Demographic Indicators

According to the figures of PCBS-2007, the total population of Salfit governorate is 59,570, of whom 30,275 males (50.8%) and 29,295 females (49.1%). There are 19 Palestinian population centers in SG including one city, 8 towns and 10 small villages. The number of households is 11,103 and the mean household size is 5.4¹³⁸.

The governorate's population represents 2.5% of the total population in the WB. The population density in the governorate is 290 individuals per km².¹³⁹ The number of disabilities/difficulties of Palestinian population in the governorate is 3921 including, blindness (2177), deafness (1138), physical disability (1753), cognition (585) and communication problems (574)¹⁴⁰. The number of population, 5 years and over, attending schools in the governorate is 22873 representing about 38.3% of the total population, while the percentage of illiteracy is 6.0%.

Economic and Social Indicators

SG is known for the fertility of its lands. It is the largest olive oil producer in the Palestinian territories, producing around 3000 tons during the good season and around 700 tons during the bad season in accordance with the statistics of the Ministry of Agriculture. Such a production was taking place before 2003, the year when the Segregation Wall was established on the lands of the Governorate.

A large number of springs and irrigation wells (14) also exist in the Governorate, which made it a prime target for Israeli occupation authorities as evident in the large number of Israeli colonies in the Governorate. In SG, the labor force participating rate in 2007 was 45.5% and the unemployment rate was 18.9%¹⁴¹.

Latest studies conducted by the Palestinian Ministry of Agriculture in 2007 indicated that 16.1% of the population of the Governorate depends on agriculture as the main source of income, while 16.2% depend on working in the colonies set up on the lands of the Governorate and a smaller percentage work inside the Green Line. In addition, around 40% of the population of the Governorate depends on working in self-employment and both the public and private sectors.

Economic Situation

The section of the Wall that was built on the lands of the village of Masha led to the total destruction of Masha'a commercial market in which tens of thousands of Israeli shekels were exchanged on daily basis. Hundreds of families in the governorate and other nearby governorates depended largely on the market as their main source of income. Its destruction have raised the unemployment rate in the Governorate in addition to the destruction of the agricultural lands in the vicinity of the market as bulldozers were used to level it along with the market.

138. PCBS-2007 census

139. LRC's GIS Unit.

140. PCBS-2007 census

141: Ibid

Given that SG borders the Green Line, lead to a large percent of its population (around 45%) to work inside Green Line up to the year 2000. After the inception of the current Intifada, Israeli policies and measures transformed almost 19% of the population of the Governorate to unemployment, a very high percentage in comparison with other governorates in the WB.

A large number of the commercial and industrial establishments in the Governorate were built on lands that are currently located behind the Wall. This situation has led to the destruction of most of such establishments and the deprivation of their owners from their main, and sometime, only source of income. An example of such an economical catastrophe is the village of Masha where 7 big animal pens used to raise cattle were totally destroyed during the establishment of the Wall.

Infrastructure

According to PCBS, The number of households which are linked to water, electricity and sewage was 1277 (11.6% of the total households in the governorate mostly in Salfit city)¹⁴². Agriculture is an important pillar of the economy of the area. The area produces 22% of the total production of olive oil and has the second largest aquifer, this is in addition to stone mining and quarry.

According to PCBS, in 2006, there were 62 schools and 18444 students in SG; 60 schools are run by the Palestinian Ministry of Higher Education and 2 are private schools. There are no universities in SG except the branches of Al Quds Open University. There is no governmental hospital in SG, but there are many private clinics.

Israeli occupation forces continued its demolition campaign of the Palestinian houses as well as agricultural and industrial estates. During the period from 2000 till now, more than 59 homes and other structures were demolished and 127 others were given halt- construction orders¹⁴³. That was due to the erection of the Wall in the western side of the Governorate and around the Israeli colonies in the Governorate, in addition to the security and building without permits reasons.

Environmental Indicators

The uprooting of thousands of olive trees in the Governorate, the confiscation of underground water resources, the isolation of Palestinian lands behind the Wall, in addition to the prevention of Palestinians to access their lands have led to an environmental disaster in SG.

The polluted and contaminated water along with the industrial waste stemming from the Israeli factories in the Governorate are considered to be serious threats to the health of humans, plants and wild animals. They are also considered the perfect environment for the breeding of rodents and harmful insects as well as harmful fumes and smells. Wadi Cana is the living example on the negative effect of Israeli colonies on both man and environment.

The colonies of Barkan and Ariel are considered the largest industrial colonies in the WB, with all what this entails for the negative effect on the health of the local Palestinian population. The colony of Barkan contains a large number of plastic, oil and pesticide factories that disposes its by-products in the Barkan



Figure 43: Waste water dumped to Wadi Qana from Israeli colonies

142. Ibid

143. Source: field work by LRC.

Valley. This fact has led to breathing difficulties (due to the smells emitted from the by-products) as well as skin problem. In addition, these by-products are usually disposed off while containing its core chemicals that seep into the underground water during the rainy season, so leading to major water contamination

Political conditions

When comparing SG with the rest of the Palestinian governorates, one notice that it is exceptional in the high number of Israeli colonies residing on its land. So far, there are 17 existing Israeli colonies which occupy not less than 38134 dunums (38.1 km²) or 18.6% of the total area of the governorate. This figure includes about 8835 dunums (8.8 km²) of built up area which constitutes 4.3% of the total surface area of the Governorate¹⁴⁴. The number of Israeli colonists in the Governorate in 2005 was around 40 000, constituting about 8.8% of the total number of colonists in the WB and East Jerusalem and around 20% of the colonists in the WB alone.

The colony of Ariel is the largest colony in the WB as Israeli occupation authorities dubbed it as the capital of (Samaria). In 1998, the colony was transformed into a city that had a college, a number of factories and industries, hotels in addition to a large population. In accordance with the 2005 population estimates, the number of colonists in Ariel is around 16520.

The Segregation Wall started to be built in the western side of the Governorate of Salfit in 2002 at the length of 12 km between the villages of Masha, Az Zawiya, Rafat and ending at Deir Balut¹⁴⁵. The erection of the Wall has led to the uprooting of about 2000 olive trees, the destruction of 1200 dunums (1.2 km²) under its route, in addition to the separation of 14,500 dunums (14.5 km²) behind the Wall (Source: Ibid). Furthermore, in an attempt to annex even more fertile lands in the Governorate, the Israeli occupation began to establish in 2005 a wall surrounding the colony of Ariel. The length of this wall is 22 kilometers and has led to the uprooting of more than 2,730 olive trees and the isolation of an additional 800 olive trees and 2700 dunums (2.7 km²) from the lands of the city of Salfit and the two villages of Marda and Iskaka.

The network of by-pass roads in SG is considered to be an important pillar of the plan to separate the Palestinian towns and villages from each other, which make them more controllable. Moreover, the network works to connect Israeli colonies with each other from one hand, and to connect between them and Israel proper, on the other hand. According to the Field Work and GIS Unit at LRC, there are 6 by-pass roads in SG that occupy about 5.5 km² (2.6% of the total area of SG).

III.2.6.2 Physical Features of SG.

As indicated in the methodology, physical features of SG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 4.3 km² which constitutes about 2% of the SG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of HG are: slope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

144. Source: Field Work and GIS Unit at LRC; Foundation for Middle East Peace.

145. Ibid.

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 0.8 km², which is equivalent to 18.6% of the NA and less than 1% of the SG area

Drainage Depressions: It has an area of about 3.1 km², which represents about 71.6% of the NA and about 1.5% of the SG area. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

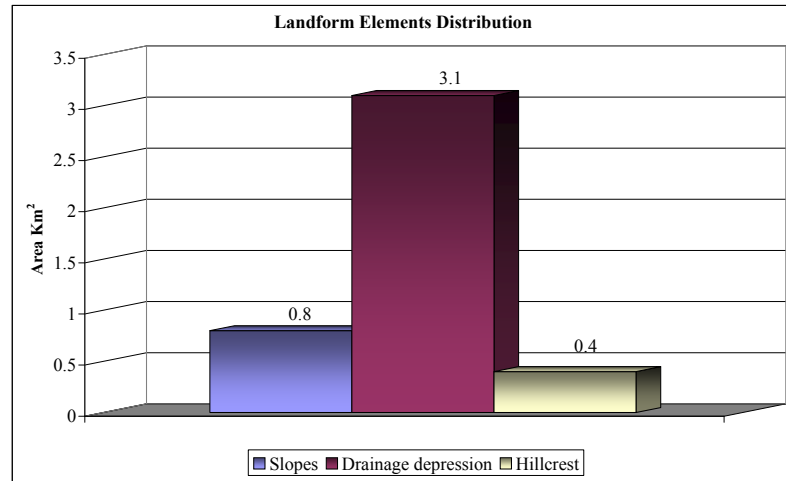


Figure 44: Landform elements in the NA of SG

Hillcrests: It has an area of about 0.4 km², which represents about 8.8% of the NA and less than 1% of the SG area. It is composed of small spots sometimes cultivated. Not all the hillcrests in the SG are mapped because the area of those hillcrests is small and cannot be shown at our scale. Also some of the hillcrests are very narrow to be mapped.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests. It usually represents leveled area. It covers an area of about 0.4 km², which is equivalent to 8.8% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

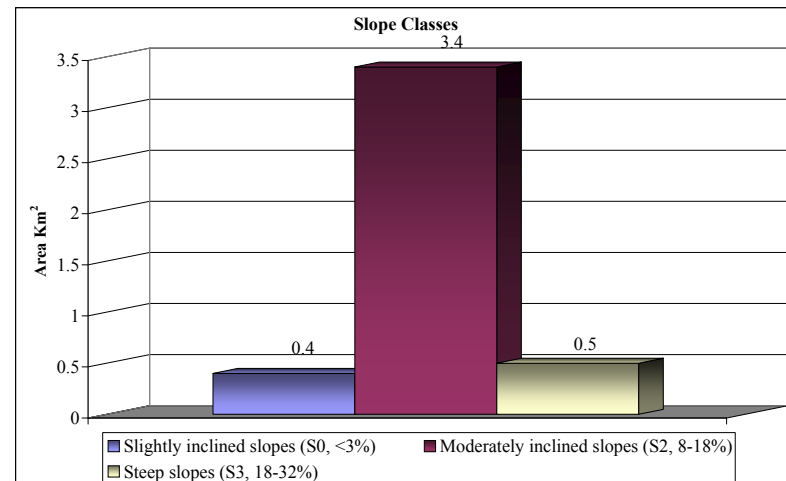


Figure 45: Slope classes in the NA of SG

Moderately inclined slopes - S2 - (8-18%):

this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 3.4 km², which is equivalent to 80.0% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 0.5 km², which is equivalent to 11.3% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates. It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents a small area (8.8%). It is composed mainly of flat hillcrests. The northern and western aspects (Mighian) occupies about 32.4%, whereas those with eastern and southern aspects (Mishmas) are about 20.2%.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. More than half of the area (73.7%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The area of the semi arid part is 0.1 km², which comprises about 1.9% of the NA; the sub humid area is 3.8 km², which comprises about 14.9% of the NA. The following chart displays the two climate classes with their conjugate area.

The majority of the NA is suffering from aridity and occupying most of the area (98%).

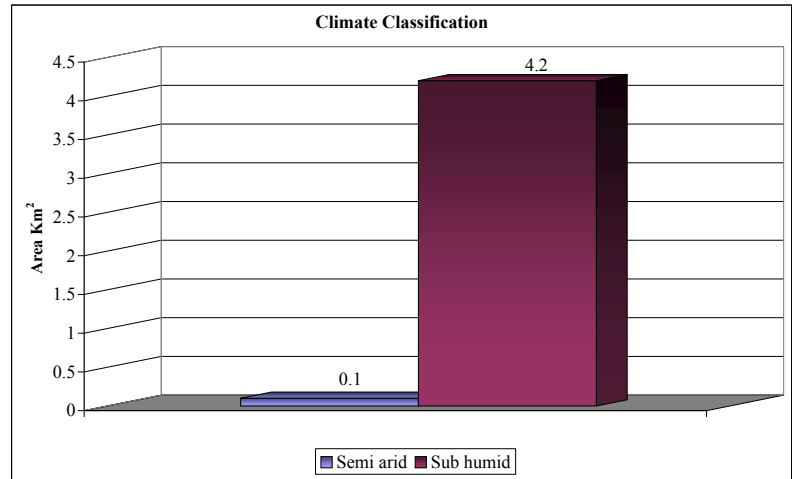


Figure 46: Climate classes of the NA of SG

III.2.6.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The following map displays the land suitability classes of reclamation in SG.

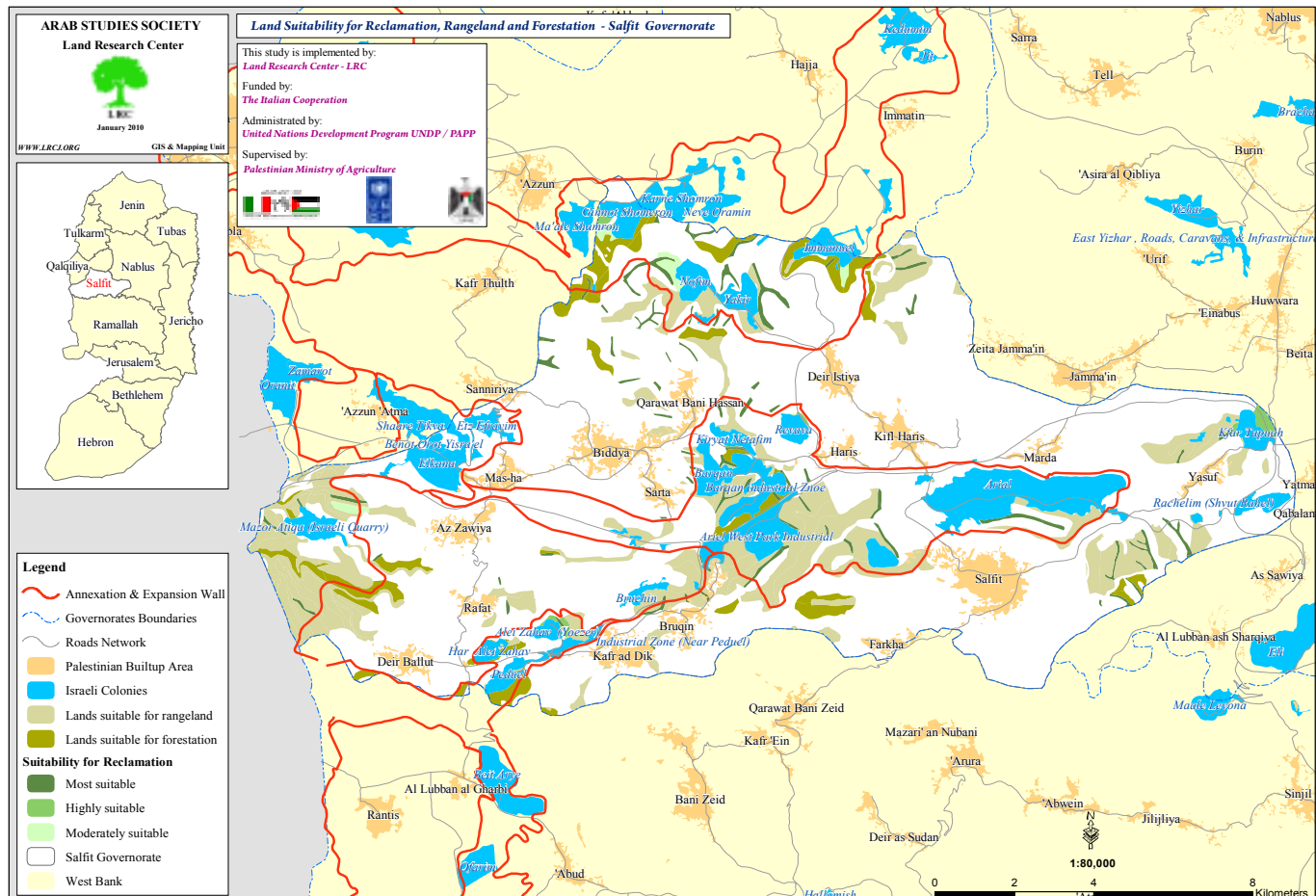


Figure 47: Areas of land suitable for reclamation, forestry and rangeland in SG

The areas of the four classes are shown in the following table:

By investigating the figures and the distribution of suitability classes in figure 48, it is clear that the most suitable class for reclamation represents the largest area percentage among all classes (71.6%). This class is mainly located at the central northwestern parts of the Governorate to the north of Qarawat Bani Hassan.

Table 54: Areas of land suitability classes for reclamation in SG.

Suitability classes	Area (km ²)	Area %
Most suitable	3.1	71.6
Highly suitable	5. 0	12.5
Moderately suitable	0.7	15.8
Total	4.3	100

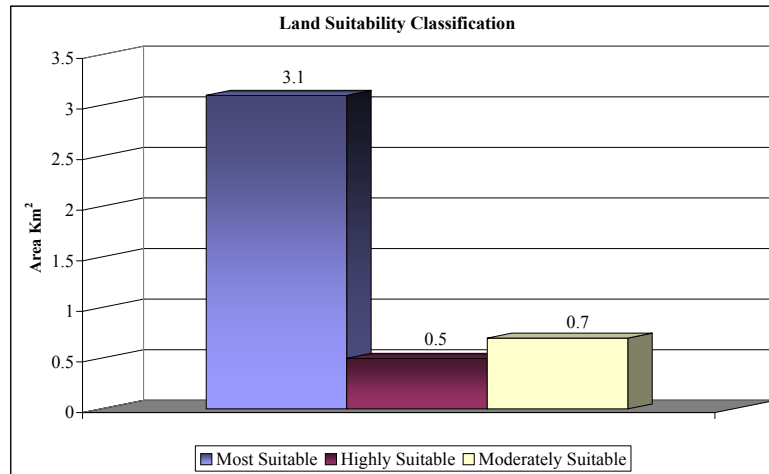


Figure 48: Land suitability for reclamation classes in NA of SG

Land Suitability for Forests and Rangeland

The total area in SG that is classified as suitable for forests and rangeland is estimated at about 32.9 km². This land has this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests out of this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 21.3% (see Figure 49). This area represents about 3.5 % of the SG area. This percent does not mean that this is the only land suitable for forestry but it rather means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of the land suitable for forestry and rangeland are shown in the following table:

The results indicated that the majority of the land in SG which is not suitable for reclamation is suitable for rangeland (78.7%). The percent suitable for forestry is comparatively low (21.3%).

Table 55: Areas of land suitable for forestry and rangeland in NA of SG.

Suitability classes	Area (km ²)	Area %
Forestry	7.0	21.3
Rangeland	25.9	78.7
Total	32.9	100

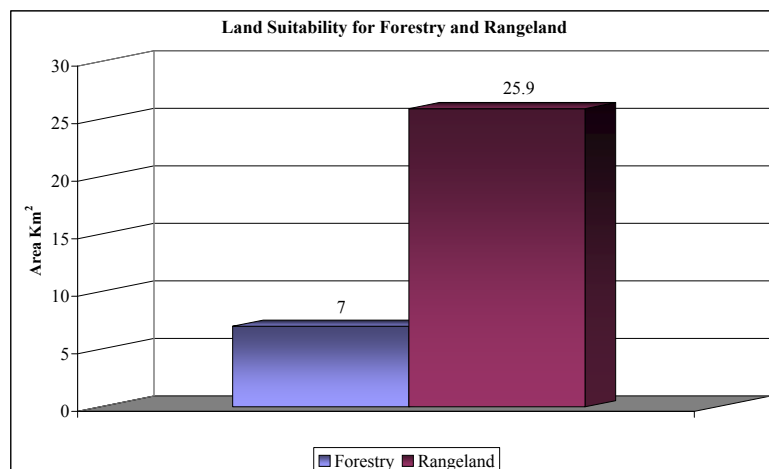


Figure 49: Land suitability for forestry and rangeland in NA of SG

III.2.6.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in SG is 5.4 ¹⁴⁶; where the corresponding average for the sample studied in SG separately was 8. This high number was highly desired and supported by the culture in an agricultural society, more children means more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 4.3 members excluding the main farmer, comparing it to the average number of household members in SG; almost 53.8% of the typical family gets involved in agriculture which reflects an agricultural society.

Table 56: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	4	8
Primary education	8	16
Secondary education	8	16
High school	17	34
Diploma	6	12
Bachelor's degree or above	7	14
Total	50	100

Analysis also revealed that the majority of farmers in SG have a modest level of education. Table 56 shows that 66% had received some formal education up to high school, 26% of the sample are well educated and holding a higher degree than Tawjihi. This adequate level of education could be enough for providing and implementing future trainings or the adoption of new techniques for production.

With regard to knowledge and experience in agriculture, the average years of experience in agricultural work among respondents was 26.9 years, which was mainly accumulated through inherited experience. Respondents showed a great dependency on inherited experience as the main source of the (know-how) in agricultural production. 70% of the farmers depend only on what they have learnt from older family members who worked, or are still working in agriculture, or are getting advice from neighboring farmers, but they neither attended short courses nor did they receive any technical training. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture. Yet, the remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information, such as attending short course and studying agriculture engineering. On the one hand, there were no professional farmers who studied agriculture at an advanced level - such as university or agricultural institutes. On the other hand, farmers who ever attended at least one short course in agriculture represented 28% of the sample, this number is relatively high and represents their will to learn and improve their production process. Nevertheless, the wide dependency on inherited knowledge indicate how agricultural work in SG depends tremendously on non-scientific traditional techniques of production, which is based on bounded-rational decisions when choosing crops, fertilizers or pesticides as clarified by respondents. This high dependency of inherited knowledge explains how outdated their knowledge about modern methods and technologies used globally, which reduces their efficiency and effectiveness in production.

According to the EC's new definition of SMEs¹⁴⁷, agricultural production is mainly dominated by micro and small-scale farms that generate about 96% and 4% of total production in the SG respectively. Most agricultural economic activities are classified under family businesses; 52% of the sample narrows labor to family members only. Conversely 48% of the farmers go beyond family members to employ seasonal labor; these farmers employ 0.7 employees on average. These facts reveal how agricultural production is of a micro-scale nature in this governorate counting mainly on family members of whom 95% are considered self-employed.

98.1% of households studied were headed by males, given the paternal culture in the oPt; males are in charge for the land or agricultural activities. Males run the farm by making decisions, yet intensively counting on females in the family to help and do the great proportion of the physical work as shown by the data gathered. Since it is not common to count only on agriculture to guarantee an adequate standard of

146. PCBS, Main Indicators By locality Type. 2009

147. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14.

living; male members of families usually leave early in the morning to start their other, usually main job, or attend school, leaving the field to be taken care of by females. Analysis showed that females represent 87.5% of the family labor in the sample. Moreover, family members usually participating in agriculture are mainly children¹⁴⁸ or grandsons below 18 years old.

Analysis showed that 54.6% of the farmers in the targeted areas are above 50 years old. Therefore, one could infer that main farmers in SG are getting old, while young people prefer other kinds of employment if any. As will be shown later, working in agriculture is a secondary job for 64.3% of farmers who are commonly old and trying to invest their time in something productive.

Common Economic Activities and the Standard of Living

The most common activity in the targeted areas was farming, which make up the common source of income for households, 96% of the households interviewed in the targeted areas were farmers. There were other kinds of common activities among the inhabitants of the targeted localities; 34% of the sample is employed as blue or white-collar employee and 22% have their own businesses.

Despite the fact that most households inhabiting the targeted areas are involved in agriculture, only 36% of the sample showed interest in agriculture, the rest preferred to have a different option such as private businesses or employment with consistent salaries.

Despite the high involvement in agriculture, many farmers in the SG consider agriculture more as a secondary rather than a primary source of income. Analysis showed that 28% of the sample working in agriculture classified it as a major job, while 68% of the sample perceived farming as a secondary job. As Table 57 shows, household's average income from agricultural work is 676 NIS; this number includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as a major occupation had an average income from agricultural work of 680 NIS. Based upon this, in addition to the average family size of the sample, and according to the PCBS measures of the standards of living in the southern WB¹⁴⁹, households counting solely on agriculture live under poverty line, these households represent 34% of the entire sample.

Table 57: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	28	680 NIS
Farmer as secondary job	68	675 NIS
Farmers in sample	96	676 NIS

Based on PCBS classification of poverty, household monthly income and average family size¹⁵⁰, households living under poverty line are estimated to be 94% in the targeted areas. Expenditure is more than monthly income, which is a common trend in the region, though is indicating the dependency of some households on transfers, micro loans and/or cash through safety nets. Spending is mainly on basic physical needs such as food cash expenditure which represents the main category of spending. Clothing, with transportation and communication, were the second and third larger expenses for this group respectively¹⁵¹.

Crop Diversification

The study showed a very high dependency by the farmers on rain-fed fruit trees. Almost all farmers own rain-fed trees. 96% of the sample own rain-fed trees which are very productive in the region that provides the appropriate climate.

The second most planted crop by the targeted farmers was field crops planted by 28% of the sample, followed by rain-fed and irrigated vegetables, leaving few farmers working with irrigated trees as shown in Table 58.

148. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah.

149. PCBS, Poverty in the Palestinian Territory. 2007.

150. Ibid

151. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah.

Opposite to other governorates, many farmers intensively focus only on one type of crops as 54% of the sample count on one kind of crops, usually rain-fed trees. The remaining 46% of the farmers cultivate a collection of at least 2 different kinds of crops, which minimizes risk. The most common fruit trees food production basket in the SG is made of olive, while common vegetables produced are mainly tomato. Field crops that are mainly produced are dry onion, wheat, and barley¹⁵².

Livestock

Generally speaking, livestock numbers in SG have decreased significantly, cattle, goats and sheep's numbers have decreased since 2004, with an exception of bee hives that increased since then¹⁵³. This decrease was explained by respondents to be a result of high incidence diseases, population pressure, and the soaring prices of livestock's fodder. Nevertheless, husbandry in SG is relatively low. In total 12% of the sample population raise livestock, which reflects a low level of dependency of livestock within the studied localities

Agricultural Machines, Equipment and Inputs

Generally speaking, SG is one among other governorates with the least agricultural machines and equipments. Almost 1% of agricultural equipments owned by households in the WB are located in Salfit, these equipments mainly consist of; four-wheel tractor, trailers, and ploughs¹⁵⁴.

Local nurseries located in SG have formed the main source of inputs with 72% of the population counting on them; nevertheless, there is a good percentage of farmers producing their own inputs of seeds (20% of the sample studied). This source of seeds has been developing as a result of the unhealthy plants that are available in the markets or from price hikes.

Water

The study showed that water reserves for agriculture were considered enough by only 19.4% of the farmers, while the rest considered it inadequate and scarce. Moreover, 50% of the farmers in these areas considered lack of water as a very important constraint in the farming systems, hence hindering agricultural projects.

The scarcity of water has clearly directed most agricultural production in the targeted regions within SG toward rain-fed crops. 44.9% of the sample did not use water at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from rainfall collective wells as shown in Table 60; the study showed that 40% of the farmers who are using water in production depend on this source as a main supply source of water. The second source that is used is public networks, utilized by 18% of the sample. Although public networks come as a second source of irrigation water, 0.2% households utilize public network water for agriculture¹⁵⁵.

Table 58: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	48	96.0
Field crops	14	28.0
Irrigated vegetables	11	22.0
Vegetables depending on rainfall	11	22.0
Irrigated trees	4	8.0

Table 59: Source of Seeds Used in SG

Source of seeds	Frequency	Percent
Local nurseries	36	72.0
Self-made	10	20.0
Agricultural organizations	1	2.0

Table 60: Percent Use of Water Source

Water source	Frequency	Percent
Collective wells	20	40.0
Public network	9	18.0
Purchasing tanks	2	4.0
Spring water	1	2.0
Artesian well	1	2.0

152. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007.

153. PCBS, Agricultural Statistics, PCBS, Editor. 2003/2004/2005/2006/2007, PCBS: Ramallah.

154. PCBS, Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm.

155. PCBS, Percent Distribution of Households in the Palestinian Territory by Water Source and the Most Water Consumption Field and Region. 2003; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/WaterResources/tab4.aspx.

Reasons Behind Underutilization of Land

Most areas located in the targeted areas are currently utilized in agriculture. 68% of households are utilizing

A total area of 40% of the land owned by the sample studied in SG is not fully utilized; reasons behind not utilizing land in agricultural activities can be summarized in order of importance for the sample as shown in Table 61:

As shown by the results, Most of the sample explained the reasons for not investing their land in agriculture by the lack of financial capital needed to embark on the reclamation process. Thus, the main reason for inefficient use of land in these localities is the combination of inappropriate physical conditions of the land and the lack of financial capital. The physical preparation of land such as building partitions, walls, roads, and leveling the land is quite expensive relative to the insufficient savings by households in the targeted areas, which represent an average of 2.1% of their income.

Table 61: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Land needs reclamation	38	76.0
Lack of financial capital	36	72.0
Lack of water	25	50.0
Closeness to settlements	23	46.0
No roads leading to it	21	42.0
Israeli forces prevent reaching land	18	36.0
Drought	12	24.0
Low profitability of agriculture	5	10.0
Land's nature is inappropriate for agriculture	5	10.0
Owned for investment reasons only	4	8.0
Owned for construction reasons only	3	6.0
No market	3	6.0
No time to plant it	2	4.0
Competition of Israeli products	2	4.0

Lack of water is considered the second obstacle hindering the start of an agricultural initiative. Half of the landowners pointed out to the insufficient quantities of water for irrigation as an obstacle hindering and reclamation process.

The lack of roads linking farmers to their land has been a dominant obstacle to reclamation. Besides the few number of roads available, farmers in the studied localities have been facing a serious problem caused mainly by settlements surrounding their land. Restrictions on mobility imposed by Israeli forces to secure settlements have caused villagers to take hard alternative paths, and though discouraging them to visit their land or investing it in agriculture, although frequent visits and trouble-free mobility are needed for utilization of the land.

It is worth noting that there was a low degree of competition by the Israeli agricultural products with those produced in the governorate. Obviously, the production of these localities in the SG is relatively profitable –when compared with southern governorates– and is well known of its high competition with the production from the Israeli sources, especially in the local and the foreign market.

Level of Acceptance for Reclamation

The sample showed a great willingness to invest in the available bare land in agriculture, 91.7% of the sample had in mind to plant the available land as a future plan. 87.8% of the sample expressed their strong will to invest in agriculture and considered it as an urgent priority.

At the same time, the ability to participate in agriculture was not high; the maximum contribution respondents are able to make is no more 11.3% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 308 per dunum for his/her land reclamation.

Apparently, most of the landowners, who are willing to undertake agricultural work, are looking either for a second source of income except pension salary or profit from other businesses, which is mostly due to the fact that most of the farmers have different source of income making agriculture as a secondary one. Moreover, it is noticeable that mostly young people showed interest in investing and maintaining land. As agriculture is mostly considered a family business in the SG as other governorates, farmers depend to a great limit on family members to help in the field, i.e. the larger the household is, the larger it is the will to invest in agriculture and the larger is the possibility to succeed.

91.7% of the households owning the bare land proclaimed to have serious future plans of investing land in agriculture. While the rest proclaimed to have no future plans for the land. Moreover, 70% of the sample, who are willing to invest in agriculture, will plant the developed land themselves with the help of the family. Finally, only 6% of the sample has gone through a reclamation program and all of them have been successfully planting their developed land until the time of the study. These overall results indicate a good potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed on the mechanical reclamation of land to be the main priority when it comes to reclamation. Table 62, demonstrates needs for reclamation according to the priorities classified by the respondents, the most common need in the targeted area was the land's need for physical adjustment mainly by providing heavy machines to leveling the land, build walls and partitions to ensure the appropriate physical conditions to accommodate agricultural activities.

While physical preparation of land (constructing walls, partitions, and providing appropriate machines for land leveling) was the main concern for land owners, the need for water sources emerged, which was the concern of 78% of the sample. In the same scenario, the need for supplies, especially seeds input and fertilizers, was the concern of 70.7% of the sample. This point was strongly stressed during interviews. The increasing number of failure trials to plant using seeds bought from local suppliers or even received as donations has pushed farmers and landowners to classify providing healthy seeds and appropriate fertilizers to overcome pests as the second priority. The last major need on the priority list of the sample was labor. Despite the relatively high average number of households, family member's involvement in farming does not seem to be enough. The minority of the sample expected that the presence of fertile soil and harvest equipment to enhance productivity.

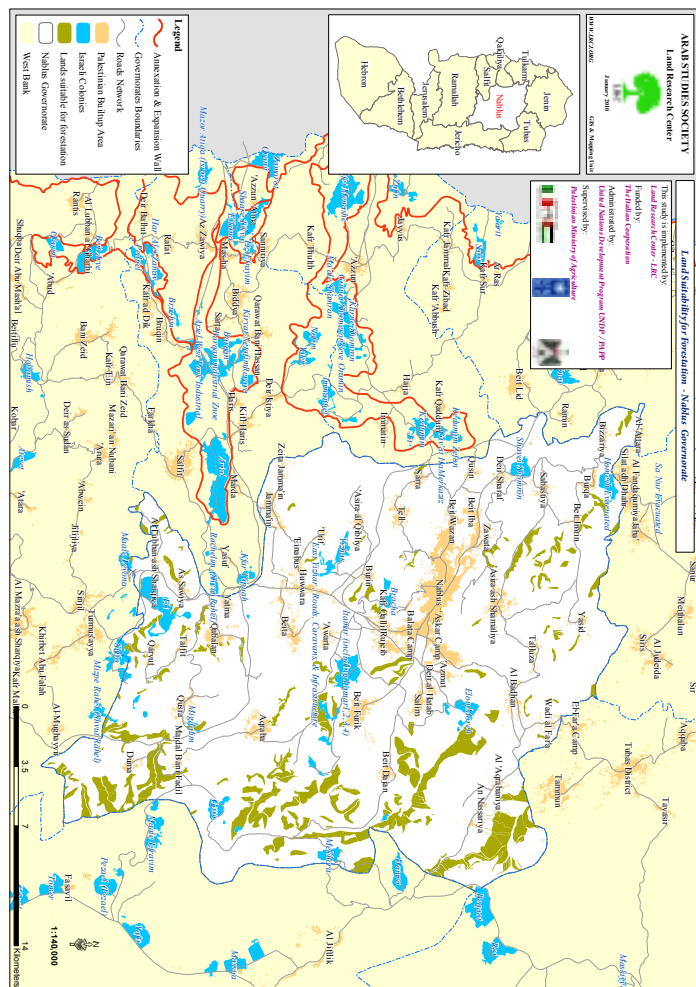
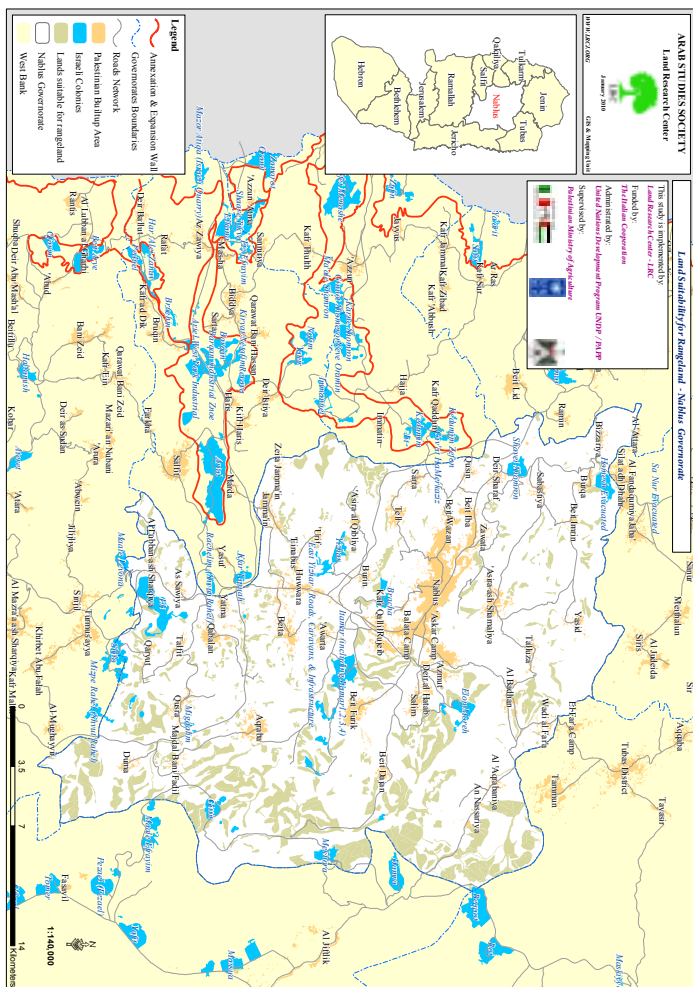
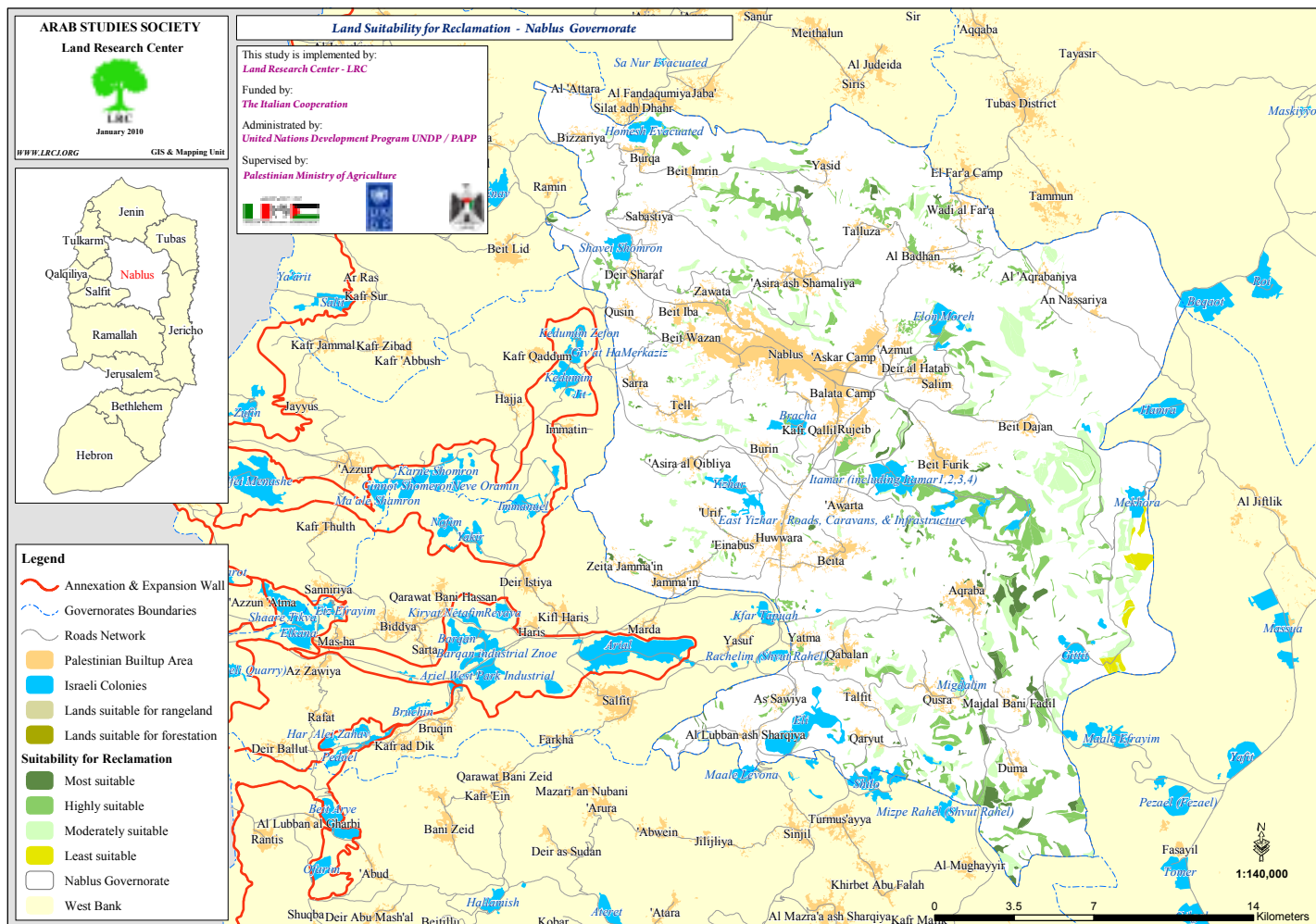
Table 62: Land's Need for Reclamation

Need	Frequency	Percent
Walls and partitions	38	92.7
Heavy machines	37	90.2
Water source	32	78.0
Supplies (seeds, fertilizers...)	29	70.7
Financial aid	27	65.9
Labor	14	34.1
Fertile soil	6	14.6
Harvest equipment	1	2.4





III.2.7 Nablus Governorate (NG)



III.2.7 Nablus Governorate (NG)

III.2.7.1 Introduction

NG at a Glance

NG is located in the central high lands of the northern part of the WB, 53 km north of Jerusalem. It is bordered by Jenin governorate from the north, Tulkarem and Qalqiliya governorates from the west, Jericho governorate from the east and Salfit and Ramallah governorates from the south. Nablus city, which is the largest in the NG, is located between the mountains of Gerzim and Mountain of Ebal. It has been a major economic, political, and cultural center for Palestinians. The current total area of NG is 613 km² ¹⁵⁶.

Demographic Indicators

According to the figures of the PCBS-2007, the total population of NG is 320,830, of whom 162,241 males (51%) and 158,589 females (49%). The number of households is 59,663 and the mean household size is 5.4¹⁵⁷. 134,116 people live in Nablus city (41% of the total governorate's population) including 23,397 refugees, accounting for about 17% of the city's residents. The remaining number of population is scattered over 56 towns and villages¹⁵⁸.

The governorate's population represents 13.6% of the total population in the WB. The population density in the governorate is 390 individuals per km².¹⁵⁹ The number of disabilities/ difficulties of Palestinian population in the governorate is 17,596 including, blindness (9,627), deafness (4,631), physical disability (7,260), cognition (2,217) and communication problems (2,211)¹⁶⁰.

Economic and Social Indicators

The city of Nablus has historically boasted itself as the commercial and business center of Palestine. However, Nablus economy, the cultural heritage, and the population have negatively been affected during the past years of Israeli military attacks. This commercial and industrial wealth has been affected by roadblocks, curfews, which has resulted in severe damage to the city's basic infrastructure and the demolition of multiple factories. As a consequence, many of its industrial establishments have been moved to other areas like Ramallah area.

Nablus area is famous for manufacturing of vegetable oils, production of olive oil and soap making in particular. 79% of this industry is concentrated in the area. It has its share in Arab market particularly the Jordanian market. Another important industry in the area of Nablus is the stone quarrying and processing, 54 stone quarrying or 37% of the total number of stone quarrying is located in Nablus as well as one third of the total stone cutting facilities. In addition to the concentration of a number of important financial, educational institution and other Palestinian Governmental departments. Equally important, Nablus is regionally known for its quality sweets¹⁶¹.

In NG, the labor force participating rate in 2007 was 43.2% and the unemployment rate was 15.6%¹⁶². The combined factors of closure, movement restrictions, and violence have decimated Nablus economy. According to the UN, (Municipal revenues from the vegetable market, for example, dropped 90 percent since 2000 (from NIS 5.19 million to NIS 509,290). The unemployment rate in Nablus governorate at the end of 2007 was 15.6% of the total labor force while the percentage of Illiteracy rates in the governorate is 5.8%¹⁶³.

156. LRC's GIS Unit.

157. PCBS-2007 census

158. Ibid

159. LRC's GIS Unit.

160. PCBS-2007 census

161. Federation of Palestinian Chambers of Commerce, Industry and Agriculture

162. Ibid

163. Ibid

Infrastructure

According to the PCBS records for 1997, 99.7% of Nablus households (18,003 households) were connected to electricity through a public network. Prior to its establishment in 1957, the city residents who had electricity was mainly receiving it from private generators. Today, the majority of the inhabitants of 18 nearby towns, in addition to the city's inhabitants, are connected to the Nablus network.

Unlike other localities within the governorate (excluding refugee camps), the majority of the city's households are connected to a public sewage system (93%), with the remaining 7% connected through cesspits. The sewage system, established in the early 1950s, also connects the refugee camps of Balata, Askar and Ein Beit al-Ma'. Pipe domestic water is provided for 100% of the city's households, primarily through a public network (99.3%), but some residents receive water through a private system (0.7%). The water network was established in 1932 and is fed by water from four nearby wells: Deir Sharaf, Far'a, al-Badan and Audala.

According to the PCBS records of 2006, there were 234 schools and 93,925 students in NG; 196 schools are run by Palestinian Ministry of Higher Education, 14 by the UNRWA and 24 are private schools. Out of Nablus city's total population, 44,926 were enrolled in schools (41.2% in primary school, 36.2% in secondary school, and 22.6% in high school). About 19.8% of the high school students received bachelor or higher certificates.

There are six hospitals in Nablus city serving the whole governorate. In addition to hospitals, Nablus has al-Rahma and at-Tadamon clinics, al-Razi medical center, Amal Center for Rehabilitation and 68 pharmacies. In addition to that, in 2001, Nablus Specialty Hospital was built, which is specialized in open heart surgery, angiograms and angioplasties.

Nablus is also home to an-Najah National University, the largest Palestinian university in the WB. Today, the university has three campuses in Nablus with over 16,500 students and 300 professors.

Environmental Indicators

The relatively temperate Mediterranean climate brings hot, dry summers and cool, rainy winters to Nablus governorate. Spring arrives around March-April and the hottest months in Nablus are July and August with the average high being 28.9 °C (84 °F). The coldest month is January with temperatures usually drops to 3.9 °C (39 °F). Rain generally falls between October and March, with annual precipitation rates being approximately 23.2 inches (589 mm).

Political conditions

There are 14 colonies in Nablus governorate whose total population in the year 2005 approximated to 11232. These colonies are occupying a total area of 31.5 km² including the colonies built up area and their municipal boundaries. This figures represents 3.6% of the total land area of NG ¹⁶⁴.

In addition, there are 13 colonial outposts established since 1996 and occupy about 20000 dunums (20 km²) of lands in the governorate (2.2% of the total area of the governorate).¹⁶⁵ There are 8 Israeli military camps in NG occupying an area of 1479.4 dunums or 1.4 km² (about 0.16% of the total land area in the governorate¹⁶⁶). Israeli occupation authorities constructed a number of bypass roads in NG that are occupying a total area of 6.421 km² (0.74 % of the total area of NG) .

164. LRC's GIS and filed work unit

165. Ibid

166. Ibid

III.2.7.2 Physical Features of NG.

As indicated in the methodology, physical features of NG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 43.5 km², which constitutes about 7% of NG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of NG are: slope, footslope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 24.0 km², which is equivalent to 55.2% of the NA and 3.9% of NG area. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

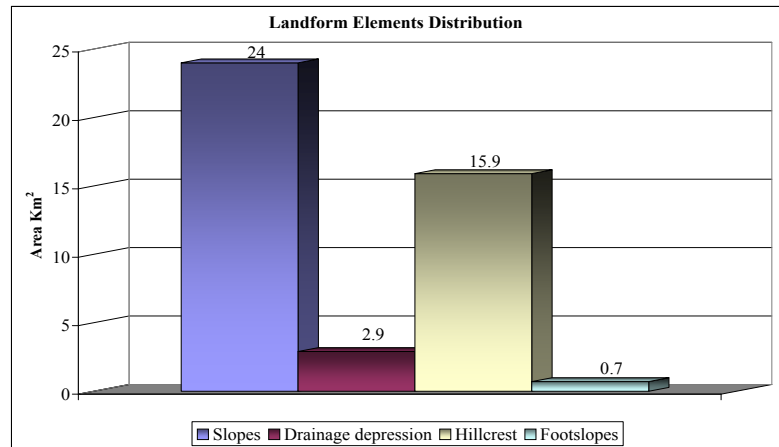


Figure 50: Landform elements in the NA of NG

Drainage Depressions: It has an area of about 2.9 km², which represents about 6.8% of the NA and less than 1% of NG area. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 15.9 km², which represents about 36.5% of the NA and 2.6% of NG area. It is composed of small spots sometimes cultivated. Not all the hillcrests in the NG are mapped because the area of these hillcrests is small and cannot be shown at our small map scale.

Footslopes: It has a comparatively small area of about 0.7 km², which represents about 1.5% of the NA and less than 1% of NG area. It is a transitional area between slope and plain with moderate or low percentage of rockoutcrop.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It usually represents level area. It covers an area of about 15.9 km², which is equivalent to 36.5% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

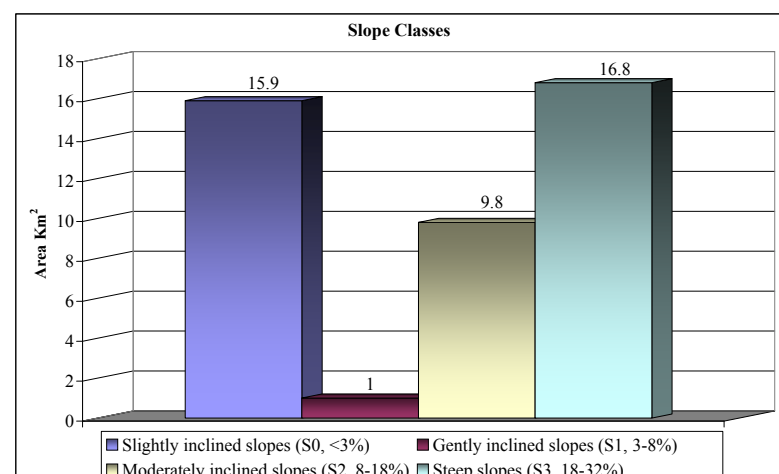


Figure 51: Slope classes in the NA of NG

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 1.0 km², which is equivalent to 2.2% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 9.8 km², which is equivalent to 22.6% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 16.8 km², which is equivalent to 38.7% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates. It is clear from the aspect class data that the non-oriented flat area, with (0) aspect degree, represents the largest area (36.5%). It is composed mainly of flat hillcrests. The northern and western aspects (Mighian) direction constitutes about 4.5% while that of the eastern and southern aspects (Mishmas) are about 22.0%.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. More than half of the area (90%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The total area of the arid class is 11.4 km² that is comprising about 26.2% of the NA; the area of the semi arid part is 17.9 km², which is comprising about 41.2% of the NA; the sub humid area is 14.2 km² and is comprising about 32.6% of the NA. The following chart displays the three climate classes with their conjugate areas.

The majority of the NA is suffering from aridity and occupying most of the area (67%). This degree of aridity imposes hard restrictions on utilizing this land for agriculture in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl according to the population distribution; the same situation is applicable to the sub humid area (33%) which is heavily populated.

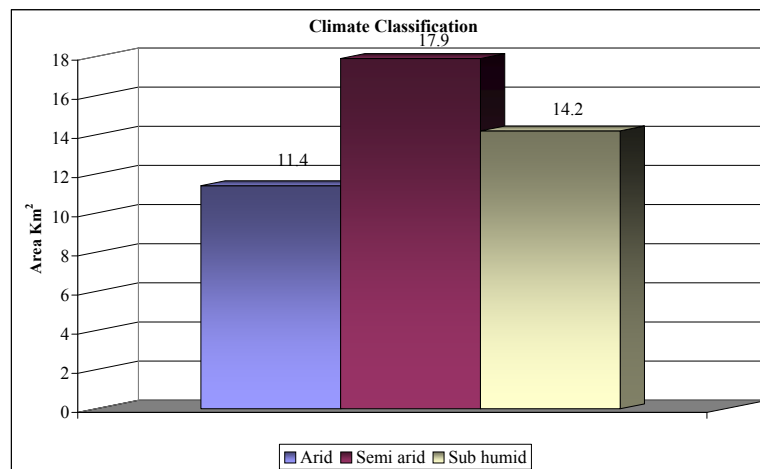


Figure 52: Climate classification in NA of NG

III.2.7.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The following map displays the land suitability classes for reclamation in NG.

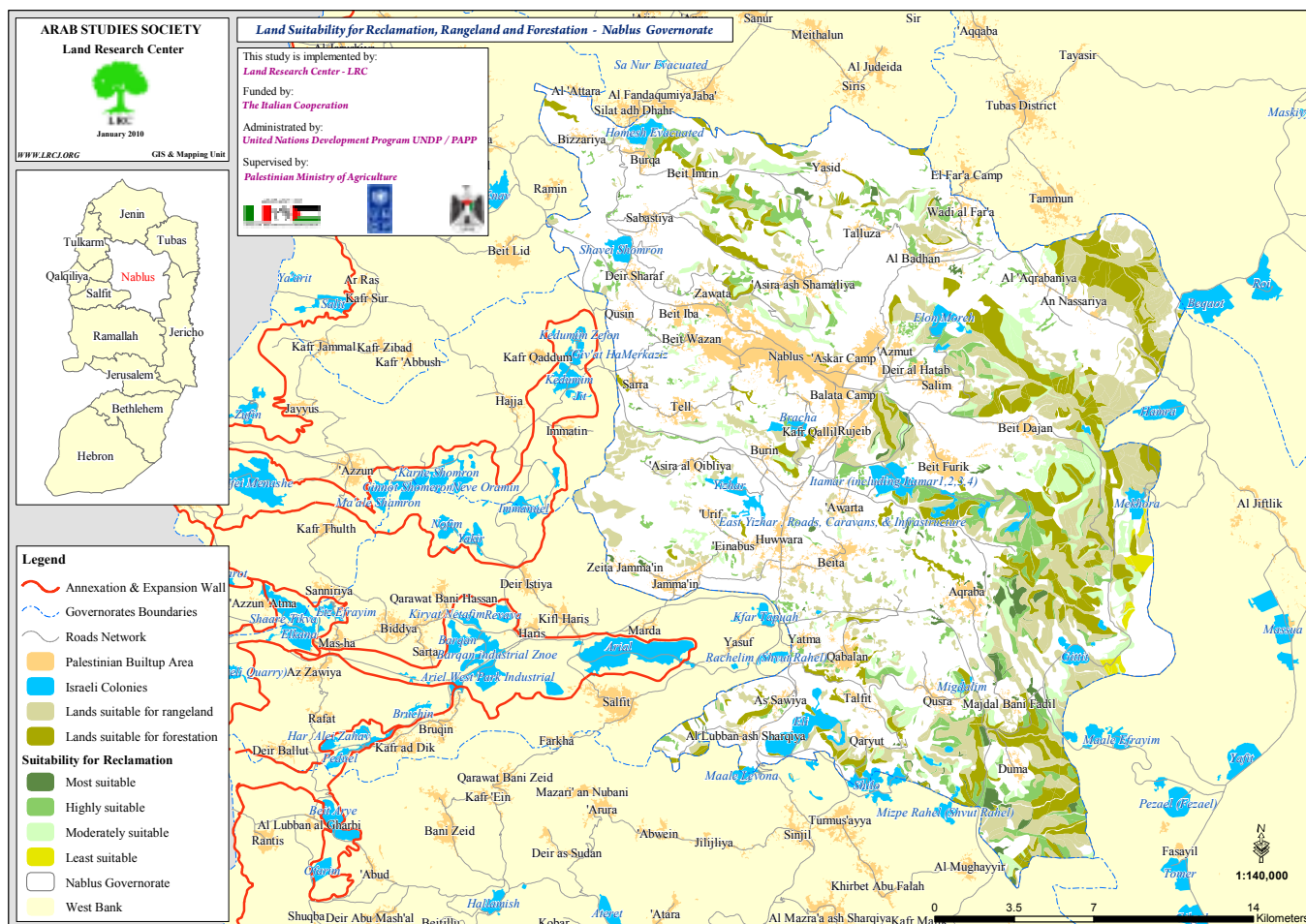


Figure 53: Areas of land suitable for reclamation, forestry and rangeland of NG

The areas of the four classes are shown in the following table:

Table 63: Area of land suitability classes for reclamation in NA of NG.

Suitability classes	Area (km ²)	Area %
Most suitable	4.0	9.2
Highly suitable	19.2	44.1
Moderately suitable	19.1	44.0
Least suitable	1.2	2.8
Total	43.5	100

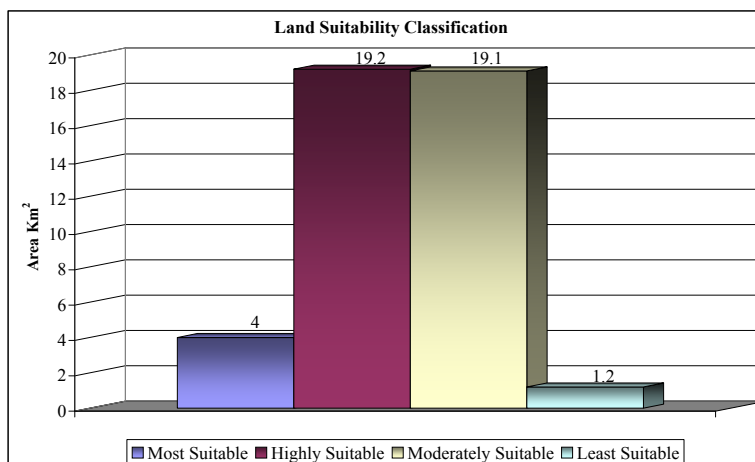


Figure 54: Land suitability for reclamation classes in NA of NG

By investigating the figures and the distribution of suitability classes in Figure 54 revealed that the least suitable class for reclamation represent the smallest area percentage among all classes (2.8%) . The most suitable class (9.2%) is mainly located at the eastern and northern parts of the Governorate. Most suitable classes of reclamation are closer to Aqraba, Beit Dajan, Beit Furik, Qusra, Duma, Yasid and Talluza towns.

Land Suitability for Forests and Rangeland

The total area in NG that is classified as suitable for forests and rangeland is estimated at about 117.2 km². This land acquires this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests from this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 41.9% (see Figure 55). This area represents about 8% of NG area. This percent does not mean that this is the only land suitable for forestry, but it means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of the land suitable for forestry and rangeland are shown in the following table:

Table 64: Areas of land suitable for forestry and rangeland in NA of NG.

Suitability classes	Area (km ²)	Area %
Forestry	49.1	41.9
Rangeland	68.1	58.1
Total	117.2	100

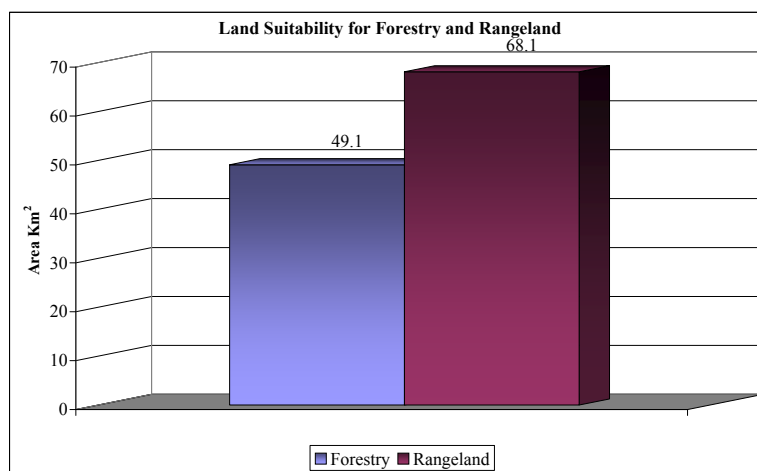


Figure 55: Suitability for forestry and rangeland in NA of NG

The results indicated that large area of the land in NG which is not suitable for reclamation is suitable for rangeland (58.1%).

III.2.7.4 Land Suitability for Reclamation of the Non-agricultural Land Inside Land Classified As Agricultural

Since the land use/cover of the WB is built at a scale of 1:50,000, there will be spots inside the land classified as agricultural that would be considered as non-agricultural. The size of this non-agricultural land is not negligible, in addition to the fact that it is possible to reclaim or rehabilitate this land. As a result, there was a tendency to explore this situation for the purpose of utilizing this land. In NG, the identified spots have an area of 21.6 km². The physical features of this land would be displayed as follows:

Landform Elements' Classes

The landform elements class that are identified in this area are: hillcrest (2.5 km²) and slope (19.1 km²).

Slope Steepness Classes

The following slope classes would be described in this area:

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It covers an area of about 2.5 km², which is equivalent to 11.4% of the identified spots. It is mainly part of the cultivated hills with low percentage of rockoutcrop.

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 0.6 km², which is equivalent to 2.6% of the identified spots. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 – (8-18%): It covers an area of about 8.8 km², which is equivalent to 40.7% of this area.

Steep slopes - S3 - (18-32%): It covers an area of about 9.8 km², which is equivalent to 45.2% of the NA.

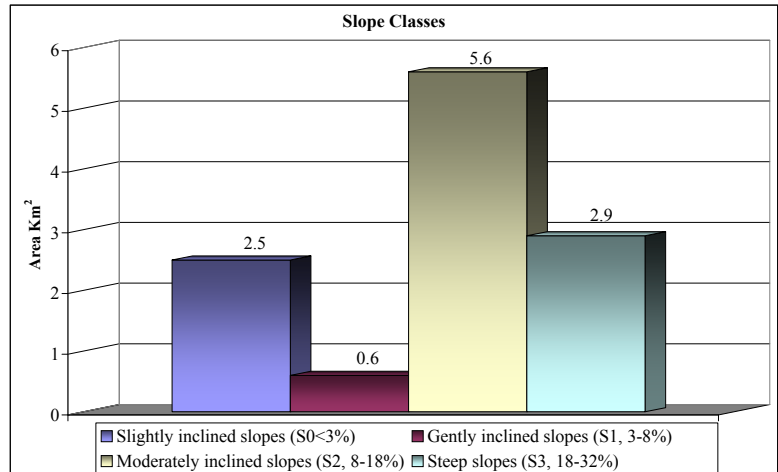


Figure 56: Slope classes of the land suitable for reclamation inside agricultural area of NG

Aspect Classes

The statistical data derived from this map indicates the following area distribution among the aspect classes:

The areas with northern and western aspects (Mighian) occupy about 22.3% and those with eastern and southern aspects (Mishmas) constitute about 21.7%.

Table 65: Aspect classes of the land suitable for reclamation inside agricultural area of NG.

Aspect class (degree)	Description	Area (km ²)	Area %
0	Flat (No)	2.5	11.4
0 - 22.5 and 337.5 - 360	North (N)	1.8	8.3
22.5 - 67.5	Northeast (Ne)	3.0	13.8
67.5 - 112.5	East (E)	0.5	6.3
112.5 - 157.5	Southeast (Se)	1.0	4.5
157.5 - 202.5	South (S)	3.3	15.4
202.5 - 247.5	Southwest (Sw)	2.7	12.5
247.5 - 292.5	West (W)	3.0	14.0
292.5 - 337.5	Northwest (Nw)	2.7	12.5
Total		21.6	100

Table 66: Rockoutcrop classes of the land suitable for reclamation inside agricultural area of NG.

Rockoutcrop Class (%)	Area	Area %
10	1.9	8.6
20	2.8	12.9
30	8.7	40.5
40	8.2	38.0
Total	21.6	100

Rockoutcrop Classes

The rockoutcrop distribution in this area is shown in the following table:

10% class represents an area with moderately low rockoutcrop; this would exist in footslopes and gently inclined slopes. 20-40% classes represent an area with comparatively high rockoutcrop; these classes would exist in steep and very steep slopes.

It is reasonable to have the majority of the area (91.4%) with high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural rather than human.

Climate Classes

The total area of the arid class is 4.3 km², which is comprising about 19.8% of the identified area; the area of the semi arid part is 3.9 km², which is comprising about 18.1% of the identified area; and the sub humid area is 13.4 km², which is comprising about 62.1% of the identified area. The following chart displays the three classes of the climate that exist in this area:

The majority of the identified area is subhumid (62.1%). The area suffering from aridity is occupying only about 38%. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl as a result of the high population growth rate and the wide range of population distribution; the same situation is applicable to the sub humid area (62.1%), which is heavily populated.

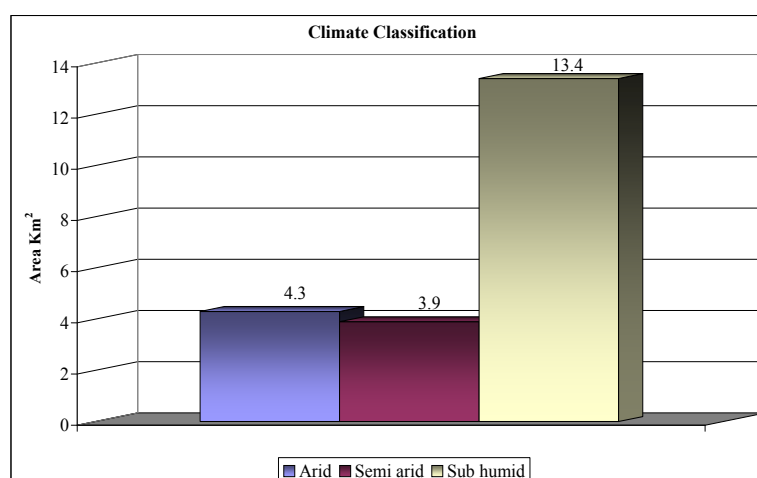


Figure 57: Climate classification of the land suitable for reclamation inside agricultural area of NG

III.2.7.5 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in the NG is 5.4¹⁶⁷; where the corresponding average for the sample studied in NG separately was 7.9. This high number was highly desired and supported by the culture in an agricultural society, more children means more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 4.9 members excluding the main farmer, comparing it to the average number of household members in NG; almost 62% of the typical family gets involved in agriculture, which reflects an agricultural society.

Analysis also revealed that the majority of farmers in NG have a modest level of education. Table 67 shows that 71.9% had received some formal education up to high school. The results show that 25% of the sample are well educated and holding a higher degree than Tawjihi, with higher degrees among farmers.

Table 67: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	10	3.2
Primary education	64	20.3
Secondary education	79	25.0
High school	84	26.6
Diploma	28	8.9
Bachelor's degree or above	51	16.1
Total	316	100

With regard to knowledge and experience in agriculture, the average years of experience in agricultural work among respondents was 23.2 years, which was mainly accumulated through inherited experience. Respondents showed a great dependency on inherited experience as the main source of the (know-how)

167. PCBS, Main Indicators By locality Type. 2009.

in agricultural production. 88% of the farmers depended only on what they have learnt from older family members who worked, or are still working in agriculture, or are getting advice from neighboring farmers, they neither attended short courses nor did they receive any technical training. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture. The remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information, such as attending short course and/or studying agriculture at universities. The percentage of people considered educated professionals who graduated from universities with agricultural degrees and working in agriculture represents only 1.6% of the sample. Moreover, farmers who ever attended at least one short course in agriculture are 6.8% of the sample. This indicates how tremendously agricultural work in NG depends on non-scientific traditional techniques of production based on knowledge passed over generations through stories, rituals and experience. This shows how superficial their knowledge about modern farming techniques and technologies used in developing an industrialized agricultural economy, which reduces their efficiency and effectiveness in production.

According to the EC's new definition of SMEs¹⁶⁸, agricultural production is mainly dominated by micro and small-scale farms, which generate 93.2% and 6.8% respectively of the total production in the targeted areas within NG. Opposite to most other governorates, within NG, most agricultural economic activities are classified outside the family-businesses region; 26.6% of the sample narrows labor to family members only, while 73.4% of the farmers go beyond family members to employ permanent and seasonal labor. Although the majority of farms in these areas are not classified as family businesses, yet they do not offer much job opportunities for local people. These farms employ 1.6 employees on average showing that agricultural production is of a micro-scale nature. 99% of the households studied were headed by males. Given the paternal culture in the oPt; males are in charge for the land or agricultural activities. Men run the farm by making decisions, yet intensively counting on females in the family to help and do the great proportion of the physical work as shown by the data gathered. Since it is not common to count only on agriculture to guarantee an adequate standard of living; male members of families usually leave early in the morning to start their second main job or attend school, leaving the field to be taken care of by females. Analysis showed that females represent 87.1% of the family labor in the sample. Moreover, family members usually participating in agriculture are mainly children¹⁶⁹ or grandsons below 18 years old.

Analysis showed that 46.8% in the targeted areas are above 50 years old. Therefore, one could infer that main farmers in NG are getting old, while young people prefer other kinds of employment if any. As will be shown later, working in agriculture is a secondary job for 76.3% of the farmers who are old and trying to invest their time in something productive.

Common Economic Activities and the Standard of living

97.8% of the sample in the targeted areas is involved in agricultural works. Thus, farming is the most common activity in the targeted areas, hence, making the main source of income for many households. Yet, as it is common in other governorates, heads of the households are usually working in more than one job to achieve a better standard of living. There were other kinds of common activities among the inhabitants of the targeted localities; 20% of the sample is employed as blue or white-collar employees and 14% work as craftsmen.

Nablus is a unique case when compared with other governorates. Households studied within the governorate Analysis showed that 21.5% of the sample working in agriculture classified it as a major job, while 76.3% of the sample perceived farming as a secondary job. Hence, farming is not the main source of income for households in this region, the largest part of the population (76.3%) got their income from different kinds of employment available in the city, other villages or from Israel.

As Table 68 shows, household's average income from agricultural work is 502 NIS; this number includes income generated by those working in agriculture as a primary and secondary job, while respondents who

168. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14.

169. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah

considered farming as major occupation had an average income from agricultural work of 685 NIS. Based upon this and the average family size of the sample, and depending on the PCBS measures of the living standards in southern WB¹⁷⁰, households counting solely on agriculture live under poverty line, these households represent 22.3% of the entire sample.

Table 68: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	21.5	685 NIS
Farmer as secondary job	76.3	452 NIS
Farmers in sample	97.8	502 NIS

Based on the PCBS classification of poverty¹⁷¹, in conjunction with the household monthly income and the family average size, households living under poverty line are estimated to be 92.3% in targeted areas. Generally, spending was more than total monthly income; this reveals the high dependency of some households on transfers, micro loans and/or cash through safety nets. Spending is mainly on basic physiological needs such as food cash expenditure, which represents the main category of expenditure. Clothing, with transportation and communication, were the second and third larger expenses for this group respectively¹⁷².

Crop Diversification

The two major crops within targeted localities were rain-fed fruit trees and field crops. The study showed a high dependency by the farmers in NG on rain-fed fruit trees. As shown in figure 1 below, 98% of the farmers own rain-fed trees, which have a key role in their economy and food production basket. Similarly, field crops seem competitive among other kinds of crops with 51% of the farmers cultivating them. Irrigated trees are the least planted, which is due to their high dependency on water that is scarce in the governorate and also due to the fact that they bear fruits accompanied by little income annually, hence making them less profitable than other kinds of crops.

Table 69: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	300	98.0
Field crops	156	51.0
Vegetables depending on rainfall	9	2.9
Irrigated vegetables	7	2.3
Irrigated trees	3	1.0

The common fruit trees production in Nablus is olive, fig and lemon. Common vegetables produced are mainly cucumber, tomato and squash. Field crops produced were mainly potato and wheat¹⁷³.

Livestock

In total, 7.1% of the sample population are raising livestock, which reflects a shallow level of dependency on livestock in the NG, where most of the sample raises livestock as a secondary job. In general, the overall number of sheep and cattle in NG has not changed much, while bee hives have started to increase in number since 2004, and number of goats has started to decrease since 2006¹⁷⁴.



170. PCBS, Poverty in the Palestinian Territory. 2007.

171. Ibid..

172. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah.

173. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007.

174. PCBS, Agricultural Statistics, PCBS, Editor. 2003/2004/2005/2006/2007, PCBS: Ramallah.

Agricultural Machines, Equipment and Inputs

Generally speaking, Nablus has the fifth rank among other governorates that are possessing agricultural machinery. 7.6% of agricultural machinery in the WB are located in NG, these equipments mainly consist of; four-wheel tractor, trailers and ploughs¹⁷⁵.

Local nurseries located in NG have formed the main source of inputs with 87% of population counting on them; nevertheless, there is a high percentage of farmers producing their own inputs of seeds, which is forming 27% of the sample studied. This source of seeds has been developing as a result of the unhealthy plants they buy or receive as aid, price hikes or to maintain a certain species of high-quality local crops.

Table 70: Source of Seeds Used in NG

Source of seeds	Frequency	Percent
Local nurseries	275	87.0
Self-made	87	27.5
Israeli dealers	2	0.6
Agricultural organizations	2	0.6

Water

The study showed that water reserves for agriculture were considered enough by only 12.3% of the farmers, while the rest considered it inadequate and scarce. Moreover, 73.4% of the farmers in these areas considered lack of water as a very important constraint in the farming systems hindering irrigated agricultural projects.

The scarcity of water has clearly directed most agricultural production in the targeted regions within NG toward rain-fed crops. 80% of the sample did not use water at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from rainfall cisterns wells as shown in Table 71; the study showed also that, of the few farmers using water, 12% depend on this source as a main supply source of water. Nevertheless, farmers usually utilize more than one kind of water source either as a substitute or as a complementary source.

Table 71: Percent Use of Water Source

Water source	Frequency	Percent
Cisterns wells	37	12.0
Spring water	8	2.6
Purchasing tanks	7	2.3
Public network	1	0.3
Artesian well	1	0.3

Reasons Behind Underutilization of Land

Most areas located in the targeted areas are currently utilized in agriculture. 54.7% of households utilize their lands in agriculture, where 43% of the landowners are not utilizing it at all.

A total area of 76.8% of the land owned by the sample studied in NG is not fully utilized; reasons behind underutilizing land in agricultural activities can be summarized in order of importance for the sample as shown in Table 72:

Table 72: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Land needs mechanical land reclamation	295	93.4
Lack of water	232	73.4
Lack of financial capital	228	72.2
Land's nature is inappropriate for agriculture	108	34.2
No roads leading to it	90	28.5
Israeli forces prevent reaching land	57	18.0
Closeness to settlements	32	10.1
No time to plant it	8	2.5
Owned for investment reasons only	7	2.2
No market	7	2.2
Drought	3	0.9
Owned for construction reasons only	3	0.9
Competition of israeli products	3	0.9
Low profitability of agriculture	2	0.6
Land size is small and not worth planting	1	0.3
Lack of the (know how) to farm	1	0.3
No intention to plant it	1	0.3

175. PCBS, Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm.

As shown by the results, the main reason for the inefficient use of land by most households is the combination of inappropriate physical conditions of the land and the lack of financial capital. The physical preparation of land such as building retaining walls, roads, and leveling the land is quite expensive relative to the insufficient savings by households in the targeted areas, which represent an average of 1.6% of their income. Lack of water is considered the second obstacle hindering the start of an agricultural initiative and land reclamation.

The lack of roads linking farmers to their land has been a dominant obstacle to reclamation. Besides, and due to the few number of roads available, farmers in the studied localities have been facing a serious problem caused mainly by settlements surrounding their land. Restrictions on mobility imposed by Israeli forces to secure settlements have caused villagers to take hard alternative paths, though discouraging them to visit their land or investing it in agriculture.

Level of Acceptance for Reclamation

The sample showed a great willingness to invest in the available bare land in agriculture, 99% of the sample had in mind to plant the available land as a future plan. 80.3% of the sample expressed their strong will to invest in abandoned land while 83.5% considered it as an urgent priority.

On the other hand, the ability to participate in mechanical reclamation was not high; the maximum contribution respondents are able to make is no more than 14.4% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 252 per dunum for his/her land reclamation. As mentioned above, one of the major obstacles facing further utilization of agricultural land was the lack of financial capital.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed on the mechanical reclamation of land to be the main priority when it comes to reclamation. Table 73, demonstrates the needs for reclamation according to the priorities classified by respondents.

The most common need in the targeted area was the need for supplies such as seeds and fertilizers. Receiving supplies was the concern of 97.7% of the sample. Farmers demanded these supplies as they need high-quality health plants, in addition to some advices about the right type of crops to cultivate. Another common need was land's need for mechanical reclamation mainly by providing heavy machines to level the land, building retaining walls to ensure the appropriate physical conditions so as to accommodate agricultural activities.

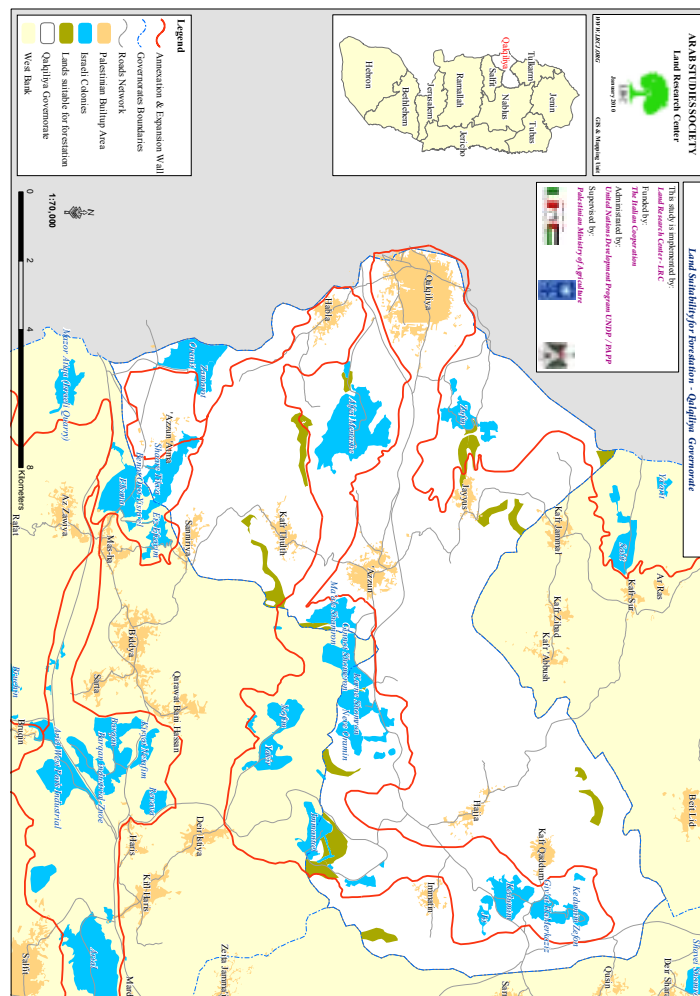
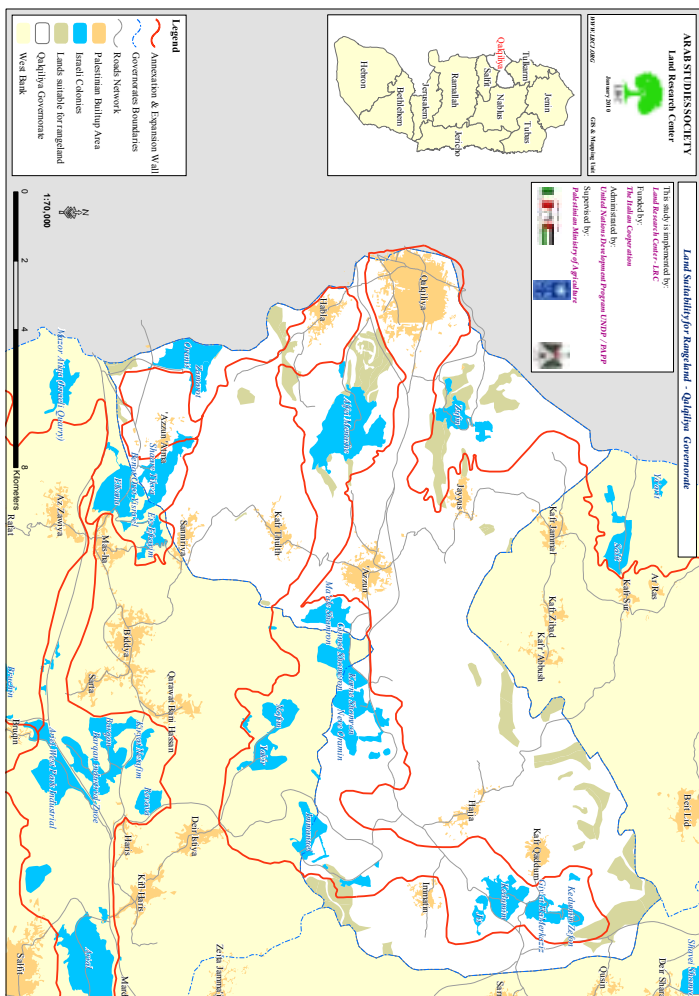
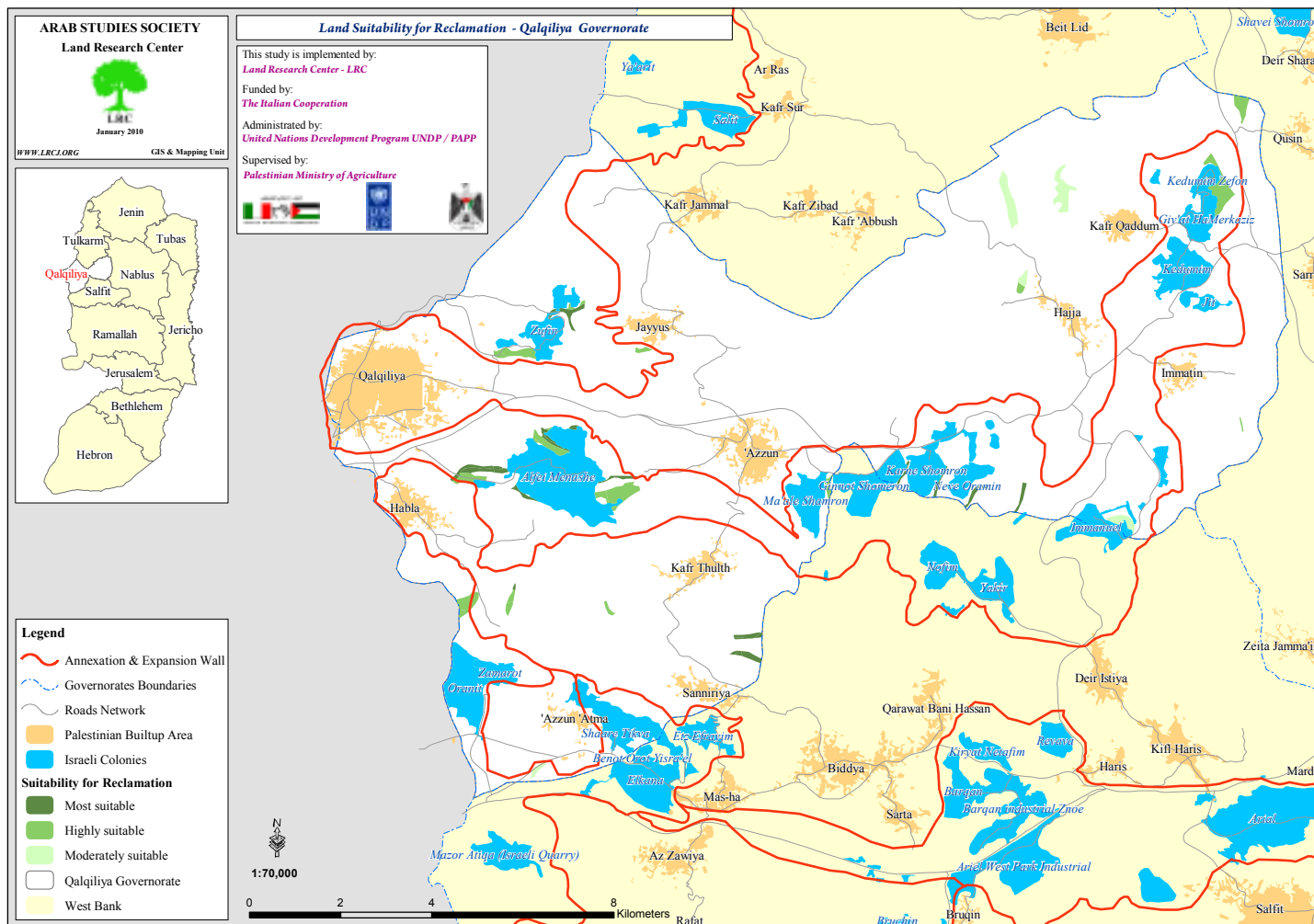
Table 73: Land's Need for Reclamation

Need	Frequency	Percent
Supplies (seeds, fertilizers...)	291	97.7
Retaining walls	289	97.0
Water source	289	97.0
Heavy machines	285	95.6
Labor	85	28.5
Financial aid	28	9.4
Fertile soil	12	4.0
Harvest equipment	5	1.7

The last two major needs on the priority list of the sample were water supply and labor. Despite the relatively high average number of households, family members involvement in farming does not seem to be enough, given that most fruit trees planted in NG is mainly olive and grape trees, which need much effort to cultivate them. As 65.1% of the farmers suffer from water scarcity, the need for new water sources has become a common need to overcome drought and allow new farming opportunities.



III.2.8 Qalqilya Governorate (QG)



III.2.8 Qalqilya Governorate (QG)

III.2.8.1 Introduction

QG at a Glance

Qalqilya Governorate (QG) lies at the northwestern terrains of the WB. It has an area of 174 km² (2.9% of the total area of the WB). Out of this area, about 8.5 km² is designated as built up area. QG has the smallest area amongst other governorates and lies almost on the 1949 Armistice line (the Green Line). Due to its closeness to the borderline, it is considered as the most affected governorate due to the suffering and devastation resulted from Israeli activities; land confiscation, building settlements, bypass roads, military bases, all kinds of checkpoints and the Israeli Segregation Wall are amongst the most important Israeli actions against this governorate.

The governorate is bordered by the green line from the west, Salfit and Ramallah governorates from the east and the south respectively, and Tulkarm from the north.

In the case of QG, and according to Oslo interim agreement between Israel and the PLO, 3.619 Km² of its land were classified as Area "A", 44.073 Km² were classified as Area "B", while 126.753 Km² were classified as Area "C". It is a fact about QG that the majority of the Palestinian population are living in Areas "A" and "B" (some 90+%), but at the same time, the bulk of their agricultural lands are located in Area "C" where the Israeli Army still has full control and administrative jurisdiction over the land.

Demographic Indicators

According to the figures of the Palestinian Central Bureau of Statistics (PCBS-2007) the total population of QG is 91217, of whom 46764 males (51.3%) and 44453 females (48.7%)¹⁷⁶. There are 34 Palestinian built up areas in QG divided into 3 urban centers, and 31 rural centers. The number of households is 16483 and the mean household size is 5.5.

The population density in the governorate is 524 individuals per km². The number of disabilities/difficulties of the Palestinian population in the governorate is 5918 (6.4% of the total population), which includes, blindness (3480), deafness (1475), physical disability (2301), cognition (735) and communication problems (705). The number of population whose age is 5 years and over, and who are attending schools in the governorate is 49871, which represents about 54.6% of the total population, while the percentage of illiteracy is 5.9%, this figure qualify QG to be in a medium status of illiteracy amongst the WB governorates.

Economic and Social Indicators

QG is known for the fertility of its lands. The agriculture activity, particularly citrus growing and nursery plants are the main features of the economy of Qalqilya area. The Qalqilya Chamber of Commerce, unlike most other governorate chambers of commerce in the WB, is strongly committed to the agricultural sector. Farmers and agricultural producers are constituting an important portion of the chamber membership base.

In QG, the labor force participating rate in 2007 was 45.2% and the unemployment rate was 14.1%¹⁷⁷ which also occupies a medium status amongst other governorates of the West Bank. The largest employment sectors in QG are construction (21.2% of the total workforce), manufacturing (15.3%), whole sale and retail trade (15.2%), Public administration and defence (11.1%), agriculture (10.1%) and education (9.3%).

Prior to the Segregation Wall, agricultural productions represented some 22% of Qalqilya's economy, much of the agricultural production was exported to other governorates of the West Bank as well as to

176. PCBS, 2007

177. Ibid

the markets of neighboring countries. With the Segregation Wall, residents increased their dependency on agriculture as a source for their livelihood, especially that some 8000 workers from Qalqiliya city and an additional 15000 workers from the entire governorate has lost the employment inside Israel because of the Segregation Wall and the closures. In addition, local sources from the governorate revealed that some 4000-5000 family-heads has moved outside QG and nearly 3000 have sought employment in neighboring countries for livelihood.

The Segregation Wall places many Palestinian towns and villages (15 villages and the city of Qalqiliya itself) in geographically disconnected and segregated enclaves and/ or ghettos, as movement from and to these communities is subjected to Israeli restriction.

Infrastructure

According to the PCBS, the number of households which are linked to water, electricity and sewage was 7851 (49% of the total households in the governorate)¹⁷⁸.

There are no universities in QG except the branches of Al Quds Open university. There is one governmental hospital in the governorate, and a number of private clinics.

Environmental Indicators

The continuous Israeli settlement activity, land confiscation and Wall construction in the governorate has resulted in a lot of damage to the environment and the landscape of the area. Amongst these impacts are the decline in the areas designated for landfills and wastewater treatment sites; the isolation of water resources where about 18 wells will be left behind the Segregation Wall, with a total annual extraction capacity of 1.9 million cubic meters, hence, these wells will no longer be under Qalqiliya's control.

Political conditions

Since the beginning of the Israeli occupation of the governorate in 1967, successive Israeli governments have intensified their efforts to build as many colonies as possible over the land of the governorate. So far, 22 colonies and colonial posts have been constructed over an area of 11.8 km² (6.7% of the total area of the governorate¹⁷⁹). A total of 29274 colonists are living in these colonies. In addition, the Israeli army built military bases over an area of 0.273 km².

Qalqiliya is the first Palestinian governorates to be targeted by the Segregation Wall and probably the most to suffer its consequences. It is the only governorate to have its main center, Qalqiliya city with a population of 44709, entrapped within an enclave (a closed ghetto with only one bottle neck entrance), and where the Israeli Army control on whose to leave or enter the enclave. More than that, the city and the governorate is almost completely isolated from the rest of the WB governorates as movement on the bypass roads is restricted by Israeli controlled checkpoints (there are 42 checkpoints) and many localities are inaccessible to residents without Israeli issued permits¹⁸⁰.

The Segregation Wall in QG extends for 97.9 km isolating about 63.9 km² of its lands behind its path¹⁸¹ (36.6%). On the other hand, the Israeli Segregation Wall in the governorate was routed to encompass all of the 22 Israeli colonies and outposts behind it.

The Israeli Segregation Wall will redraw the political boundary of QG. It will, also, redefine the demographic balance of the governorate with more than 36% of its area cut-off toward Israel. The Segregation Wall is creating new demographic facts that will lead to forced internal migration among Palestinians who will lose their livelihoods. The Plan will severely affect the vital ties between Qalqiliya and other Palestinian Governorates.

178. Ibid

179. ARIJ data base

180. Ibid

181. Ibid

III.2.8.2. Physical Features of QG.

As indicated in the methodology, physical features of NG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 2.7 km², which constitutes about 1.6% of QG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of QG are: slope, footslope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 1.7 km², which is equivalent to 62.9% of the NA and less than 1% of QG area.

Drainage Depressions: It has an area of about 0.6 km², which represents about 20.8% of the NA and less than 0.5% of QG area. It displays nice spots of arable land among the very steep and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

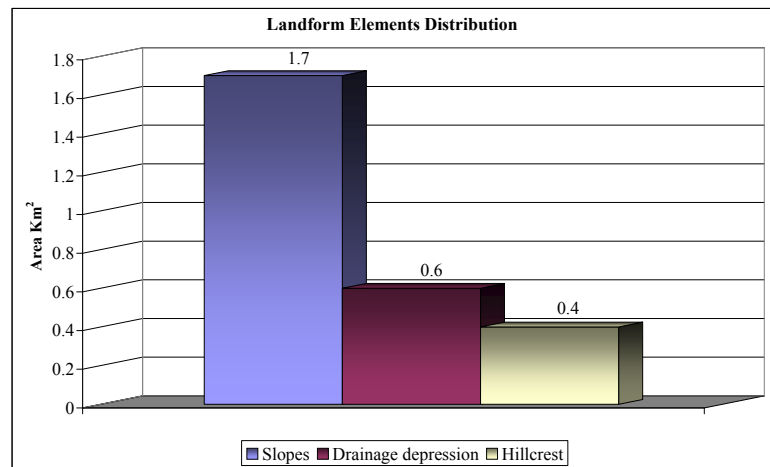


Figure 58: Landform elements in the NA of QG

Hillcrests: It has an area of about 0.4 km², which represents about 16.3% of the NA and less than 0.5% of QG area. It is composed of small spots sometimes cultivated. Not all the hillcrests in the QG are mapped because the area of those hillcrests is small and cannot be shown at this study map scale.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It usually represents level area. It covers an area of about 0.4 km², which is equivalent to 16.3% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 0.1 km², which is equivalent to 4.4% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

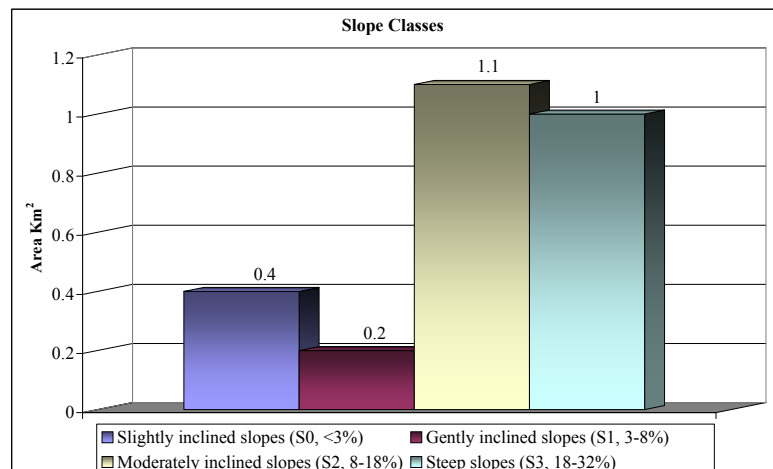


Figure 59: Slope classes in the NA of QG

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 1.1 km², which is equivalent to 41.3% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 1.0 km², which is equivalent to 38.0% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates. It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents large area (16.3%). It is composed mainly of flat hillcrests. The areas with northern and western aspects (Mighian) occupies about 24.8%, whereas those with eastern and southern aspects (Mishmas) have about 32.4% of the NA.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. More than half of the area (91%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The total area of the arid class is 11.4 km², which comprises about 26.2% of the NA; the area of the semi arid part is 17.9 km² and comprising about 41.2% of the NA; the sub humid area is 14.2 km² with about 32.6% of the NA area. The following chart display the three climate classes with their conjugate areas:

Less than 50% of the NA is suffering from aridity (40%).

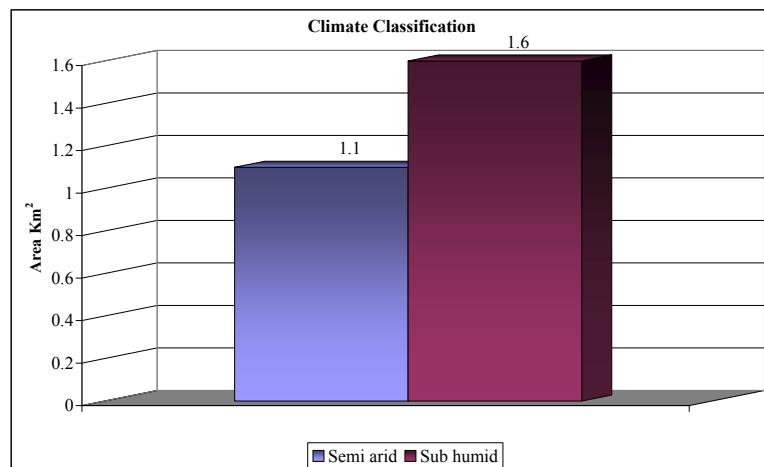


Figure 60: Climate classification in the NA of QG



III.2.8.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analyses for the preparation of the land suitability map of the NA. The following map displays the land suitability classes of reclamation in QG.

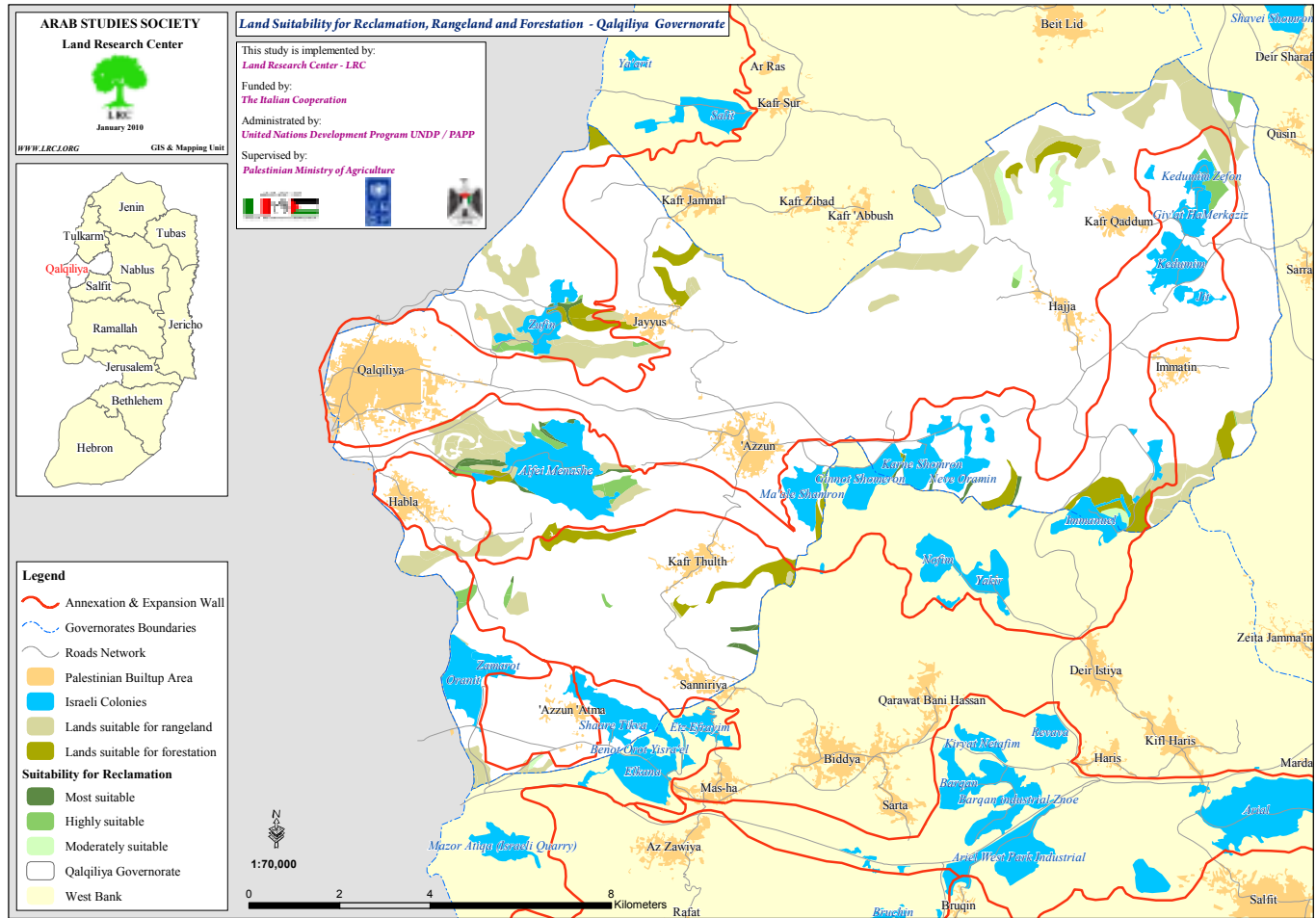


Figure 61: Areas of land suitable for reclamation, forestry and rangeland in QG

The areas of the four classes are shown in the following table:

Table 74: Areas for land suitable for reclamation in NA of QG.

Suitability classes	Area (km ²)	Area %
Most suitable	0.7	25.4
Highly suitable	1.4	51.2
Moderately suitable	0.6	23.4
Total	2.7	100

Figure 62 shows that the most suitable class for reclamation represents a comparatively small percentage of the total area (25.4%). It is also obvious that different land suitability classes for reclamation are generally distributed in an even way into the governorate.

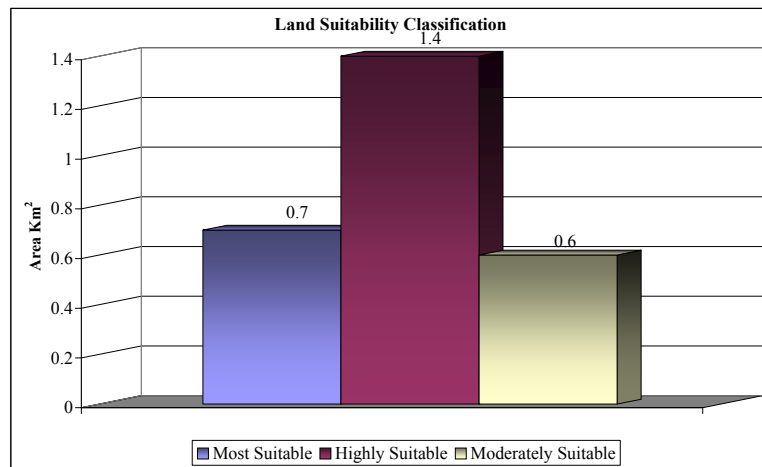


Figure 62: Land suitability for reclamation classes in NA of QG

Land Suitability for Forests and Rangeland

The total area in the NG that is classified as suitable for forests and rangeland is estimated at about 16.3 km². This land has this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests from this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 4.2 km² (see Figure 63). This area represents about 2.4 % of QG area. This percent of land suitable for forests does not mean that this area is the only land suitable for forestry, but it rather means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of the land suitable for forestry and rangeland are shown in the following table:

The results indicated that the majority of the land in QG which is not suitable for reclamation is suitable for rangeland (74.2%). The land suitable for forestry is comparatively low (25.8% of the land classified as not suitable for reclamation).

Table 75: Areas of land suitable for forestry and rangeland in NA of QG.

Suitability classes	Area (km ²)	Area %
Forestry	4.2	25.8
Rangeland	12.1	74.2
Total	16.3	100

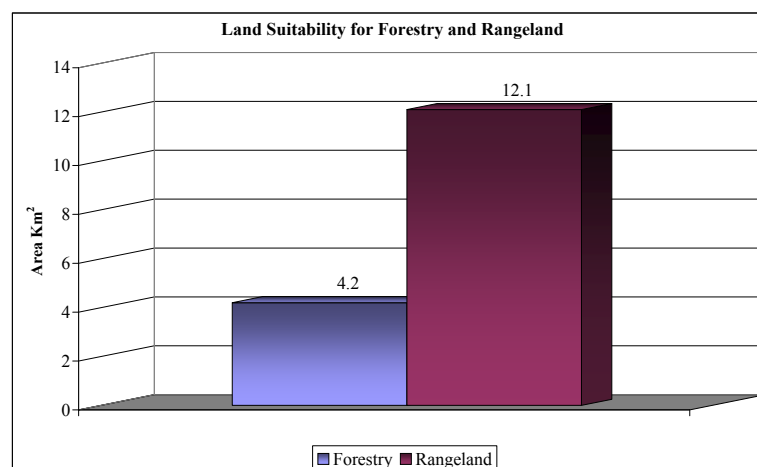


Figure 63: Land suitability for forestry and rangeland in NA of QG

III.2.8.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in Qalqiliya is 5.5¹⁸², where the corresponding average for the sample studied in QG separately was 8.1. This high number was highly desired and supported by the culture, where more children means more support for parents in their old age. Finally and most importantly, in an agricultural society, more children mean more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 2.1 members excluding the main farmer, comparing it to the average number of household members in QG; almost 25.9% of the typical family gets involved in agriculture which reflects an agricultural society.

Analysis also revealed that the majority of the farmers in QG have a modest level of education. Table 76 shows that 70% of the farmers had received some formal education up to high school, 22% of sample are well educated and holding a higher degree than Tawjihi. This adequate level of education could be a good condition for providing and implementing future trainings or the adoption of new techniques for production.

With regards to knowledge and experience in agriculture, respondents showed a great dependency on inherited experience as the main source of the (know-how) in agricultural production. The average year of experience in agricultural work among respondents was 21.2 years. However, 80% of the farmers depended only on what they have learnt from older family members who worked, or are still working in agriculture, or are getting advices from neighboring farmers, but they neither attended short courses nor did they receive any technical training. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture. Yet, the remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information, such as attending short course and studying agriculture engineering. There were no farmers who are well educated professionals with university graduation in agricultural degrees and at the same time are working in agriculture. Moreover, farmers who ever attended at least one short course in agriculture represented 2% of the sample. This indicates how tremendously agricultural work in QG depends on non-scientific traditional techniques of production, which is based on bounded-rational decisions when they need to choose crops, fertilizers or pesticides as clarified by respondents. This high dependency of inherited knowledge explains how outdated the farmers knowledge about modern methods and technologies used globally, which reduces their efficiency and effectiveness in production.

Table 76: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	4	8
Primary education	9	18
Secondary education	11	22
High school	15	30
Diploma	5	10
Bachelor's degree or above	6	12
Total	50	100

According to the EC new definition of SMEs¹⁸³, agricultural production is mainly dominated by micro and small-scale farms that generate about 98% and 2% of the total production in QG respectively. Most agricultural economic activities are classified under family businesses; 84% of the sample narrows labor to family members only. Barely 2% of the farmers go beyond family members to employ seasonal labor; these farmers employ 1 employee on average. These facts reveal how agricultural production is of a micro-scale nature in this governorate and counting mainly on family members of whom 100% are considered self-employed.

Males run the farm by making decisions, as 94% of the households studied were headed by males who are in charge of managing agricultural activities in the farms. Yet intensively counting on females in the family

182. PCBS, Main Indicators By locality Type. 2009.

183. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14.

to help and do some of the physical work as shown by the data gathered. In QG, it is not common to count only on agriculture to guarantee an adequate standard of living; male members of families usually leave early in the morning to start a second main job or attend school, leaving the field to be taken care of by females who are usually children. Analysis showed that females represent 78.8% of the family labor in the sample, which expresses the crucial role of female family members in the production process.

Analysis showed also that 36% of the sample are 51 years old or over. Therefore, different from other governorates, the majority of active farmers are relatively youth, this shows that more youth are attracted by agriculture. The most common reason given behind this attraction was profit; 76% of the sample is counted on agriculture as a competitive source of income. In addition to profits, many households were concerned about achieving a level of self-sufficiency with agricultural products they produce.

Common Economic Activities and the Standard of Living

The most common activity in the targeted areas was farming and so making common source of income for households; the sample studied was made of owners of land suitable for reclamation and farmers working in this land. 94% of the sample in the targeted areas was made of farmers. Other jobs that are common among land owners and farmers were working with livestock that represented 56%, followed by working as white-collar employees and blue-collar employees with 18 and 16% respectively.

Households did not seem very motivated to work in agriculture, 68% considered other economic activities as business and different kinds of employment to be a better option as a career. Those who expressed their satisfaction of working in agriculture were mainly farmers.

Despite the high involvement in agriculture, many farmers in QG considered agriculture more as a secondary rather than a primary source of income. Analysis showed that 38% of the sample working in agriculture classified it as a major

Table 77: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	38	1,563 NIS
Farmer as secondary job	56	717 NIS
Farmers in sample	94	1,060 NIS

job, while 56% of the sample perceived farming as a secondary job. As Table 77 shows, household's average income from agricultural work is 1,060 NIS; this number includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as major occupation had an average income from agricultural work of 1,563 NIS. Based upon that and the average family size of the sample and in accordance to the PCBS measures for the standard of living in the southern WB¹⁸⁴, households counting solely on agriculture live under poverty line, these households represent 28% of the entire sample.

88% of the sample's monthly income is NIS 3,000 or less. Based on the PCBS classification of poverty, household size and monthly income¹⁸⁵; households living under poverty line are estimated to be 74% in targeted areas. Expenditure was more than monthly income, which was a common practice in the region indicating the dependency of some households on transfers, micro loans and/or cash through safety nets. Expenditure is mainly concentrated on the basic physical needs such as food, which represents the main category of expenditure, clothing, and transportation and communication were the second and third larger expenses for this group respectively¹⁸⁶.

Crop Diversification

The study showed a high dependency by farmers in QG on rain-fed fruit trees. As shown in figure 1 below, 76% of the farmers own rain-fed trees which have a key role in their economy and the food production basket. These second most planted crop by the targeted farmers was field crops planted by 52% of the sample, followed by irrigated vegetables, but few farmers are working with irrigated trees and rain-fed vegetables as shown in Table 78.

184. PCBS, Poverty in the Palestinian Territory. 2007

185. Ibid

186. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah.

Evidently, most farmers use a minimizing-risk strategy by diversifying the types of crops they grow. Farmers cultivate a collection of 2-3 different kinds of crops which minimizes risk. The common fruit trees production in Qalqiliya are orange, lemon and olive. Common vegetables produced are mainly tomato and cucumber. Field crops produced were mainly potato, thyme, and wheat¹⁸⁷.

Livestock

Generally speaking, livestock numbers in QG have decreased significantly, numbers of goats and cattle have decrease moderately over the years while sheep numbers have dropped dramatically¹⁸⁸, interviews correlated this decrease to the high incidence of diseases, and the soaring prices of livestock's fodder. Nevertheless, husbandry in QG is relatively high. In total 22% of the sample population raise livestock as a secondary source of income, with little dependency on livestock.

Agricultural Machines and Equipment and Input Use

Generally speaking, QG is the seventh in order of possessing agricultural machines and equipments. 2.9% of agricultural equipments owned by households in the WB are located in Qalqiliya, these equipments mainly consist of; four-wheel tractor, ploughs, and trailers¹⁸⁹.

Local nurseries located in QG have formed the main source of inputs with 80% of population counting on them; nevertheless, there are some farmers producing their own seeds, while agricultural organizations are not active in the studied localities.

Water

The study shows that water reserves for agriculture were considered enough by many farmers. 34.7% of the farmers claimed to have enough to plenty of water to utilize in agriculture, while the rest considered it inadequate and scarce. Moreover, 42.2% of the farmers in these areas considered lack of water as a very important constraint in the farming systems that is hindering agricultural projects.

Remarkably, the entire sample claimed to use water in agricultural production despite their concentration of on rain-fed crops. Farmers explained that most water used in irrigation comes from artisan wells and rain harvesting wells as shown in Table 80; the study showed that 40% and 34% of the farmers use artesian and cisterns wells respectively as a main supply source of water.

Purchasing water tanks is practiced by 28% of the targeted farmers. Despite its high cost, it is preferred among other kinds of sources due to its availability. Water tanks are available on-demand and can reach to fields regardless of how far they are from villages or public networks. However, this source is commonly used as a (last option strategy) where they generally consider it as a secondary source when they run short of the main source.

Table 78: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	38	76.0
Field crops	26	52.0
Irrigated vegetables	14	28.0
Irrigated trees	7	14.0
Vegetables depending on rainfall	6	12.0

Table 79: Source of Seeds Used in QG

Source of seeds	Frequency	Percent
Local nurseries	40	80.0
Self-made	8	16.0
Agricultural organizations	1	2.0

Table 80: Percent Use of Water Source

Water source	Frequency	Percent
Artesian wells	20	40.0
Cisterns wells	17	34.0
Purchasing tanks	14	28.0

187. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007.

188. PCBS, Agricultural Statistics, PCBS, Editor. 2003/2004/2005/2006/2007, PCBS: Ramallah.

189. PCBS, Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm.

Reasons Behind Underutilization of Land

Most areas located in the targeted areas are currently utilized in agriculture. 87.3% of the households are utilizing their lands in agriculture, whereas 10.6% of the landowners are not utilizing it at all. The remaining households are using it for husbandry and construction with 1.4% and 0.7% respectively.

A total area of 48.67% of the land owned by the sample studied in QG is underutilized; the reasons behind underutilizing land in agricultural activities can be summarized in order of importance as shown in Table 81:

As shown by the results, the main reason for inefficient use of land by most households is the combination of inappropriate physical conditions of the infrastructure. Infrastructure development was a common request among respondents, there is a shared need of constructing partitions and walls, constructing roads and linking land to water.

The lack of roads linking farmers to their land has been a dominant obstacle to reclamation. In addition to the low number of roads available, farmers in the studied localities have been facing a serious problem caused mainly by settlements surrounding their land. Restrictions on mobility imposed by Israeli forces to secure settlements have caused villagers to take hard alternative paths and though discouraging them to visit their land or investing it in agriculture.

Table 81: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Land needs reclamation	37	82.2
No roads leading to it	23	51.1
Lack of water	19	42.2
Closeness to settlements	18	40.0
Lack of financial capital	7	15.6
Low profitability of agriculture	3	6.7
Owned for investment reasons only	3	6.7
Competition of israeli products	2	4.4

Level of Acceptance for Reclamation

The sample showed a great willingness to invest in the available bare land in agriculture, 87.5% of the sample had in mind to plant the available land as a future plan. 72.9% of the sample expressed their strong will to invest in agriculture and 79.6% considered it as an urgent priority.

On the other hand, the ability to contribute financially to agriculture was not high; the maximum contribution respondents are able to make is no more 16.4% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 540 per dunum for his/her land reclamation.

It is worth noting that not only farmers, but most other non-farmers villagers, as well, were very much willing to invest their available land in agriculture, mainly as a (for-profit investment) with expected future income and/or for domestic consumption respectively. Moreover, the most three clusters of the farmers who are willing to take risk and spend on reclamation work and investing in agriculture were retired villagers in the first place, followed by businessmen and farmers respectively. Apparently, most of landowners willing to undertake agricultural work are looking either for a second source of income except pension salary or profit from other businesses, which is mostly due to the low profitability of the business and the high risk involved. Moreover, it is noticeable that mostly old people are interested in investing and maintaining land; the ease to enter the market with no age restrictions, opposite to employment in other sectors, made agriculture the most attractive option besides running groceries and other light works where elderly could invest their time and to make some money. Finally, there is a clear positive relation between household size and willingness to invest and increase production. As agriculture is mostly considered a family business in the QG similar to other governorates, farmers depend to a great extent on family members to help in the field, i.e. the larger the household is, the larger it is the will to invest in agriculture and the larger is the possibility to succeed.

87.5% of the households owning abandoned land proclaimed to have serious future plans of investing land in agriculture. The rest 12.5% proclaimed to have no future plans for the land and ready to accept genuine ideas. In total, 2% of the sample have gone through a reclamation program and have been successfully planting their developed land until the time of the study. These overall results indicate a good potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed on the need for mechanical reclamation of land to be the main priority. Table 84, demonstrates the needs for reclamation according as prioritized by respondents, the most common need in the targeted area was the land's need for physical adjustment mainly by providing heavy machines to flatten the land, build walls and partitions to ensure the appropriate physical conditions to accommodate agricultural activities.

Households within the targeted localities have shown a need for infrastructure as a precondition for investing their time and money in agriculture. Table 82, demonstrates needs for reclamation according to the priorities classified by the respondents, the highest three common needs in the targeted area were the land's need for mechanical reclamation, linking land to water, and providing healthy supplies.

Mechanical reclamation of land, in order to ensure the appropriate physical conditions so as to accommodate agricultural activities, was the main concern for land owners, the need for water sources came second in the order, which was the concern of 54% of the sample. In the same way, the need for supplies, especially seeds input and fertilizers, was the concern of 32% of the sample. Financial aid, fertile soil and labor were also on the needs' list, whereas harvest equipment was the least needed on the list.

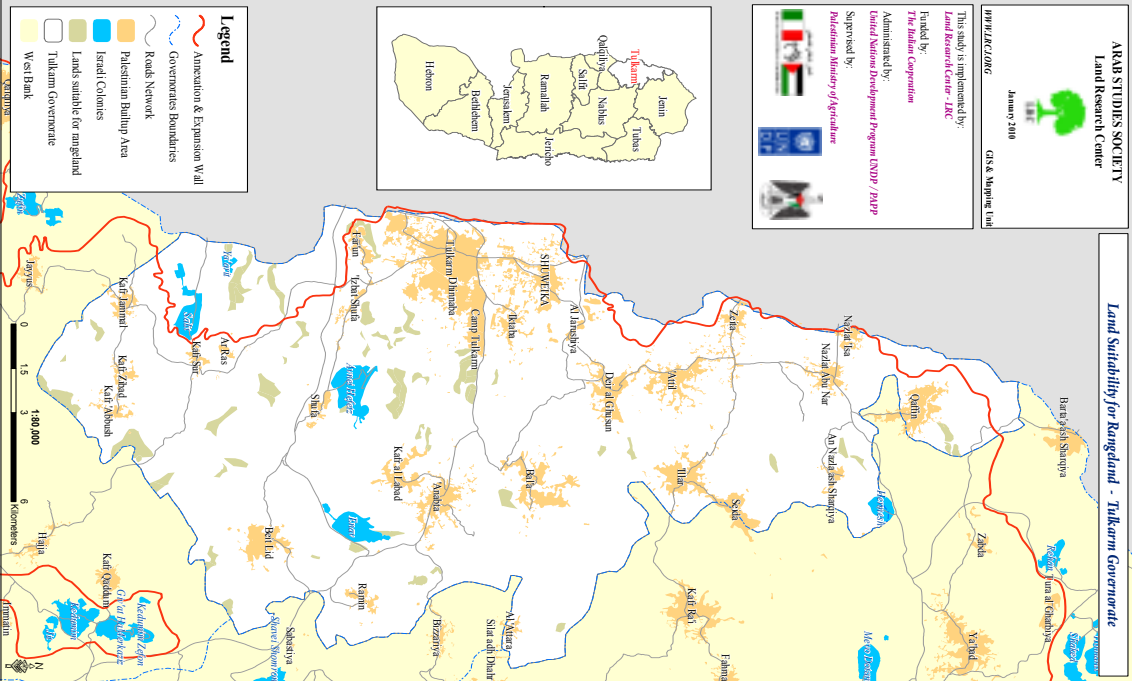
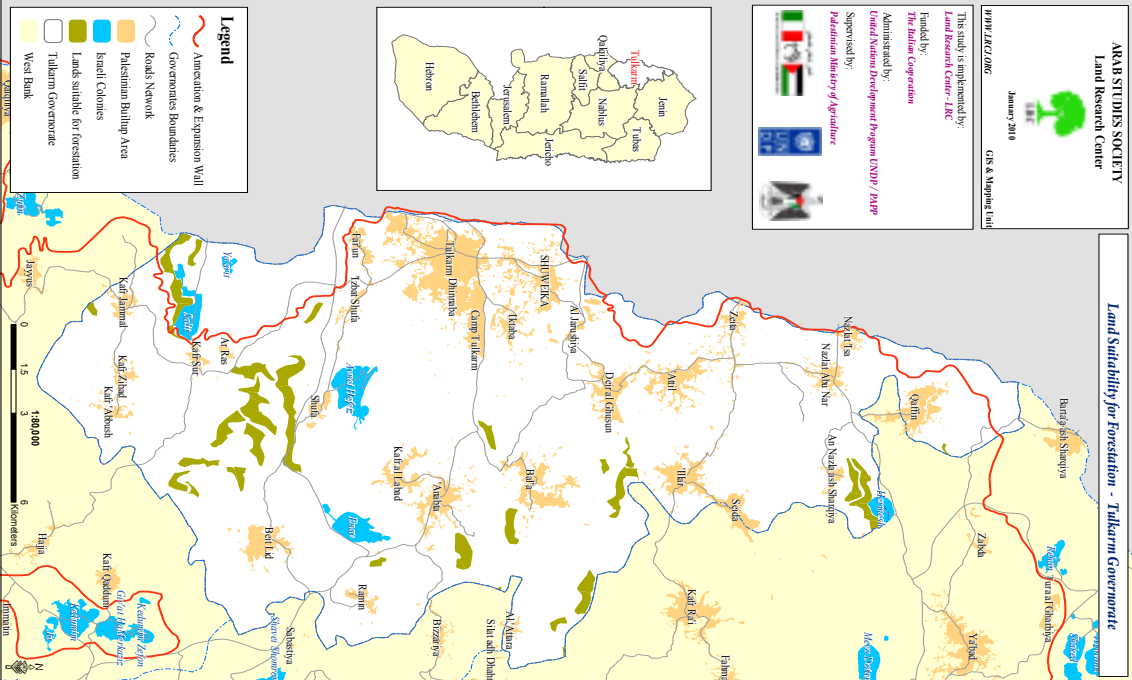
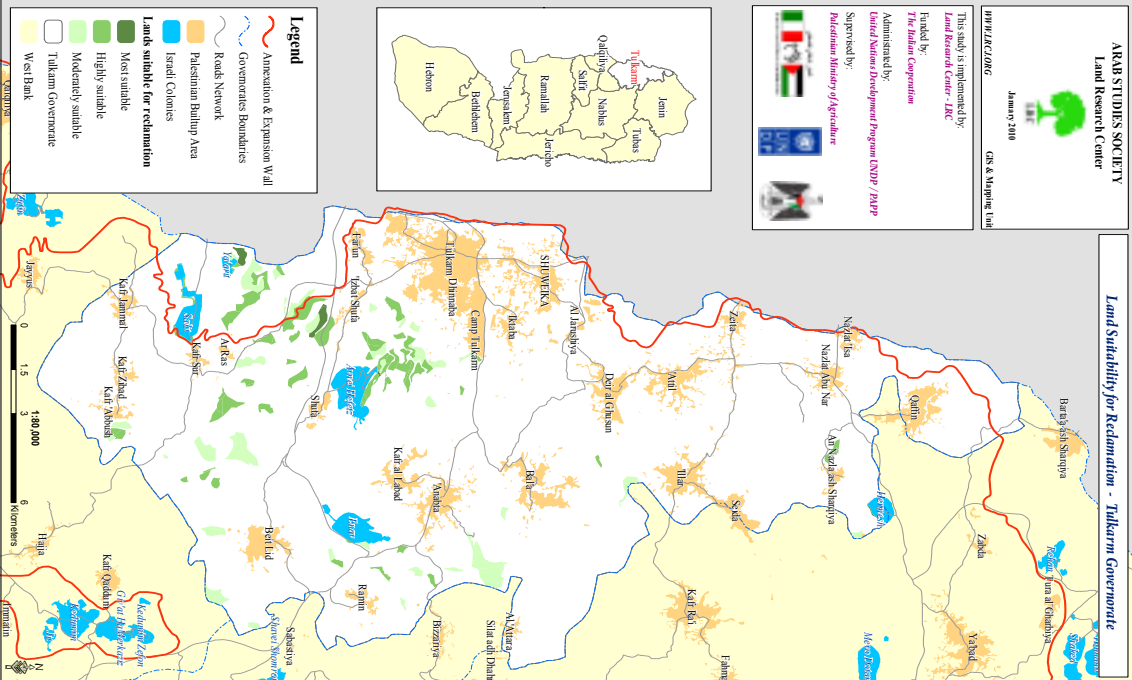
Table 82: Land's Need for Reclamation

Need	Frequency	Percent
Heavy machines	42	84.0
Water source	27	54.0
Supplies (seeds, fertilizers...)	16	32.0
Labor	9	18.0
Walls and partitions	4	8.0
Financial aid	4	8.0
Fertile soil	3	6.0
Harvest equipment	1	2.0





III.2.9 Tulkarm Governorate (TulG)



III.2.9 Tulkarm Governorate (TulG)

III.2.9.1 Introduction

TulG at a Glance

The Governorate of Tulkarm (TulG) is located north west of the WB and is considered to be the commercial link between the northern governorates (Jenin and Tubas) and the middle Governorates (Salfit and Nablus). It is also considered to be a commercial exchange point with the villages and towns of the Triangle which is located inside of the Green Line as the Governorate is located directly on the Green Line. The City of Tulkarm is about 27 kilometers away from the City of Nablus. The total area of the TulG is 245000 dunums (245 km²) which constitutes about 4.4% of the total area of the WB¹⁹⁰.

Demographic Indicators

According to the figures of the PCBS in 2007, the total population of Tulkarm governorate is 157,988 of whom 79,806 males (50.5%) and 78,182 females (49.5%) distributed in 42 built up areas, which are including one main city, 2 refugee camps, 13 towns and 26 villages. The population density is 632 person per square kilometer. The number of households is 29,938 and the mean household size is 4.3¹⁹¹.

The governorate's population represents 6.7% of the total population in the WB. The number of disabilities/difficulties of Palestinian population in the governorate is 10560 including, blindness (6102), deafness (2674), physical disability (4817), cognition (1184) and communication problems (1303)¹⁹², while the percentage of illiteracy rates in the governorate is 3.9%¹⁹³.

Economic and Social Indicators

Since the beginning of the Intifada in 2000, Israeli forces have intentionally destroyed the economy of the Governorate due to its previous strong economic and agricultural situation; prior to the year 2000. The unemployment rate in the Governorate was 12%; today, it is 20.5%¹⁹⁴. One of the main reasons for such deterioration is the Israeli policy of establishing permanent checkpoints designed to isolate Palestinian towns and villages from each other

In TulG, the labor force participating rate in 2007 was 44.7%. The number of households which are linked to water, electricity and sewage is 12200 (40% of the total households in the governorate)¹⁹⁵.

Sewing and garment industry dominate the industrial activities in the area of Tulkarm, ranked second in this industry. TulG houses a number of companies of good quality products that found its way to foreign markets directly or through sub- contracting arrangements. Agriculture is another important pillar of the economy of the area.

190. LRC's GIS unit

191. PCBS-2007 census

192. PCBS-2007 census

193. Ibid

194. Ibid

195. Ibid

The year 2002 is considered to be the Year of Al Nakba (Catastrophe) for the City and the Governorate of Tulkarm as it was the year when the Israeli Segregation Wall was built on its lands. Its establishment led to the confiscation of 36339 dunums (36.3 km²) of the lands of the Governorate either inside or outside the wall¹⁹⁶. This figure represents 14.5% of the total area of the governorate. The Wall stretches over 27 kilometers on the western side of the Governorate starting from the village of A'qaba until it reaches the area of Al Kafriyat south of the Governorate. The land, over which the wall was built, has been considered to be the food basket for the Governorate as because of its high fertility¹⁹⁷.

After the segregation Wall was built, the occupation authorities issued military orders to establish a security zone with a width of 300 meters east and west of the Wall, which the Palestinians are not allowed to use, access or even get close to. The (Zone) made the Governorate lose an additional 8100 dunum (8.1 km²) of its lands along the route of the Wall¹⁹⁸ (about 3.2% of the governorate's total area).

Infrastructure

The establishment of the Wall in the northern part of the Governorate led to the destruction of 526 industrial and commercial workshops in Nazlet Issa market. That is in addition to the closure of additional 320 shops that used to constitute the main source of income for thousands of Palestinian families in the Governorate and other nearby governorates. Most of the infrastructure has been destroyed during the military incursion. Furthermore, from the year 2000 until the current time, about 295 houses and other structures have been demolished for (security) reasons, due to proximity to the Segregation Wall, or due to building in Area C without an Israeli permission¹⁹⁹.

Environmental Indicators

The continuous Israeli settlement activity, land confiscation and Wall construction in the governorate has inflicted a lot of damage to the environment and to the landscape of the area. The presence of the Israeli Industrial Zone nearby TulG borders poses severe environmental threat on the governorate environment. Also, the existence of wastewater stream called Wadi Zommer causes a pollution to the land in addition to the bad odor resulted from this wastewater.

Political conditions

There are 3 colonies in the Governorate of Tulkarm occupying an area of 4935 dunums²⁰⁰ (4.9 km²), which represents about 2% of the total area of the governorate.²⁰¹ Their total population at the end of 2006 was 2087 settlers²⁰².

There is one main colonial by-pass road in the Governorate of Tulkarm that connects the colonies of Enav and Avnei Hefetz with the Green Line. This road is also used by the Nablus colonists especially those from the colony of Shavei Shomron. The road is called Road 57 and its length in the TulG is around 14 kilometers, starting from the village of Ramin and ending on the Green Line with a width of 40 meters. Its establishment has led to the destruction of about 560 dunums (0.56 km²) from TulG land. This figure represents 0.22% of the total area of the governorate²⁰³.

196. LRC's GIS unit

197. Ibid

198. Ibid

199. LRC field work

200. Ibid

201. LRC's GIS unit.

202. Foundation For Middle East peace-Washington).

203. LRC's GIS unit.

III.2.9.2 Physical Features of TulG.

As indicated in the methodology, physical features of TulG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 9.8 km², which constitutes about 4% of TulG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of TulG are: slope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 7.6 km², which is equivalent to 77.6% of the NA and 3% of TulG area. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

Drainage Depressions: It has an area of about 0.1 km², which represents about 1.1% of the NA and less than 0.1% of TulG area. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 2.1 km², which represents about 21.3% of the NA and about 1% of TulG area. It is composed of small spots that are sometimes cultivated. Not all the hillcrests in the TulG are mapped because the area of those hillcrests is small and cannot be shown at small map scale.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It usually represents level area. It covers an area of about 2.1 km², which is equivalent to 21.3% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 0.8 km², which is equivalent to 8.3% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

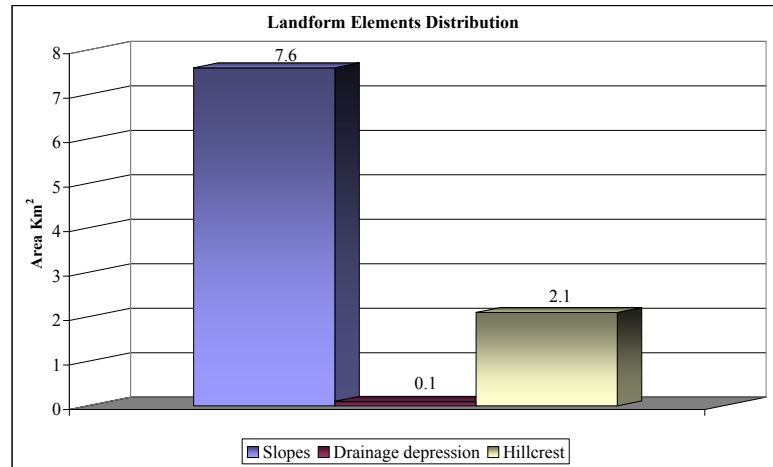


Figure 64: Landform elements in the NA of TulG

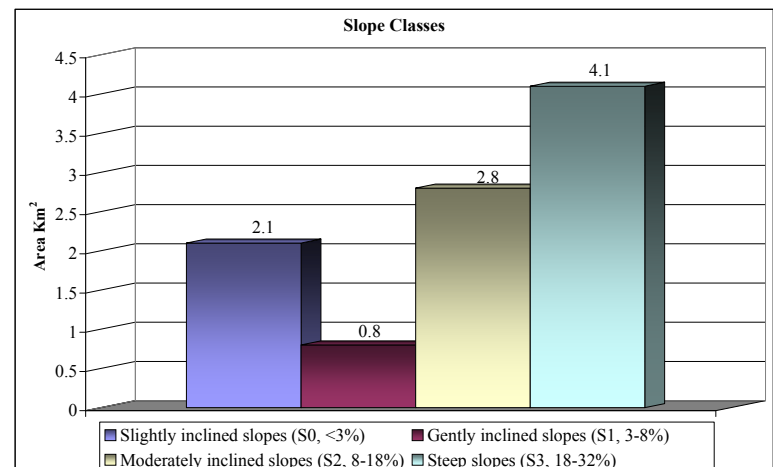


Figure 65: Slope classes in the NA of TulG

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 2.8 km², which is equivalent to 28.7% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 4.1 km², which is equivalent to 41.7% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates. It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents the largest area (21.3%). It is composed mainly of flat hillcrests. In Palestine, areas with northern and western aspects (Mighian) are normally considered much better for agriculture than those with eastern and southern aspects (Mishmas). In TulG, the first part has an area of about 21.1 % while the second part is about 15.3%.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. More than half of the area (96%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The semi arid part is 4.1 km², which comprises about 42.1% of the NA; the sub humid area is 5.7 km², which comprises about 57.9% of the NA. The following chart displays the two climate classes with their conjugate areas:

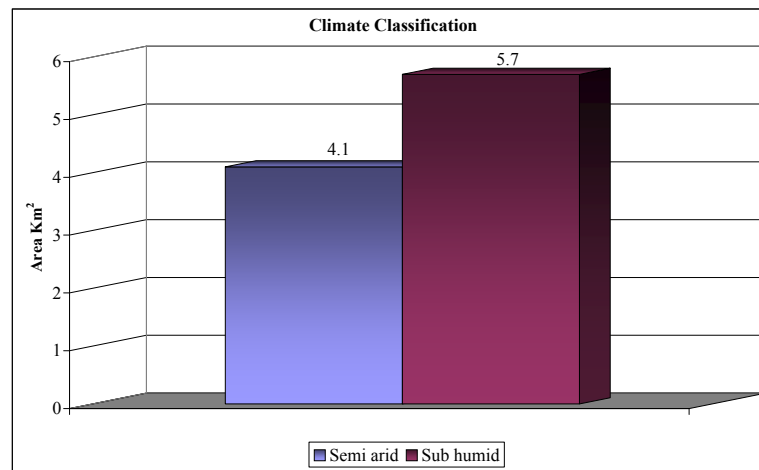


Figure 66: Climate classification of the NA of TulG

III.2.9.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The following map displays the land suitability classes of reclamation in TulG.

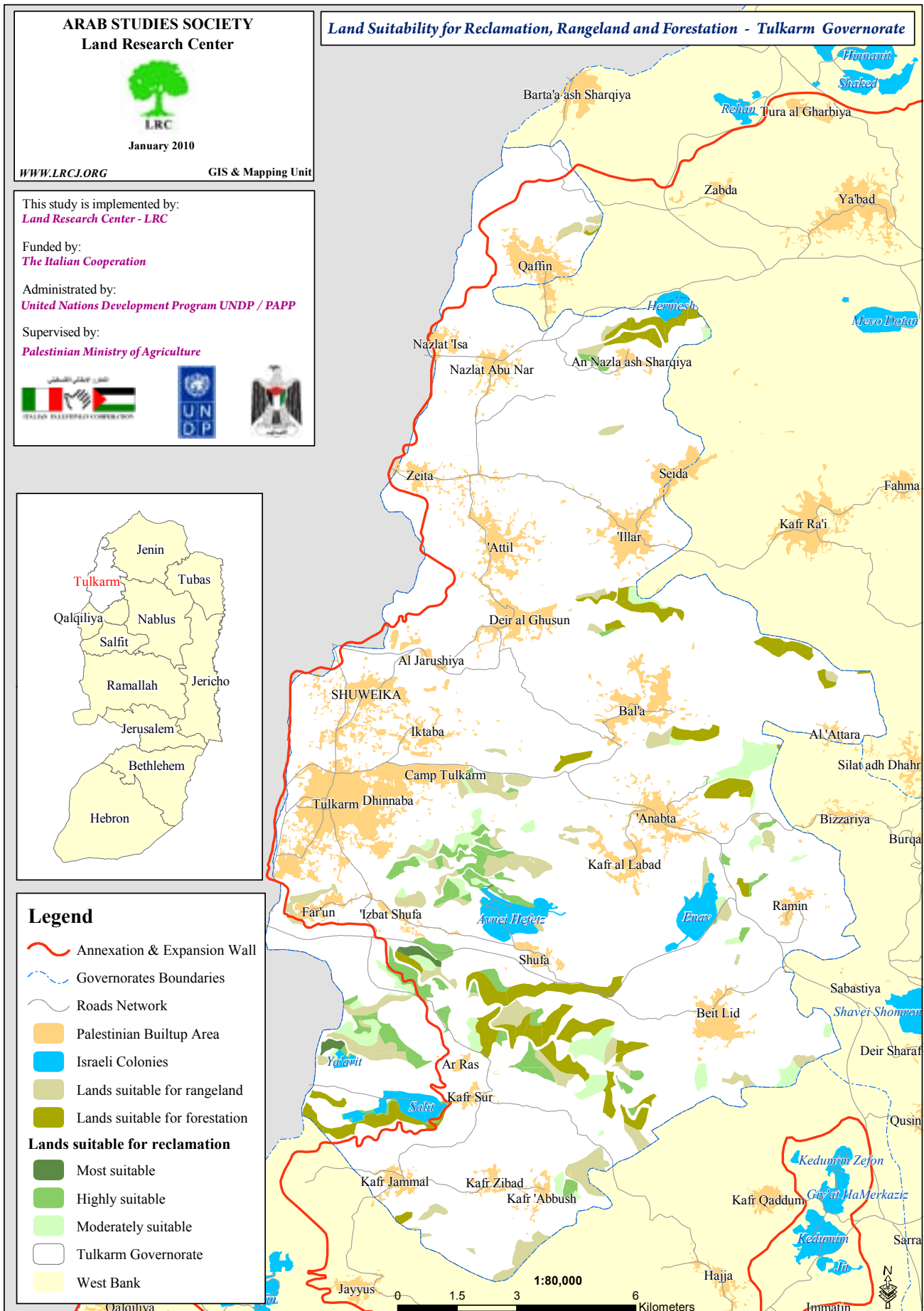


Figure 67: Areas of land suitable for reclamation, forestry and rangeland in TulG

Investigation the figures and the distribution of suitability classes (see Figure 68), revealed that the most suitable class for reclamation represents the smallest area percentage among all classes (3.8%) . Suitable classes for reclamation are located at the southwestern parts of the Governorate closer to Kufr Rumman, Shufa, Saffarin and Ar Ras towns.

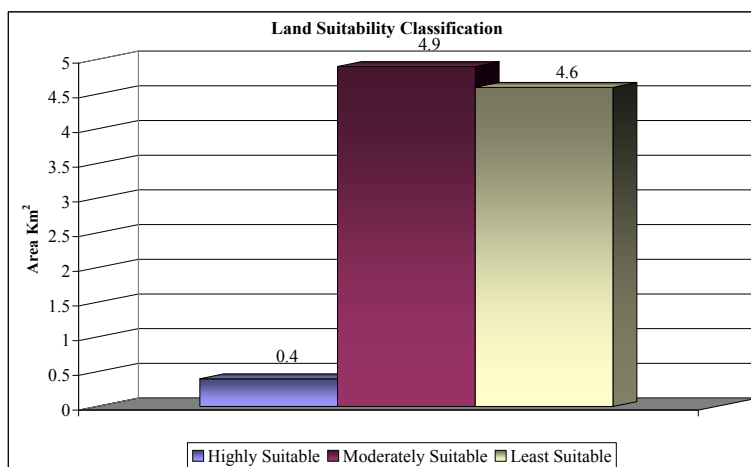


Figure 68: Land suitability classes for reclamation in NA of TulG

Land Suitability for Forests and Rangeland

The total area in TulG that is classified as suitable for forests and rangeland is estimated at about 16.2 km². This land acquired this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests from this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 51.8% (see Figure 69). This area represents about 3.4 % of TulG area. Tulkarm is the only Governorate that has an area suitable for forests larger than those suitable for rangeland.

The areas of the land suitable for forestry and rangeland are shown in the following table:

The results indicated that the majority of the land in TulG, which is not suitable for reclamation, is suitable for forestry (51.8%). The area suitable for rangeland is also high (48.2%) from the land that is classified as not suitable for reclamation.

Table 83: Areas of land suitable for forestry and rangeland in NA of TulG.

Suitability classes	Area (km ²)	Area %
Forestry	8.4	51.8
Rangeland	7.8	48.2
Total	16.2	100

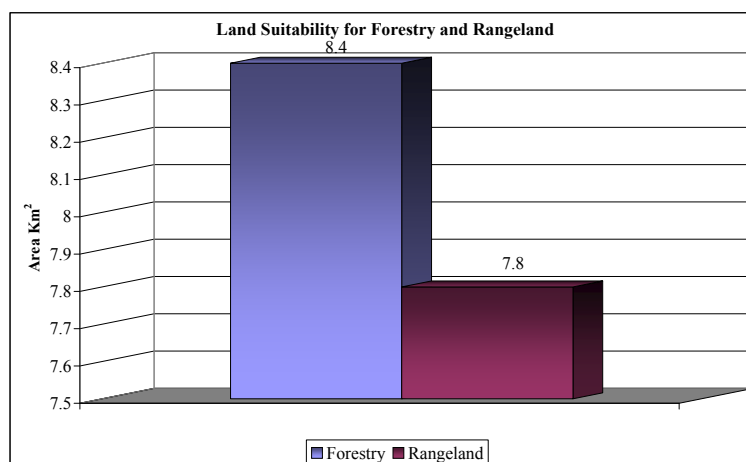


Figure 69: Land suitability for forestry and rangeland in NA of TulG

III.2.9.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in the TulG is 5.3²⁰⁴; where the corresponding average for the sample studied in TulG separately was 8.2. This high number was highly desired and supported by the culture in an agricultural society, more children means more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 3.1 members excluding the main farmer, comparing it to the average number of household members in TulG; almost 38.2% of the typical family gets involved in agriculture, which reflects an agricultural society.

Analysis also revealed that the majority of the farmers in TulG have a modest level of education. Table 84 shows that 53.1% had received some formal education up to high school. The results showed that 48% of the samples are well educated and holding a higher degree than Tawjihi graduates, with higher degrees among farmers.

With regards to knowledge and experience in agriculture, the average years of experience in agricultural work among respondents was 26.5 years, which was mainly accumulated through inherited experience. Respondents showed a great dependency on inherited experience as the main source of the (know-how) in agricultural production. 55% of the farmers depended only on what they have learnt from older family members who worked or are still working in agriculture, or are getting advices from neighboring farmers, but they neither attended short courses nor did they receive any technical training. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture. Yet, the remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information, such as attending short course and studying agriculture engineering. On the one hand, there were only 4% professional farmers who studied agriculture at an advanced level - such as university or agricultural institutes. On the other hand, farmers who ever attended at least one short course in agriculture represented 40.8% of the sample, this number is relatively high and represents the high level of willingness to learn and improve their production process. Nevertheless, the wide dependency on inherited knowledge indicates how agricultural work in TulG depends tremendously on non-scientific traditional techniques of production based on bounded-rational decisions, especially when choosing crops, fertilizers or pesticides as clarified by respondents. This high dependency of inherited knowledge explains how outdated the farmers' knowledge about modern methods and technologies used globally, which reduces their efficiency and effectiveness in production.

According to the EC new definition of SMEs²⁰⁵, agricultural production is mainly dominated by micro-scale farms that generate 100% of total production in the targeted areas within TulG. Opposite to other governorates, and similar to Jenin Governorate Most agricultural economic activities are classified outside the family-businesses region; 16.3% of the sample narrow labor to family members only, while 83.7% of farmers go beyond family members to employ permanent and seasonal labor. Although the majority of farms in these areas are not classified as family businesses, yet they do not offer much job opportunities for local people. These farmers employ 1.6 employees on average, emphasizing the fact that agricultural production is of a micro-scale nature.

95.9% of households studied were headed by males, given the paternal culture in the oPt; males are in charge for the land or agricultural activities. Males run the farm by making decisions, yet intensively counting on females in the family to help and do a great proportion of the physical work as shown by the data gathered. Since it is not common to count only on agriculture to guarantee an adequate standard of

Table 84: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	3	6.1
Primary education	4	8.2
Secondary education	9	18.4
High school	13	26.5
Diploma	9	18.4
Bachelor's degree or above	11	22.4
Total	49	100

204. PCBS, Main Indicators By locality Type. 2009.

205. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14.

living; male members of families usually a second main job or attend school, leaving the field to be taken care of by females. Analysis showed that females represent 80.9% of family labor in the sample. Moreover, family members who are usually participating in agriculture are mainly children²⁰⁶ or grandsons below 18 years old. This implies that young females have a higher contribution to agricultural production and a main pillar in TulG. Analysis also showed that 46.9% of the main farmers and the head of the households in the targeted areas are above 50 years old. Therefore, one could infer that main farmers in TulG are getting old, while young people prefer other kinds of employment if any.

Common Economic Activities and the Standard of Living

The most common activity in the targeted areas was farming for making common source of income for households, the sample studied was made of owners of lands suitable for reclamation and farmers working in this land. 100% of the random sample interviewed in the targeted areas was farmers who are considering agriculture as their main or secondary job. There were other kinds of common activities among the inhabitants of the targeted localities; 20% of the sample is employed as blue or white-collar employee and 14% work with livestock. Despite the fact that most households inhabiting the targeted areas are involved in agriculture, only 42.9% of the sample showed enthusiasm to agriculture, the rest preferred to have a different option such as jobs with frequent salaries or private businesses.

Tulkarm is a unique case when compared with other governorates. Analysis of the households studied within the governorate showed that 79.6% of the sample working in agriculture classified it as a major job, while 20.4% of the sample perceived farming as a secondary job. Hence, most farmers working in the field are full-time farmers. As Table 85 shows, household's average income from agricultural work is 1,488 NIS; this number includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as major occupation had an average income from agricultural work of 1,610 NIS. Based upon this and on the average family size of the sample, and in accordance to the PCBS measures of living standards in southern WB²⁰⁷, households counting solely on agriculture live under poverty line, these households represent 26.5% of the entire sample.

Table 85: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	79.6	1,610 NIS
Farmer as secondary job	20.4	1,010 NIS
Farmers in sample	100	1,488 NIS

Based on household's size, income and the PCBS classification of poverty²⁰⁸, households living under poverty line are estimated to be 89% in targeted areas. Generally speaking, spending was more than total monthly income; this reveals the dependency of some households on transfers, micro loans and/or cash through safety nets. Spending is mainly on basic physical needs such as food cash expenditure, which represents the main category of expenditure. Clothing, with transportation and communication, were the second and third larger expenses for this group respectively²⁰⁹.

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Crop Diversification

The two major crops within the targeted localities are rain-fed fruit trees and field crops. The study showed a high dependency by the farmers in TulG on rain-fed fruit trees. As shown in Table 86, 98% of the farmers own rain-fed trees, which have a key role in their economy and the food production basket. Field crops seem

Table 86: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	48	98.0
Field crops	24	49.0
Irrigated vegetables	21	42.9
Irrigated trees	17	34.7
Vegetables depending on rainfall	13	26.5

206. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah.

207. PCBS, Poverty in the Palestinian Territory. 2007.

208. Ibid

209. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah.

competitive among other kinds of crops with 49% of the farmers cultivating them. These localities were outstandingly planting Irrigated vegetables and trees. Finally, rain-fed vegetables are cultivated commonly but they are considered to be the least among others. It is worth shedding light on how diverse the food production basket of Tulkarm's farms is since the farmers are using the same risk-minimizing strategy used elsewhere, but it is more diversified with a combination of 3-5 different kinds of crops. The common fruit trees production in Tulkarm is clement, olive, and lemon. Common vegetables produced are mainly cucumber, tomato and cauliflower. Field crops produced were mainly wheat, dry onion and potato²¹⁰.

Livestock

Husbandry in TulG is relatively high. In total, 28.6% of the sample population raise livestock which reflects a little dependency on livestock among these localities, none of the households studied earn their living solely from husbandry, the entire sample raises livestock as a secondary job.

Agricultural Machines, Equipment and Inputs

Generally speaking, TulG is the sixth richest governorate with regard to the number of agricultural machines and equipments among other governorates. 3.7% of agricultural equipments owned by households in the WB are located in Tulkarm, these equipments consist mainly of four-wheel tractor, trailers, cultivator and sprayers²¹¹.

Table 87: Source of Seeds Used in TulG

Source of seeds	Frequency	Percent
Local nurseries	47	95.9
Self-made	8	16.3

As other governorates, Local nurseries located within TulG have formed the main source of inputs with 95.9% of population counting on them; the only other source of seeds was home-made ones. 16% of the farmers are producing their own inputs of seeds.

Water

The study shows that water reserves for agriculture were considered enough by only 47.7% of the farmers, which is relatively high, while the rest considered it inadequate and scarce. Moreover, 51% of the farmers in these areas considered lack of water as a very important constraint in the farming systems and as a cause for hindering agricultural projects.

Table 88: Percent Use of Water Source

Water source	Frequency	Percent
Cisterns wells	22	44.9
Artesian wells	22	44.9
Public network	2	4.1
Purchasing tanks	2	4.1
Spring water	1	2.0

The scarcity of water has clearly directed most agricultural production in the targeted regions within TulG toward rain-fed crops. 25% of the sample did not use water at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from artesian and rainfall cisterns wells as shown in Table 88; the analysis also showed that farmers usually utilize more than one kind of water source either as a substitute or a complementary source.

The other sources of water were slightly used, public networks are utilized for irrigation by 4.1% of the sample, and this is because the targeted localities rarely utilize public water for irrigation but for domestic use. The reason for not largely utilizing the public networks is their distance from farms. 97.9% of the sample have their cultivated land outside the master plan of Tulkarm town, 89.8% of the sample have the land cultivated at least one kilometer away from their houses, which makes it far from public networks and though difficult to be used for irrigating their fields.

210. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007.

211. PCBS, Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm.

Reasons Behind Underutilization of Land

Most areas located in the targeted areas are currently utilized in agriculture. 89.8% of households utilize their lands in agriculture, whereas 10.2% of the landowners are not utilizing it at all.

A total area of 40.4% of the land owned by the sample studied in TulG is not fully utilized; reasons behind not utilizing land in agricultural activities can be summarized in order of importance for the sample as shown in Table 89:

Table 89: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Land needs reclamation	43	87.8
Lack of water	25	51.0
Lack of financial capital	19	38.8
No roads leading to it	6	12.2
Drought	4	8.2
Low profitability of agriculture	4	8.2
Closeness to settlements	3	6.1
Israeli forces prevent reaching land	2	4.1
No time to plant it	2	4.1

As shown by the results, the main reason for inefficient use of land by most households is the combination of inappropriate physical conditions of the land and the lack of financial capital. The physical preparation of land such as building retaining walls, roads, and leveling the land is quite expensive relative to the insufficient savings by households in targeted areas which equal an average of 1.7% of their monthly income. The lack of water is considered the second obstacle hindering the start of agricultural initiatives. The common practice among farmers is constructing wells to collect and save water for irrigation; the process is expensive and not affordable to all.

It is worth noting that there was no effect of the competition of Israeli production on the motivation of respondents to start a reclamation process, obviously, the production of these localities is quite profitable and has high competition level both in the local and the foreign market, where 25% of the farmers production is exported to other countries except for Israel. This has ultimately helped to increase the profitability of the sector contrary to the existing situation in the southern governorates.

Level of Acceptance for Reclamation

The sample showed a great willingness to invest in the available bare land for agriculture, 91.8% of the sample had in mind to plant the available land as a future plan. 67.3% of the sample expressed their strong will to invest in abandoned land and 61% considered it as an urgent priority.

The ability to get involved in agriculture was relatively high. Yet, comparing the high percentage and the tiny amount they are willing to participate, which shows the degree respondents are perceiving the real cost of mechanical reclamation. The maximum contribution respondents are able to make is, on average, 20.4% of the total amount spent for reclamation. More specifically, the sample showed capability to participate with an average of NIS 385 per dunum for his/her land reclamation.

It is worth noting that not only farmers, but most other non-farmers villagers, as well, were very much willing to invest their available land in agriculture, mainly as a (for-profit investment) with expected future income and/or for domestic consumption respectively. Moreover, the most three types of respondents who are willing to take risk and spend on reclamation work for agriculture were farmers in the first place, followed by employees and retired persons respectively. Agricultural sector in Tulkarm seems to be more attracting than in other governorates, it is relatively more profitable and developing further land would lead to more job opportunities as most landowners are fulltime farmers who would seriously invest more in developing their land.

Finally, there is a clear positive relation between household size and willingness to invest and increase production. As agriculture is mostly considered a family business in the TulG similar to other governorates, farmers depend to a great extent on family members to help in the field, i.e. the larger the household is, the larger it is the will to invest in agriculture and the larger is the possibility to succeed.

As mentioned previously, 91.8% of the households owning the abandoned land proclaimed to have serious future plans of investing land in agriculture. The rest of the sample had no plans. 89.8% of the sample who are willing to invest in agriculture will plant the developed land by themselves with the help of the family members, but without employing workers from outside the family. Finally, 20% of the sample has gone through a previous reclamation program and 100% have been successfully planting their developed land until the time of the study. These overall results indicate a good potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed on the mechanical reclamation of land to be the main priority when it comes to reclamation. Table 90, demonstrates needs for reclamation according to the priorities classified by respondents, the most common need in the targeted area was the need for physical adjustment mainly by providing heavy machines to flatten the land, build retaining walls to ensure the appropriate physical conditions and to accommodate agricultural activities.

Table 90: Land's Need for Reclamation

Need	Frequency	Percent
Retaining walls	47	95.9
Heavy machines	41	83.7
Water source	30	61.2
Supplies (seeds, fertilizers...)	18	36.7
Financial aid	11	22.4
Fertile soil	6	12.2
Labor	2	4.1
Harvest equipment	1	2.0

While physical preparation of the land (constructing walls, partitions, and providing appropriate machines for land leveling) was the main concern for land owners, the need for water sources emerged, which was the concern of 61.2% of the sample. In the same needs requirements, 36.7% of the sample demanded supplies of seeds and others when embarking on the reclamation process. Finally, financial aid and fertile soil were not common demands, yet required by some respondents.





III.2.10 Jenin Governorate (JenG)

III.2.10 Jenin Governorate (JenG)

III.2.10.1 Introduction

JenG at a Glance

The Governorate of Jenin (JenG) is bordered in the north by the cities of Nazerath and Afoula, from the east by Tubas (the Jordan Valley and Bisan), from the south by NG and by the Green Line and the TulG from the west.

The area of the Governorate is 573 km² constituting about 10% of the total area of the WB. The City of Jenin (which is the center of the Governorate) is 150 meter above sea level and has a surface area of 23.59 km², of which 6.95 km² is the built-up area. The average annual rain fall is ranging from 400 to 600 mm, which makes the soil very fertile and suitable for feasible mass agricultural production.

Demographic Indicators

The population rate has been affected by a number of natural and political factors including the migration waves and the conflict with Israel; the migration of Palestinians living inside the Green Line between the years 1945 and 1947 have led to a marked increase in the population, as well as the establishment of the Jenin refugee camp in the northwestern part of the city.

According to the PCBS-2007 census, the population of the Governorate was 256,619 (10.9 % of the WB population) distributed on 96 built up areas, which are including the City of Jenin (population 40,276). The population density in the Governorate is about 439 persons per km². 42.5% of the population is below 15 years while the average family size is 5.4²¹².

Economic and Social Indicators

In JenG, the labor force participating rate is 45.4% and the unemployment rate is 13.1%²¹³. The number of households, which are linked to water, electricity and sewage is 7,790 (3% of the total households in the governorate mostly in Jenin city)²¹⁴.

The number of disabilities/difficulties of Palestinian population in the governorate is 14,893 including, blindness (8,821), deafness (3,792), physical disability (6,082), cognition (2,031) and communication problems (2,189)²¹⁵.

Despite the constraints and distortions inflicted to the Palestinian economy in general, and to the productive sectors; specifically industry and agriculture in particular, the agricultural activities remain dominant in the JenG. The contribution is \$74,128,000 or 16.2% of the total share of agriculture to GDP. In addition, agriculture equipment and machinery are mainly manufactured in Jenin²¹⁶.

The main effects of the establishment of the Segregation Wall in Jenin is the confiscation of natural resources such as land and water sources which had led to the increase in the unemployment, poverty and malnutrition levels in the Governorate. Moreover, the Wall restricts the movement of residents, the sick people, the elderly and the medical crews as well as cutting off traditional roads connecting between the villages and their service center. The total number of affected families due to the erection of the Wall is around 815 families.

212. PCBS-2007

213. Ibid

214. Ibid

215. (PCBS-2007 census)

216. Federation of Palestinian Chambers of Commerce, Industry and Agriculture

Environmental Indicators

The environment in JenG is suffering from the same threats similar to other governorates in the WB. However, the excessive use of fertilizers, pesticides and insecticides in the agricultural production reflects a serious environmental threat in JenG.

Political conditions

The Israeli colonial activity in the JenG has started later than other parts in the WB as it began only in 1977 after the Likud party- right wing- won the Israeli parliamentary elections. There are 9 colonies in the Governorate that occupies an estimated area of 21722 dunums (21.7 km²) which is about 2.7% of the area of the Governorate. The built up area of the colonies is about 1306 dunums (1.3 km²) in which 3779 colonists lived in 2005²¹⁷.

In addition, there are 4 bypass roads in the JenG with a total length of 81 kilometers and a width of up to 30 meters. The area expropriated to establish these roads is around 2.4 km² (about 0.4% of the total area of the Governorate)²¹⁸

The Segregation Wall in the Governorate starts from the village of Muttala (located in the south east of the Governorate) and reaches the village of Zibda. Its length is 66 kilometers with 17 gates, 6 of which are closed permanently, 6 are seasonal and the remaining are used for labors crossing into and from Israel and also used for those communities isolated beyond the Wall (such as Barta'a and Imrieha)²¹⁹.

The Wall was established at about 3169 dunums of land (about 3.1 km²) which constitutes around 0.5% of the total area of the governorate. It isolated behind it 6328 dunums (about 6.3 km²) which is constituting 1% of the area of the governorate²²⁰.

The number of Palestinian population centers that were affected by the Wall in the Governorate of Jenin reached 37, of which 9 has become completely isolated behind it including Umm Al Reahn, Dhaher Al Maleh, Barta'a, Khirbet Barta'a, Al Mintar Al Gharbi, Al Mintar ash Sharqi, Khirbet Abdullah Yunis, Khirbet Al Omor and Khirbet Al Ra'adiya²²¹.

III.2.10.2 Physical Features of JenG.

As indicated in the methodology, physical features of JenG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 8.4 km², which constitutes about 1.5% of JenG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of JenG are: slope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 6.1 km², which is equivalent to 72.8% of the NA and less than 1% of JenG area. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

217. Foundation for Middle East Peace- Washington).

218. LRC's GIS unit

219. Ibid

220. Ibid

221. Ibid

Drainage Depressions: It has an area of about 0.3 km², which represents about 4.2% of the NA and less than 0.1% of JenG area. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 1.9 km², which represents about 23.0% of the NA and less than 1% of JenG area. It is composed of small spots sometimes cultivated. Not all the hillcrests in the JenG are mapped because the area of those hillcrests is small and cannot be shown at small scale of this study.

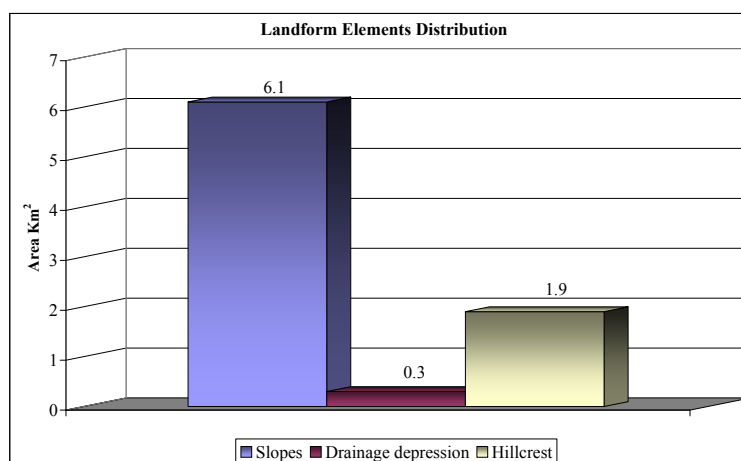


Figure 70: Landform elements in the NA of JenG

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It usually represents level area. It covers an area of about 1.9 km², which is equivalent to 23.0% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Gently inclined slopes - S1- (3-8%): this type of slope is usually located at the footslopes, drainage depression and sometimes at the hillcrests. It covers an area of about 0.2 km², which is equivalent to 2.0% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

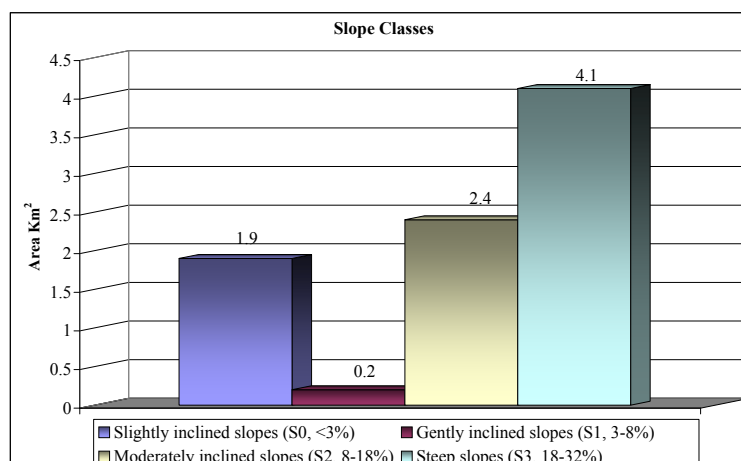


Figure 71: Slope classes in the NA of JenG

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 2.4 km², which is equivalent to 28.2% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 4.1 km², which is equivalent to 48.5% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other Governorates. It is clear from the aspect class data that the non-oriented flat area with (0) aspect degree represents the largest area (23.0%). It is composed mainly of flat hillcrests. The northern and western aspects (Mighian) composes about 12.2% of the NA whereas the eastern and southern aspects (Mishmas) occupies 12.4% of the NA.

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. Most of the area (87.0%) has high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The total area of the arid class is 1.1 km², which is comprising about 12.9% of the NA; the area of the semi arid part is 3.3 km², which is comprising about 39.5% of the NA; the sub humid area is 4.0 km² and is comprising about 47.9% of the NA. The following chart displays the three climate classes with their conjugate area:

More than half of the NA is suffering from aridity and occupying most of the area (52.4%). This degree of aridity imposes hard restrictions on utilizing this land for agriculture in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl according to the population distribution; the same situation is applicable to the sub humid area (47.9%) which is heavily populated.

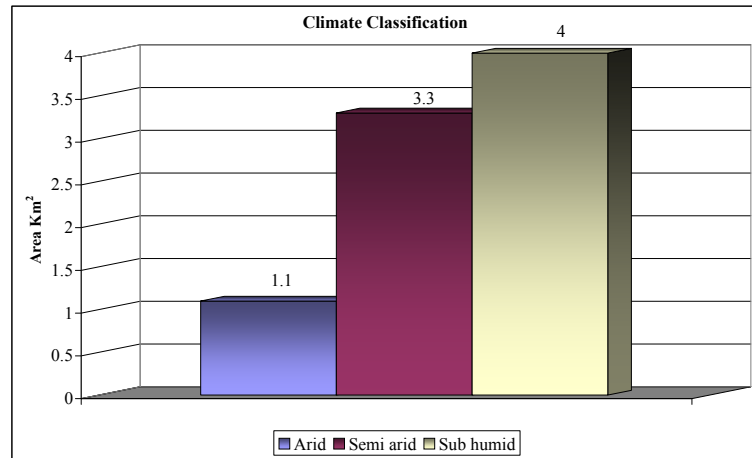


Figure 72: Climate classification of the NA of JenG

III.2.10.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analysis for the preparation of the land suitability map of the NA. The following map displays the land suitability classes for reclamation in JenG:



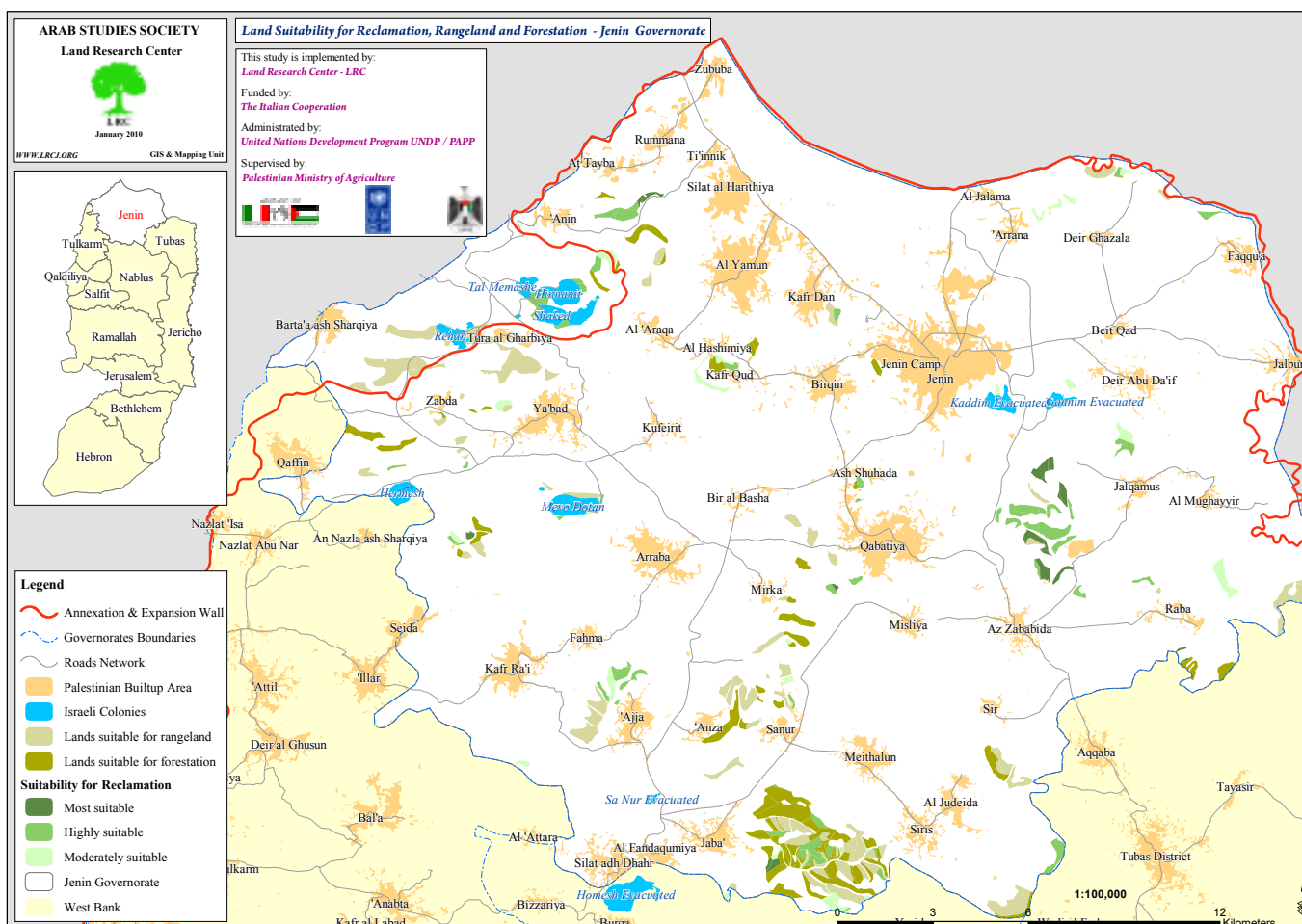


Figure 73: Areas of land suitable for reclamation, forestry and rangeland in JenG

The areas of the four classes are shown in the following table:

Figure 74 reveals that the most suitable class for reclamation represent the smallest area among all classes (14.5%) . At the same time, the land suitable for reclamation is evenly distributed over the Governorate and it is close to Ajja, Jalqamus, Az Zababdeh, Qabatiya and Sanur towns.

Land Suitability for Forests and Rangeland

The total area in JenG that is classified as suitable for forests and rangeland is estimated at about 18.7 km². This land has this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests from this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 41.7% (see Figure 75). This area represents about 1.4 % of Jenin Governorate area. This percent does

Table 91: Areas of land suitable for reclamation in NA of JenG.

Suitability classes	Area (km ²)	Area %
Most suitable	1.2	14.5
Highly suitable	4.7	55.8
Moderately suitable	2.5	29.7
Total	8.4	100

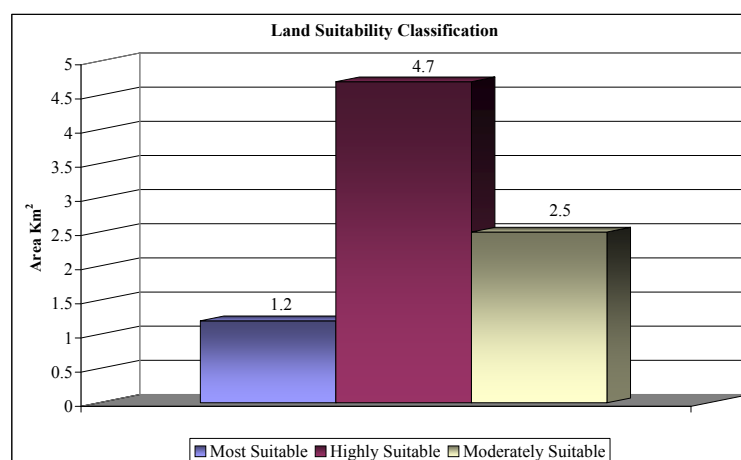


Figure 74: Land suitability for reclamation classes in NA of JenG

not mean that this is the only land suitable for forestry, but it means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation.

The areas of the land suitable for forestry and rangeland are shown in the following table:

Table 92: Areas of land suitable for forestry and rangeland in NA of JenG.

Suitability classes	Area (km ²)	Area %
Forestry	7.8	41.7
Rangeland	10.9	58.3
Total	18.7	100

The results also indicated that the majority of the land in JenG which is not suitable for reclamation is suitable for rangeland (58.3%). The area suitable for forestry is also high (41.7%) out of the land that are classified as not suitable for reclamation.

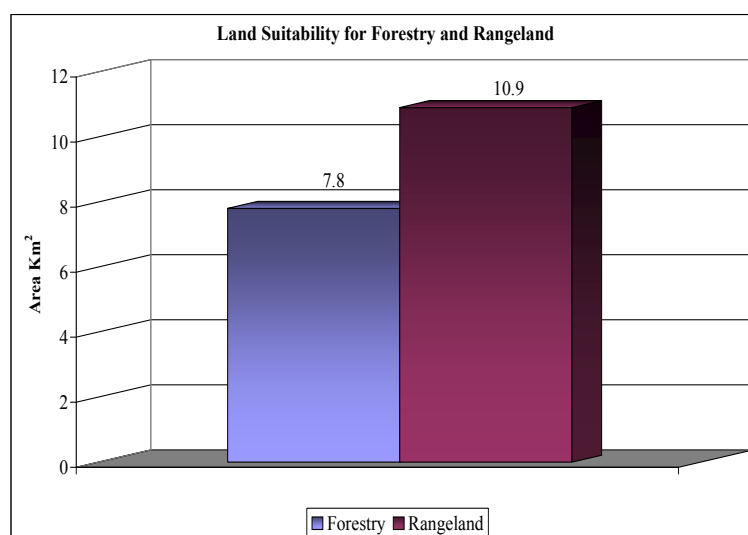


Figure 75: Land suitability for forestry and rangeland in NA of JenG

III.2.10.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in JenG is 5.4²²²; whereas the corresponding average for the sample studied in JenG separately was 8.4. This high number is highly desired and supported by the culture, more children means more support for parents in their old age. Moreover, in an agricultural society, more children means more workers, which translate to economic and food security. The average number of family members helping in agricultural work was 2.9 members excluding the main farmer, comparing it to the average number of household members in JenG; almost 34.5% of the typical family gets involved in agriculture which reflects an agricultural society.

Analysis also revealed that the majority of farmers in JenG have a modest level of education. Table 93 shows that 71.2% have received some formal education up to high school, 25.7% of sample are well educated and holding a higher degree than Tawjihi. This adequate level of education could provide a good condition for providing and implementing future trainings, or for the adoption of new techniques for agricultural production.

With regard to knowledge and experience in agriculture, as the case of other governorates, respondents showed a great dependency on inherited experience as the main source of the (know-how) in agricultural production. 70.7% of the farmers depend only on what they have learnt from older family members who worked or are still working in agriculture, and also through seeking advices from neighboring farmers,

222. PCBS, Main Indicators By locality Type. 2009.

but they neither attended short courses nor did they receive any technical training. Remarkably, the average year of experience in agricultural work among respondents was 22 years. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture. Yet, the remaining part of the sample have learned how to farm from inherited experience in addition to other sources of information such as attending short course and studying agriculture engineering. The percentage of people considered educated professionals who graduated from universities with agricultural degrees, and at the same time are working in agriculture was not high and constitute only 2% of the farmers. Moreover, farmers who ever attended at least one short course in agriculture were 26%. This indicates how tremendously agricultural work in JenG, as other governorates, depends on non-scientific traditional techniques of production based on bounded-rational decisions, especially when choosing crops, fertilizers or pesticides as clarified by respondents. This high dependency of inherited knowledge explains how outdated their knowledge about modern methods and technologies that are being used globally, which reduces their efficiency and effectiveness in production.

Table 93: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	3	3.1
Primary education	19	19.6
Secondary education	21	21.6
High school	29	29.9
Diploma	14	14.4
Bachelor's degree or above	11	11.3
Total	97	100.0

According to the EC new definition of Small and Medium Enterprises (SMEs)²²³, Agricultural production is mainly dominated by micro-businesses that generate about 94.5% of total production in the JenG, the rest are of small-scale nature. Agriculture in areas located in Jenin has a distinguished pattern of employment; opposite to other districts, agricultural activities have relatively fewer family businesses. 55% of farms in the sample employ an average of 2.8 of seasonal and permanent labor. Regardless of the fact that most farms are of small-scale, yet they have spread out the family-business range to create job opportunities outside the family members. The study showed that income generated by agricultural activities in the targeted localities is enough and relatively high when compared with other governorates. Obviously, this high income increases the ability to employ and not to count only on labor available inside the family range.

100% of the households in the random sample were headed by males, given the paternal culture common in the oPt; the male is in charge for the land or agricultural activities. Males run the farm by making decisions, yet intensively count on females in the family to help and do large proportion of the physical work as shown by the data gathered. Females working in agriculture are mainly children females²²⁴, and they are representing 74.7% of labor among family members reflecting the key-role females play in agriculture.

Analysis showed that 43% of farmers are 51 years old and above. Farmers in JenG are different in terms of age strata from other governorates as the majority of farmers in targeted localities are of young age. By analyzing the motives behind working in agriculture, making profits was the main factor; apparently, agricultural activities generate higher profits than they do in other governorates, this excess profit enables households to recruit labors from outside the family and bear their cost. Self-sufficiency was the second main incentive to farmers; households stressed their interest in adopting the traditions of the land that are being inherited from their ancestors and save it against confiscation.

Common Economic Activities and the Standard of Living

The most common activity in the targeted areas was farming and so making the main source of income for the households, 99% of the sample in the targeted areas where farmers who are considering agriculture as their main or secondary job. Other jobs that are common among land owners and farmers were working with livestock that represented 28%, followed by working as blue-collar and white collar employees with 23 and 19% respectively.

223. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14.

224. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah.

Despite the high involvement in agriculture, many farmers in the JenG considered it more as a secondary rather than a primary source of income. Analysis showed that 41.4% of the sample working in agriculture considered it as a major job, while 58.6% of the sample perceived farming as a secondary job. As Table 94 shows, household's average income from agricultural work is 1,172 NIS; this figure includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as major occupation had an average income from agricultural work of 1,355 NIS. Based upon that and according to the PCBS measures of living standards in southern WB²²⁵, households counting solely on agriculture live under poverty line, these households represent 20% of the entire sample. Households did not seem very satisfied with working in agriculture as 70% considered other economic activities as business and different kinds of employment to be a better option as a career. Those who expressed their satisfaction of working in agriculture were mainly farmers with 41 years old and above.

Table 94: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	41.4	1,355 NIS
Farmer as secondary job	58.6	882 NIS
Farmers in sample	99	1,172 NIS

76% of the sample's monthly income is NIS 3,000 or less. Based on PCBS classification of poverty and according to the household monthly income²²⁶, it is estimated to that 76% of the sample living under poverty line. Spending is mainly on basic physical needs such as food, which represents the main category of expenditure, transportation and communication, and clothing were the second and third larger expenses for this group respectively²²⁷.

Crop Diversification

The study showed a very high dependency by farmers on rain-fed fruit trees. Almost all farmers own rain-fed trees. 98% of the samples own rain-fed trees, which are very productive in the region due to its favorable climate.

The second most planted crop by the targeted farmers was field crops, which are planted by 85% of the sample, followed by rain-fed vegetables leaving few farmers working with irrigated crops of trees and vegetables as shown in Table 95.

Evidently, most farmers use a minimizing-risk strategy by diversifying the types of crops they grow. 88% of the farmers cultivate a collection of at least 2 different kinds of crops to minimize the risk. The most common fruit trees production basket in JenG is made up of olive, grapes, aloe and cherry. Common vegetables produced are mainly tomato and cucumber. Field crops mainly produced are dry onion, wheat, clover and chickpeas²²⁸.

Table 95: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Trees depending on rainfall	98	98.0
Field crops	85	85.0
Vegetables depending on rainfall	28	28.0
Irrigated vegetables	20	20.0
Irrigated trees	2	20.0

Livestock

Generally speaking, households living in targeted localities depend primarily on farming with little focus on livestock. Husbandry in JenG is relatively low. In total 28% of the sample population raise livestock, which reflects light intensity and small reliance, 23% of the household earn their living mainly from husbandry, while 5% of the sample raises livestock as a secondary job.

225. PCBS, Poverty in the Palestinian Territory. 2007.

226. Ibid

227. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah.

228. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007.

Agricultural Machines and Equipment and Input Use

Generally speaking, JenG is the second among other governorates possessing agricultural machinery. 25.9% of the agricultural machinery in the WB are located in JenG, these equipments mainly consist of four-wheel tractor, plough, trailers, water tanks, sprayers and other²²⁹.

Table 96: Source of Seeds Used in JenG

Source of seeds	Frequency	Percent
Local nurseries	97	97.0
Self-made	79	79.0
Agricultural organizations	15	15.0
Israeli dealers	1	10.0

Local nurseries located in JenG have formed the main source of input seeds with 97% of farmers counting on them; nevertheless, there is a high percentage of farmers producing their own inputs of seeds, which made 79% of the sample studied. This source of seeds has been developing as a result of the unhealthy plants they buy or receive as aid, price hikes or to maintain a certain species of high-quality local crops. Agricultural organizations were more active in this governorate, yet they supply 15% of the sample with required seeds.

Water

The study showed that water reserves for agriculture were considered enough by only 13.6% of farmers, while the rest considered it inadequate and scarce. Moreover, 72% of farmers in these areas considered lack of water as a very important constraint in the farming systems, which is hindering the irrigated agricultural projects.

The scarcity of water has clearly directed most agricultural production in the targeted localities within JenG toward rain-fed crops. 17% of the sample did not use water for irrigation at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from spring water where 99% of the farmers are depending on.

Table 97: Percent Use of Water Source

Water source	Frequency	Percent
Spring water	99	99
Water tanks	66	66
Cisterns wells	25	25
Artesian well	16	16
Public network	3	3

The second source used was water tanks, which are used by 66.9% of the sample. Using this costly source demonstrates that main sources of water are insufficient for large production within these localities. Water tanks are available on demand and can reach to fields regardless of how far they are from villages or public networks.

Opposite to southern WB, cisterns wells are not as intensively used in the north as they are in the south. In the same way, artesian wells are rarely used in the south while reasonably used in the north. The same scenario is applicable to public water; although public networks are used as a basic source of irrigation in southern WB, it is the least used source in the north of the WB such as JenG²³⁰. It seems that farmers of JenG are not largely depending on public water for irrigation (only 0.2% of the sample use it for irrigation) due to two reasons; the first is that most of them are utilizing public water for domestic use, and the second is that 94% of the sample have their cultivated land outside the master plan of the town, 77% of the sample have the land cultivated at least one kilometer away from their houses, which makes it far away from public networks and though difficult to use.

229. PCBS, Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm.

230. PCBS, Percent Distribution of Households in the Palestinian Territory by Water Source and the Most Water Consumption Field and Region. 2003; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/WaterResources/tab4.aspx.

Reasons Behind Underutilization of Land

Most areas located in the targeted areas are currently utilized in agriculture. 85.7% of the households are utilizing their lands in agriculture, where 11.2% of the landowners are not utilizing it at all. The remaining 3% of the households are using it for husbandry.

A total area of 39% of the land owned by the sample studied in JenG is underutilized; reasons behind underutilizing land in agricultural activities can be summarized in order of importance for the sample as shown in Table 98:

Table 98: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Lack of financial capital	85	85
Lack of water	72	72
Land needs reclamation	69	69
No roads leading to it	40	40
Closeness to settlements	9	0.9
No market	8	0.8
Israeli forces prevent reaching land	4	0.4
Competition of israeli products	2	0.2
Land size is small and not worth planting	2	0.2
No time to plant it	2	0.2
Land's nature is inappropriate for agriculture	1	0.1
Owned for investment reasons only	1	0.1
Drought	1	0.1

Results indicate that the inefficient use of land by most households is caused by a combination of lack of financial capital, the need for a supportive infrastructure, and the inappropriate physical condition of the land. Obtaining a sound infrastructure of mainly water source and roads, in addition to the physical preparation of the land such as building retaining walls, roads, and flattening the land is quite expensive relative to the insufficient savings by households in targeted areas which represent an average of 3.5% of their income.

It is worth noting that on the contrary to many other governorates, none of the farmers in the targeted localities within JenG believed that farming is a low profitable industry and due to this might cause underutilization of the land. Apparently, given all market determinants in this governorate, such as prices, demand on crops produced, size of farms and supply of foreign competitive products, profits farmers earn are not low to become an obstacle for new investment in agriculture.

Level of Acceptance for Reclamation

Farmers in JenG are of high willing to participate in reclamation and invest in agriculture, the sample showed a great willingness to invest in the available abandoned land for agriculture, 99% of the sample had in mind to plant the available land as a future plan. 94% of the sample expressed their strong will to invest in agriculture and 96% considered it as an urgent priority.

Table 99: Landowners' Future Plans for the Wild Land

Future plan	Frequency	Percent
No plans	35	12.0
Sell it	10	3.4
Plant it	236	80.8
Rent it out	1	0.3
Building site	6	2.1
Total land owners	288	98.6

The ability to financially contribute to agriculture was relatively high; the maximum contribution respondents are able to make is 17.6% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 332 per dunum for his/her land reclamation.

The attitude to invest remaining land in agriculture was shared by almost all farmers. 99% of the households owning the abandoned land proclaimed to have serious future plans of investing land in agriculture. Moreover, 99% of the sample will plant the future developed land themselves and/or with the help of the family member, this shows a great commitment and real will. Finally, 24% of the sample has gone through a reclamation program and 100% have been successfully planting their developed land until the time of this study. These overall results indicate that Jenin is the governorate with the best potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Generally speaking, land owners agreed that establishing of an infrastructure is the main priority when it comes to reclamation. Table 100, demonstrates needs for reclamation according to the priorities classified by respondents, the most common need in the targeted area was the land need for physical adjustment mainly by providing heavy machines to flatten the land, build retaining walls to ensure the appropriate physical conditions to accommodate agricultural activities.

Table 100: Land's Need for Reclamation

Need	Frequency	Percent
Heavy machines	100	100
Retaining walls	97	97
Supplies (seeds, fertilizers...)	89	89
Water source	81	81
Financial aid	51	51
Labor	22	22
Harvest equipment	14	14
Fertile soil	5	5

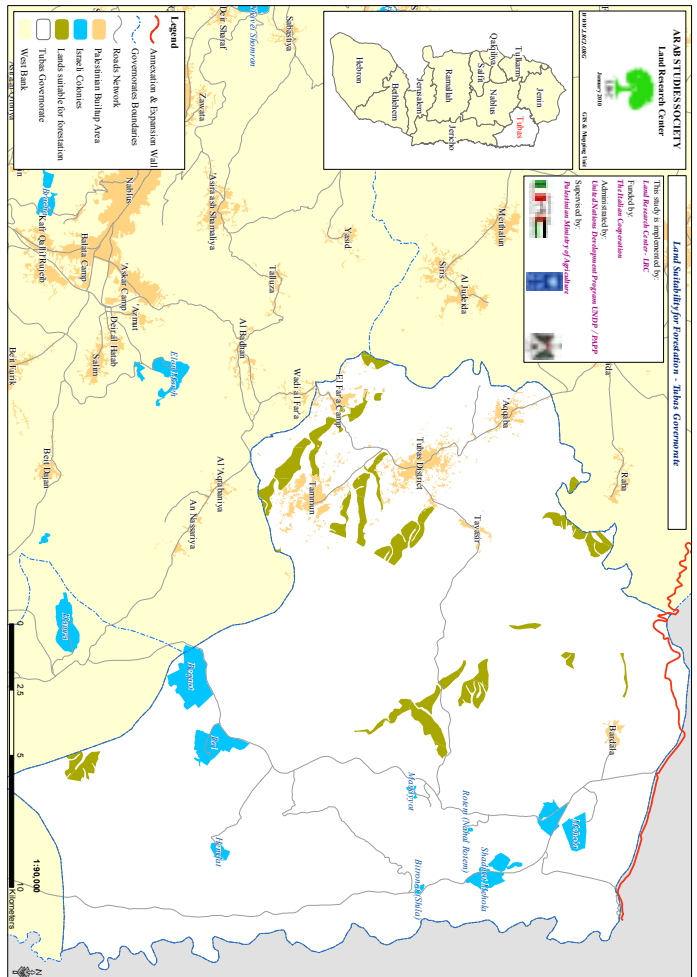
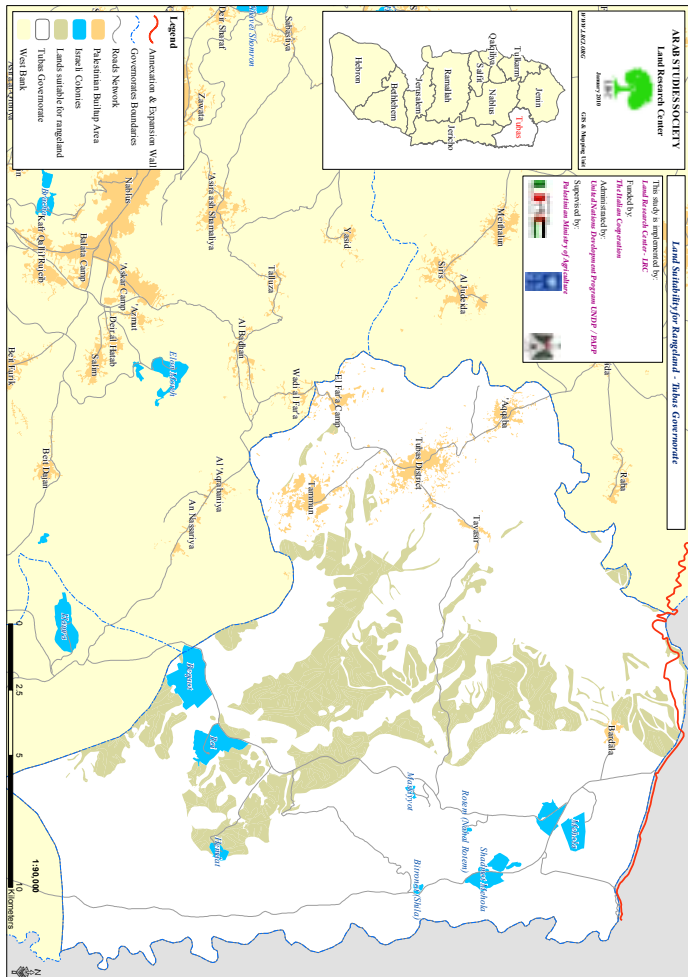
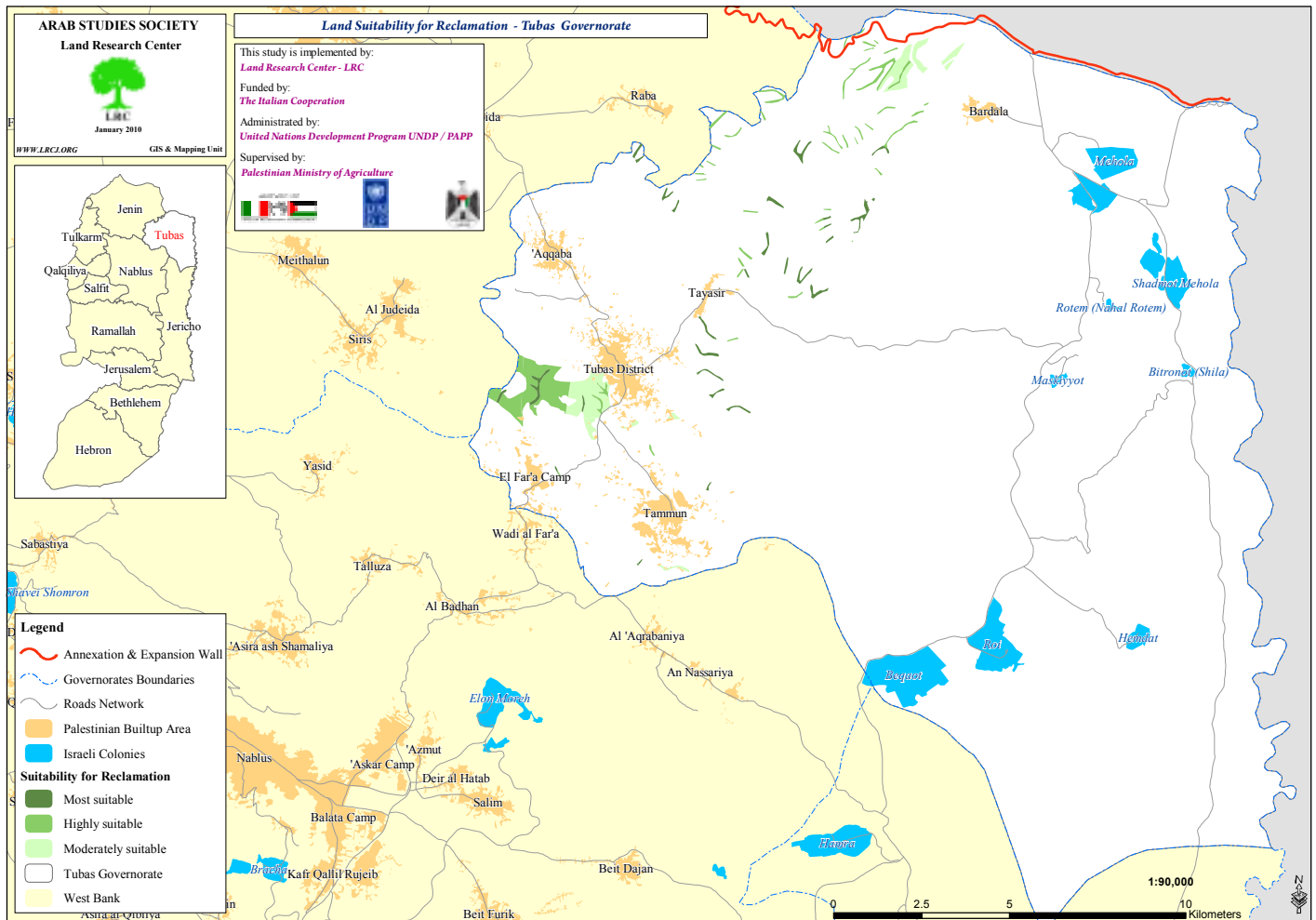
While physical preparation of land was the main concern for land owners, need for supplies, especially seeds input and fertilizers, was the concern of 89% of the sample. The high prices of seeds, fertilizers and pesticides besides defect seeds bought, was the reason for stressing on the supply for agriculture.

Regardless of the available water resources such as water springs, respondents indicated an urgent need for water when considering reclamation, in addition to the financial aid, which was required by half of the sample.





III.2.11 Tubas Governorate (TubG)



III.2.11 Tubas Governorate (TubG)

III.2.11.1 Introduction

TubG at a Glance

The Governorate of Tubas (TubG) is bordered from the north by the green line and JenG, from the east by the Jordan River (the Jordan Valley and Bisan), from the south by NG and from the west by NG and JenG. The area of the Governorate is 366 km², which constitutes about 7% of the total area of the WB. The City of Tubas (which is the center of the Governorate) is the only city in the governorate.

Demographic Indicators

The population rate has been affected by a number of natural and political factors including the migration waves and the conflict with Israel. According to the PCBS - 2007 census, the population of the Governorate was 50,261 (2 % of the WB population). The population density in the Governorate is about 119 persons per km².

Economic and Social Indicators

In TubG, the labor force participating rate is 41.5% and the unemployment rate is 16.7%²³¹. The number of households which are linked to water, electricity and sewage is 8,628²³². Agriculture is an important source of income in TubG. The average number of household members in the TubG is 5.6²³³.

Infrastructure

The urban communities in Tubas which is provided by water through networks is 9 communities and 12 communities are lacking this service. Related to electricity, there are 14 communities with electricity supply and the other 7 localities are lacking electricity.

Environmental Indicators

The environment in TubG is suffering from the same threats similar to other governorates in the WB. However, the excessive use of fertilizers, pesticides and insecticides as it is used in the agricultural production represent a serious environmental threat in TubG. TubG has a climate that provokes soil erosion, which has the form of gully and sheet erosion.

Political conditions²³⁴

TubG is located in the upper northern area of the Jordan Valley . About 27.6% of the total area of TubG (841000 dunums) exists in the Jordan Valley area. It is bordered by Nablus Governorate from the south and Jenin Governorate from the north. The Governorate has an area of 365983 dunums (6.5% of the total area of the West Bank) with a total population of about 48127 residents according to the Palestinian Central Bureau of Statistics population projection 2006.

The Segregation Wall in TubG extends a length of 14.3 km. It was constructed during the first phase of the Segregation Wall in 2003. It commences from southeastern part of Al Mutalla village in the upper Jordan Valley penetrating deep into the lands of TubG (about 1 km) and continues eastwards until it reaches the far upper east of TubG. The Wall isolated a total of 1845 dunums of TubG land area, most of which are Agricultural.

231. Ibid

232. Ibid

233. PCBS, Main Indicators By locality Type. 2009.

234. www.poica.org

III.2.11.2 Physical Features of TubG.

As indicated in the methodology, physical features of TubG that affect the land suitability for reclamation would be summarized in: landform elements, slope steepness, aspect, rockoutcrop and climate. The total area of the non-agricultural land that would be suitable for reclamation (NA) is 5.9 km², which constitutes about 1.6% of TubG area. The above mentioned physical features would be described as follows:

Landform Elements Classes

The landform element classes that are defined in the non-agricultural area (NA) of TubG are: slope, footslope, hillcrest and drainage depression. The different landform elements, which were used for assigning land suitability for reclamation, can be described as follows (Annex 1 displays the landform elements distribution of all Governorates):

Slopes: this landform element is prevailing in the area. It ranges from the gently inclined slopes (3-8%) to the steep slopes (18-32%). It covers an area of about 2.9 km², which is equivalent to 49.3% of the NA and less than 1% of TubG. It is mainly part of uncultivated hills with high percentage of rockoutcrop.

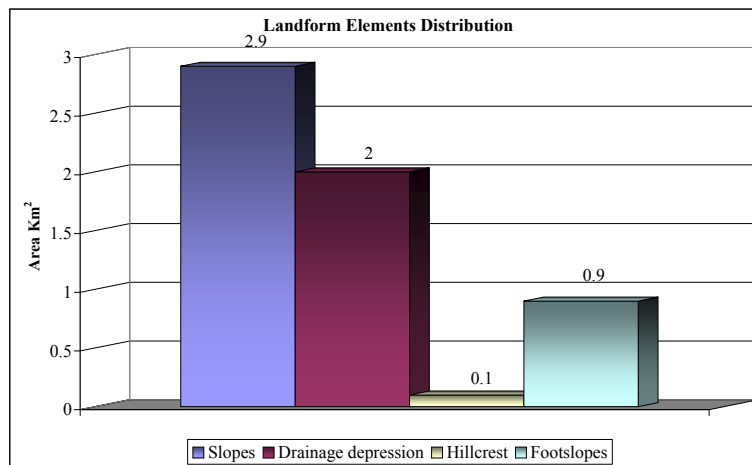


Figure 76: Landform elements in the NA of TubG

Drainage Depressions: It has an area of about 2.0 km², which represents about 33.7% of the NA and less than 1% of TubG. It displays nice spots of arable land among the very and moderately steep slopes. Sometime it can be considered as an extension of the plains and undulating plains within the hills. It can be considered also as a form of elevated valleys.

Hillcrests: It has an area of about 0.1 km², which represents about 2.0% of the NA and less than 0.1% of TubG. It is composed of small spots sometimes cultivated. Not all the hillcrests in the TubG are mapped because the area of those hillcrests is small and cannot be shown at small scale map in this report.

Footslopes: It has a comparatively small area of about 0.9 km², which represents about 15.0% of the NA and less than 1% of TubG. It is a transitional area between slope and plain with moderate or low percentage of rockoutcrop.

Slope Steepness Classes

The following slope classes would be described in the NA (Annex 2 displays the slope steepness distribution of all Governorates):

Slightly inclined slopes - S0 - (<3%): this type of slope is usually located at the hillcrests and sometimes the footslopes. It usually represents level area. It covers an area of about 0.1 km², which is equivalent to 2.0% of the NA. It is mainly part of the uncultivated hills with low percentage of rockoutcrop.

Moderately inclined slopes - S2 – (8-18%): this type of slope is located at the hillslopes with rolling low hills and moderately steep hills landform patterns. It covers an area of about 2.9 km², which is equivalent to 49.2% of the NA. It is mainly part of the uncultivated hills with moderate percentage of rockoutcrop.

Steep slopes - S3 - (18-32%): this type of slope is located at the hillslopes with steep and very steep hills as a landform pattern. It covers an area of about 2.9 km², which is equivalent to 48.8% of the NA. It is mainly part of the uncultivated hills with comparatively high percentage of rockoutcrop.

Aspect Classes

The statistical data derived from the aspect map is shown in Annex 3 among those of other governorates. Within TubG, the northern and western aspects (Mighian) composes about 1.2% of the NA, whereas those with eastern and southern aspects (Mishmas) occupies about 8.5% of the NA.

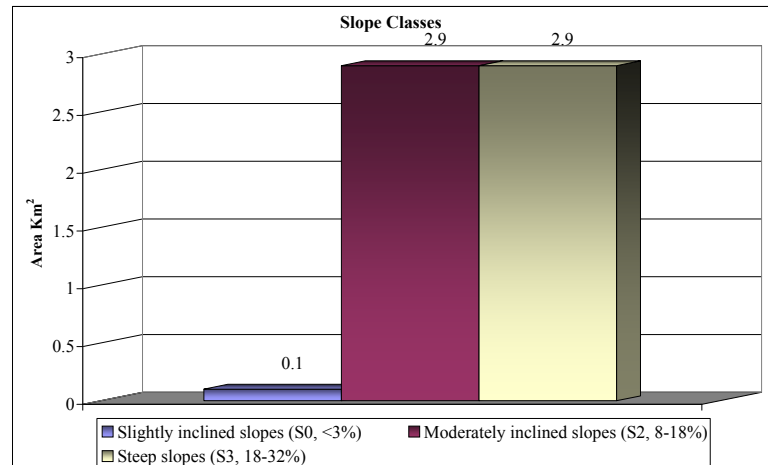


Figure 77: Slope classes in the NA of TubG

Rockoutcrop Classes

The statistical data derived from the rockoutcrop classes is shown in Annex 4 among those of other Governorates. Most of the area (100%) has a high rockoutcrop (>20%). This is an indication that the main reason of non-cultivation is natural.

Climate Classes

The total area of the arid class is 3.9 km², which is comprising about 66.6% of the NA; the area of the semi arid part is 2.0 km², which represents about 33.4% of the NA. The following chart display the two climate classes with their conjugate area:

The majority of NA is suffering from aridity and occupying most of the area (100%). This degree of aridity imposes hard restrictions on utilizing this land for agriculture in the absence of control and special management. The semi arid, which is a promising agricultural land, is unfortunately suffering from urbanization sprawl according to the population distribution.

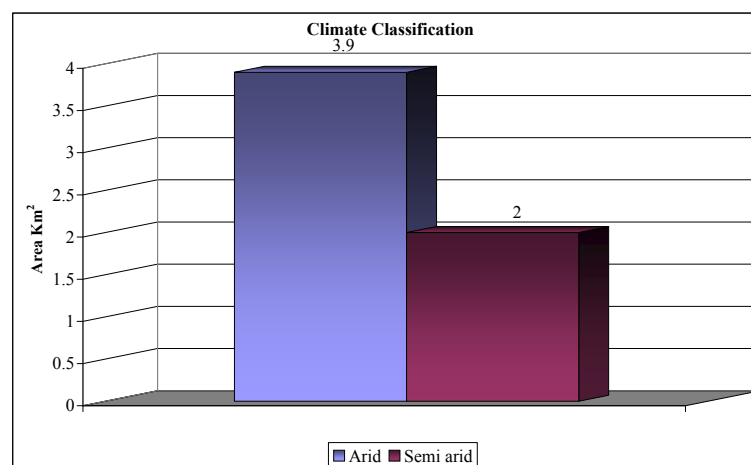


Figure 78: Climate classification of NA in TubG

III.2.11.3 Results and Analysis

Land Suitability for Reclamation

The above mentioned primary data represented in the physical features of the non-agricultural area composes the core of the analyses for the preparation of the land suitability map of the NA. The following map displays the land suitability classes for reclamation in TubG.

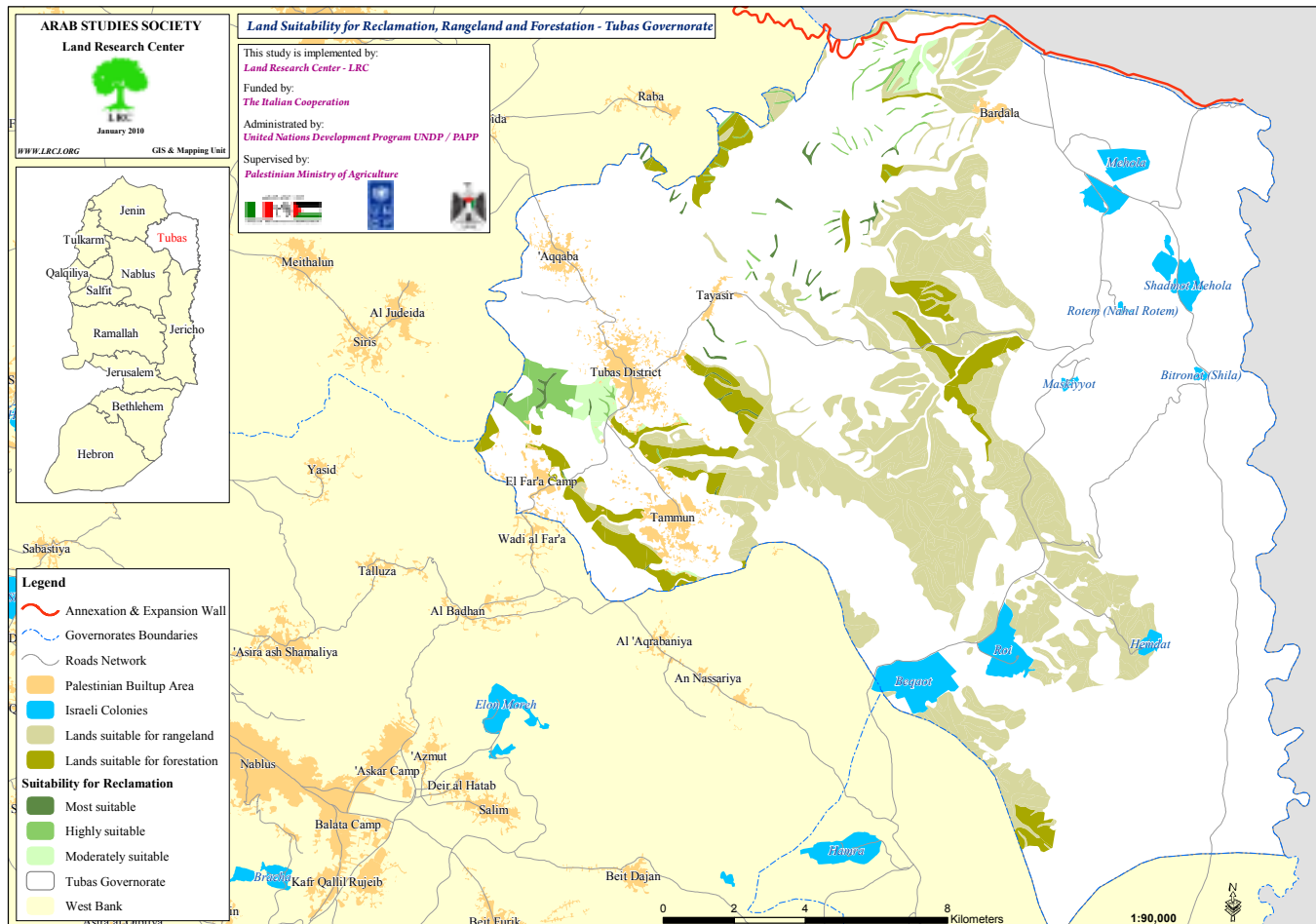


Figure 79: Areas of land suitable for reclamation, forestry and rangeland in TuG

The areas of the four classes are shown in the following table:

Table 101: Areas of suitability classes for reclamation in NA of TubG.

Suitability classes	Area (km ²)	Area %
Most suitable	0.9	15.9
Highly suitable	2.8	47.9
Moderately suitable	2.1	36.2
Total	5.9	100

Figure 80 reveals that the most suitable class for reclamation represent the smallest area among all classes (15.9%). Land suitable for reclamation is located at the mid-eastern and mid-northern parts of the Governorate closer to Tubas and Bardala towns respectively.

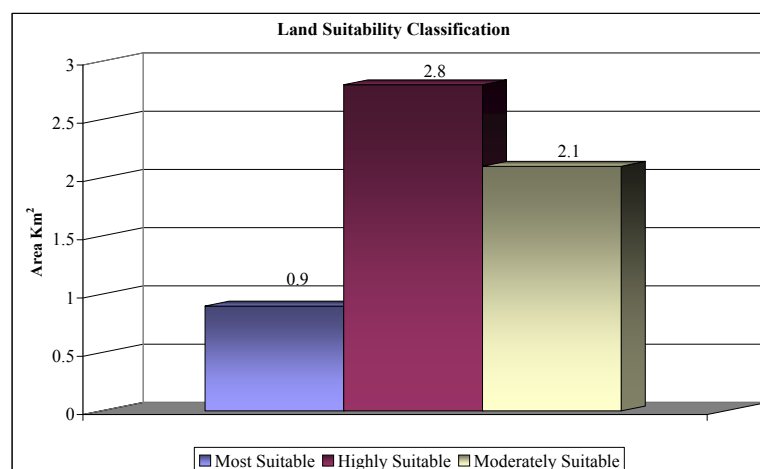


Figure 80: Land suitability for reclamation classes in NA of TubG

Land Suitability for Forests and Rangeland

The total area in TubG that is classified as suitable for forests and rangeland is estimated at about 74.0 km². This land has this classification as a result of one or more of the physical features components (slope, rockoutcrop and climate). To consider the land suitability for forests from this land, the rainfall should be more than 300 ml/year and the rockoutcrop should be less than 40%. The area of land classified as suitable for forestry is estimated at about 16.1% (see Figure 81). This area represents about 3.2 % of TubG area. This percent does not mean that this is the only land suitable for forestry but it rather means that the most suitable use of these sites is forestry after excluding the land suitable for reclamation. The areas of the land suitable for forestry and rangeland are shown in the following table:

Table 102: Areas for land suitable for forestry and rangeland in NA of TubG.

Suitability classes	Area (km ²)	Area %
Forestry	11.9	16.1
Rangeland	62.1	83.9
Total	74.0	100

The results indicated that the majority of the land in TubG, which is not suitable for reclamation, is suitable for rangeland (83.9%), whereas the rest of the area is suitable for forestry (16.1%), which is comparatively low.

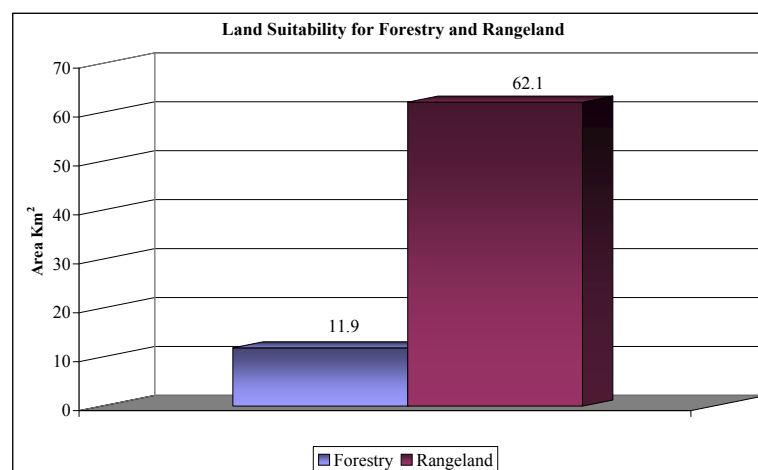


Figure 81: Land suitability for forestry and rangeland in NA of TubG

III.2.11.4 Socioeconomic Status

The Household Composition and Involvement in Agriculture

The average number of household members in TubG is 5.6²³⁵; where the corresponding average for the sample studied in TubG separately was 7.9. This high number was highly desired and supported by the culture in an agricultural society, more children means more workers, which is translated to economic and food security. The average number of family members helping in agricultural work was 2.4 members excluding the main farmer, comparing it to the average number of household members in TubG; almost 30.4% of the typical family gets involved in agriculture, which reflects an agricultural society.

Analysis also revealed that the majority of farmers in TubG have a modest level of education. Table 103 shows that 64.8% had received some formal education up to high school, 22.3% of the sample are well educated and holding a higher degree than Tawjihi. This adequate level of education could be a suitable condition for providing and implementing future trainings or the adoption of new techniques for production.

With regard to knowledge and experience in agriculture, the average years of experience in agricultural work among respondents was 22.2 years, which was mainly accumulated through inherited experience. Respondents showed a great dependency on inherited experience as the main source of the (know-how) in agricultural production. However, 83% of farmers depend only on what they have learnt from older family members who worked or are still in work, or are getting advices from neighboring farmers, but these farmers were never attended short courses or universities nor did they receive any technical training. This shallow knowledge almost half of the farmers have, as explained later, has been a barrier to a successful agriculture. Yet, the remaining part of the sample have learned how to farm depending on inherited experience in addition to other sources of information, such as attending short course and studying agriculture engineering. The percentage of people considered educated professionals who graduated from universities with agricultural degrees and working in agriculture was not high and represented 12% of the sample. Moreover, farmers who ever attended at least one short course in agriculture represented 2% of the sample. This indicates how tremendously agricultural work in TubG depends on non-scientific traditional techniques of production based on bounded-rational decisions when choosing crops, fertilizers or pesticides as clarified by respondents. This high dependency of inherited knowledge explains how outdated the farmers' knowledge about modern methods and technologies used globally, which reduces their efficiency and effectiveness in production.

According to the EC new definition of SMEs²³⁶, agricultural production is mainly dominated by micro and small-scale farms that generate about 98% and 2% of total production in the TubG respectively. Most agricultural economic activities are classified under family businesses; 70% of the sample narrows labor to family members only. Almost 30% of farmers go beyond family members to employ seasonal labor; these farmers employ 4.3 employee on average. These facts reveal how agricultural production is of a micro-scale nature in this governorate counting mainly on family members of whom 42.6% are considered self-employed.

Unsurprisingly, 98.1% of the households studied were headed by males, given the paternal culture in the oPt; males are in charge for the land or agricultural activities. Males run the farm by making decisions, yet intensively counting on females in the family to help and do a large portion of the physical work as shown by the data gathered. Since it is not common to count only on agriculture to guarantee an adequate standard of living; male members of families usually have a second main job or they attend school, leaving

Table 103: Farmer's Level of Education

Educational status	Frequency	Percent
Uneducated	7	13.0
Primary education	9	16.7
Secondary education	16	29.6
High school	10	18.5
Diploma	7	13.0
Bachelor's degree or above	5	9.3
Total	54	100

235. PCBS, Main Indicators By locality Type. 2009.

236. Commission, E., SME User Guide explaining the new SME definition 2005: p. 14.

the field to be taken care of by females. Analysis showed that females represent 71% of the family labor in the sample. Moreover, family members who are usually participating in agriculture are mainly children or grandsons below 18 years old²³⁷.

Analysis showed that 39.6% of the farmers are 51 years old and above. Therefore, opposite to the southern governorates, the majority of active farmers are relatively young, this shows that more youth are being attracted by agriculture. The most common motive behind this attraction was achieving a level of self-sufficiency with agricultural products they produce, besides, many of the households count on agriculture as a competitive source of income. In addition to profits, many households were considering agriculture as a main part of their inherited culture, and though they have to maintain the land for agriculture and protect against possible confiscation, 41.2% of the sample considered their land threatened by confiscation, and showed a real will to continue cultivating the land as a strategy for protecting the land.

Common Economic Activities and the Standard of Living

The most common activity in the targeted areas is farming, which constitutes a common source of income for households where 98% of households interviewed in targeted areas were farmers. Heads of households usually have more than one source of income. Thus, there were other kinds of common activities among the inhabitants of the targeted localities; 52% of the sample is employed as blue or white-collar employee and 17% work with livestock.

Despite the fact that most households inhabiting the targeted areas are involved in agriculture, only 31.5% of the sample showed enthusiasm about agriculture, the rest preferred to have a different option such as employment with consistent salaries or private businesses.

Despite the high involvement in agriculture, many farmers in the TubG consider agriculture more as a secondary rather than a primary source of income. Analysis showed that 37% of the sample working in agriculture classified it as a major job, while 61% of the sample perceived farming as a secondary job. As Table 104 shows, household's average income from agricultural work is 697 NIS; this number includes income generated by those working in agriculture as a primary and secondary job, while respondents who considered farming as a major occupation had an average income from agricultural work of 1,100 NIS. Based upon this and depending on the average family size of the sample as well as the PCBS measures of living standards in southern WB²³⁸, households counting solely on agriculture live under poverty line, these households represent 17% of the entire sample.

Table 104: Type of Farmer and Respective Average Income

Type of farmer	Percent	Average Income
Farmer as primary job	37	1,100 NIS
Farmer as secondary job	61	411 NIS
Farmers in sample	98	697 NIS

Based on household's size, their income and the PCBS classification of poverty according to the household monthly income²³⁹; households living under poverty line are estimated to be 85% in the targeted areas. Spending more than monthly income was a common practice in the region, which is indicating the dependency of some households on transfers, micro loans and/or cash through safety nets. Spending is mainly on basic physical needs such as food cash expenditure, which represents the main category of expenditure. Clothing, with transportation and communication, were the second and third larger expenses for this group respectively²⁴⁰.

237. PCBS, On the Occasion of (Palestinian Children's Day), PCBS, Editor. 2009: Ramallah.

238. PCBS, Poverty in the Palestinian Territory. 2007.

239. Ibid

240. PCBS, Expenditure and Consumption Levels: A Quarterly Report. 1997, PCBS: Ramallah.

Crop Diversification

The study showed a high dependency by farmers in TubG on rain-fed fruit trees. As shown in Table 105 below, 80% of farmers own rain-fed crops which have a key role in their economy and food production basket.

On the one hand, rain-fed trees formed 70.6% of the production basket of the localities studied, whereas irrigated trees are the least planted; this could be explained by their high dependency on water which is scarce in the governorate and the fact that fruits bearing is accompanied by small annual income, which makes planting fruits less profitable than other kinds of crops.

Irrigated and Rain-fed vegetables were also used in TubG by 19.6% and 13.7% of the farmers respectively. Evidently, most farmers use a minimizing-risk strategy by diversifying the types of crops they grow. Farmers cultivate a collection of 2-3 different kinds of crops, which minimizes risk.

The common fruit trees in Tubas are olive, orange, lemon and clement. Common vegetables produced are mainly cucumber, tomato, eggplant and squash. Field crops produced are mainly wheat and dry onion ²⁴¹.

Livestock

Husbandry in TubG is relatively moderate. In total 18.5% of the sample raise livestock, which reflects a moderate level of dependency of livestock in TubG, 5.5% of the household earn their living mainly from husbandry, while 13% of the sample raises livestock as a secondary job. Generally speaking, livestock numbers in TubG have decreased over the past years; the numbers of cattle and sheep have slightly decreased while goats and bee hives have slightly increased in number²⁴².

Agricultural Machines and Equipments and Input Use

Generally speaking, Tubas is the fifth among other governorates possessing agricultural machinery. 7.5% of agricultural machinery in the WB are located in TubG, these equipments mainly consist of; four-wheel tractors, trailers and water tanks²⁴³.

Agricultural organizations in TubG are quite active and formed the main source of inputs with 94.4% of the sample counting on them. There is a high percentage of farmers producing their own inputs of seeds which made 64% of the sample studied. This source of seeds has been developing as a result of the unhealthy plants they buy or receive as aid, price hikes or to maintain a certain species of high-quality local crops. The demand of local nurseries' goods, opposite to other governorates, comes in the third place with 57.4% of the sample using it.

Table 105: Distribution of Farmers According to Crops Produced

Types of crops	Frequency	Percent
Field crops	41	80.4
Trees depending on rainfall	36	70.6
Irrigated vegetables	10	19.6
Vegetables depending on rainfall	7	13.7
Irrigated trees	4	7.8

Table 106: Source of Seeds Used in TubG

Source of seeds	Frequency	Percent
Agricultural organizations	51	94.4
Self-made	35	64.8
Local nurseries	31	57.4
Israeli dealers	1	1.9

241. PCBS, Production of Field Crops, Fruit Trees, Vegetables in the Palestinian Territory by Governorate and Crop. 2006/2007.

242. PCBS, Agricultural Statistics, PCBS, Editor. 2003/2004/2005/2006/2007, PCBS: Ramallah.

243. PCBS. Number of Agricultural Machines and Equipments in the Palestinian Territory by type and Governorate, 2006/2007. 2007; Available from: http://www.pcbs.gov.ps/Portals/_pcbs/Agriculture/tab%205.htm.

Water

The study shows that water reserves for agriculture were considered enough by only 3.6% of the farmers, while the rest considered it as inadequate and scarce. Moreover, 84.9% of the farmers in these areas considered lack of water as a very important constraint in the farming systems, which is hindering agricultural projects.

Table 107: Percent Use of Water Source

Water source	Frequency	Percent
Purchasing tanks	17	34.0
Cisterns wells	12	24.0
Artesian well	7	14.0

The scarcity of water has clearly directed most of the agricultural production in the targeted regions within TubG toward rain-fed crops. 7.4% of the sample did not use water at all, which was explained by cultivating rain-fed crops only. Yet, the rest of the farmers explained that most of the scarce water used for irrigation comes from private water tanks as shown in Table 106; where it is utilized by 34% of the targeted areas. Despite its high cost, it is preferred among other kinds of sources due to its high availability. Water tanks are available on demand and can be delivered to the fields regardless of how far they are from villages or public networks, given the scarcity of other sources, water tanks have become a priority. Retaining wells (cisterns) come in the second place; the study showed that 24% of the farmers who are using water in the production depend on this source for irrigation. Nevertheless, farmers usually utilize more than one kind of water source either as a substitute or a complementary source. Remarkably, neither public water nor spring water are utilized for irrigation purposes. However, artesian wells are competing for 14% of the sample.

Reasons Behind Underutilization of Land

Most of the lands located in the targeted areas are currently utilized in agriculture. 77.4% of the households utilize their lands in agriculture, where the rest of the landowners are not utilizing it at all. A total area of 67.3% of the land owned by the sample studied in TubG is underutilized; and the reasons behind not utilizing land in agricultural activities can be summarized in order of importance for the sample as shown in Table 108:

Table 108: Reasons For Not Utilizing Land in Agriculture

Reason	Frequency	Percent
Lack of financial capital	48	90.6
Land needs reclamation	47	88.7
Lack of water	45	84.9
Drought	33	62.3
Competition of israeli products	25	47.2
No roads leading to it	22	41.5
Closeness to settlements	19	35.8
Israeli forces prevent reaching land	18	34.0
No market	17	32.1
Low profitability of agriculture	14	26.4
Land's nature is inappropriate for agriculture	7	13.2
Owned for investment reasons only	4	7.5
No time to plant it	2	3.8
Land size is small and not worth planting	2	3.8
Owned for construction reasons only	1	1.9
Lack of the know how	1	1.9

As shown by the results, the main reason for inefficient use of land by most households is the combination of inappropriate physical conditions of the land and the lack of financial capital. The physical preparation of land such as building retaining walls, roads, and flattening the land is quite expensive relative to the insufficient savings by the households in the targeted areas, which represent an average of 2.5% of their income.

Lack of water is considered the second obstacle hindering the start of an agricultural initiative. Half of the landowners revealed that the insufficient quantities of money for irrigation are an obstacle that is hindering the reclamation process.

The lack of roads linking farmers to their land has been a dominant obstacle to reclamation. Besides the few number of roads available, farmers in the studied localities have been facing a serious problem caused mainly by settlements surrounding their land. Restrictions on mobility imposed by Israeli forces to secure settlements have caused villagers to take hard alternative roads, which is discouraging them to visit their land or investing it in agriculture.

Other constraints stressed during meetings and interviews included the high competition of the Israeli products that is usually of lower prices due to the high tech used. In addition, lack of understanding the current demand of the market for appropriate product and avoid the excess supply, both have pushed down the prices and discouraged agricultural productions due to its low profitability.

Level of Acceptance for Reclamation

The sample showed a great willingness to invest available abandoned land in agriculture, 98% of the sample had in mind to plant the available land as a future plan. 80% of the sample expressed their strong will to invest in agriculture and considered it as an urgent priority.

On the other hand, the ability to contribute financially in agriculture was not high; the maximum contribution respondents are able to make is no more 10.1% of the total amount spent on reclamation. More specifically, the sample showed capability to participate with an average of NIS 215 per dunum for his/her land reclamation. As mentioned above, one of the major obstacles facing further utilization of agricultural land was the lack of financial capital.

It is worth noting that not only farmers, but most other non-farmers villagers, as well, were very much willing to invest their available land in agriculture, mainly as a (for-profit investment) with expected future income and/or for domestic consumption respectively. Apparently, most of landowners willing to undertake agricultural work are looking either for a second source of income except pension salary or profit from other businesses, which is mostly due to the low profitability of the business and the high risk involved.

98.1% of the households owning abandoned land proclaimed to have serious future plans of investing land in agriculture. While the rest proclaimed to have no future plans for the land. Moreover, 98% of the sample willing to invest in agriculture will plant the developed land themselves with the help of the family, which reflects a real will to utilize future developed land. Those who have already gone through a reclamation program made up 21% of the sample, while 91.7% have been successfully planting their developed land until the time of this study. These overall results indicate a good potential for reclamation initiatives and directing landowners to invest in agriculture.

Priorities as Perceived by Farmers

Households within the targeted localities have shown an expectation to fulfill a variety of needs when developing their land, Table 109, demonstrates needs for reclamation according to the priorities classified by respondents, the most common needs in the targeted area were the land's need for mechanical reclamation, linking land to water and providing healthy supplies.

Mechanical reclamation of land, so as to ensure the appropriate physical conditions to accommodate agricultural activities, was the main concern for land owners, the need for water sources emerged, which was the concern of 82.4% of the sample. In the same way, the need for supplies, especially seeds input and fertilizers, was the concern of 82.4% of the sample. Financial aid and fertile soil were also on the needs list, were harvest equipment and labor were the least needed on the list.

Table 109: Land's Need for Reclamation

Need	Frequency	Percent
Heavy machines	47	92.2
Water source	42	82.4
Supplies (seeds, fertilizers...)	42	82.4
Retaining walls	40	78.4
Financial aid	29	56.9
Fertile soil	23	45.1
Harvest equipment	5	9.8
Labor	4	7.8

IV. Conclusions and Recommendations

IV. Conclusions and Recommendations

The following main conclusions and recommendations are drawn out of the findings of this study:

First: Land Suitability for Reclamation of the Non-agricultural Land

The suitability for non-agricultural land in the WB for reclamation would be assigned based on two spatial scales, these scales are:

1. The Macro-scale (West Bank Level):

At the West Bank level, three main factors were taken in consideration: person/km², US\$/person out of the agricultural productivity and the area of land suitable for reclamation. This is a macro-scale economic window that is directed to figure out the suitability for reclamation at the national level. The ranking of the governorates according to these considered factors is:

Jerusalem Governorate should have the first priority in the land reclamation projects followed by Hebron Governorate. These two governorates are followed by Ramallah, Nablus, Tulkarm, Bethlehem, Qalqilya, Jenin, Salfit, Tubas and Jericho Governorates respectively.

The danger of land confiscation is considered the biggest threat on the Palestinian land that lead to the necessity of exerting more pressure to act by implementing land reclamation and rehabilitation projects. So far, donors have been the most forthcoming in areas where projects and programs are deemed most acceptable in the eyes of Israel. More efforts are needed in critical areas other than those with high accessibility and away from Israeli existence and so from troubles.

There is a need for political and international support to find substitutes for the Israeli market and demand, favorably in the surrounding Arab countries. Apparently, increasing the productivity of the Palestinian farmer by itself is not sustainable unless a sufficient demand exists to absorb the products and prevent losses caused by surplus. In addition to that, enhancing mobility of individuals and products both inside and outside of the West Bank is a vital step.

Linking farmers with specialized financial institutions is a top list priority, such as microcredit institutions, who provide micro-loans for agriculture, and providing loan guarantees for new agricultural investment, should be the very next step after reclamation work is complete.

The urgent need to develop new water resources was acknowledged by all targeted areas. Constructing artesian wells, developing existing resources through spring and cistern upgrading and developing projects to maintain and control surface water where applicable were encouraged by stakeholders and perceived as the real need at ground.

There is a need for a comprehensive insurance system emerged as an urgent priority. Many active farmers were discouraged by the numerous times they were struck by curfews and calamitous weather conditions and fatal diseases.

There is a clear need for training among farmers and landowners. This is essential for the sustainability of reclamation works and for an effective land utilization, training should include, but is not limited to: acquiring new farming techniques, choosing appropriate crops given the characteristics of land, agricultural seasons, and market demand, it also should introduce modern technology used in agriculture, proper use of fertilizers and pesticides, their advantages and drawbacks.

Coaching and support; there is a need for follow up by supporting organizations to insure the success and sustainability of reclamation work, in addition to, new projects. This support could also include incubation options for new enterprises. There is a critical need for specialist support to provide advice on different levels of the production process, starting from planning and ending with marketing.

There is a need for subsidizing the purchase of fertilizers and animal fodder, especially the locally produced animal fodder and for supporting local nurseries to enhance their productivity and production quality.

2. The Intermediate-scale (Governorate Level):

At the governorate level, the physical features combined with socio-economic status are playing the decisive role in classifying land suitability for reclamation. The suitability classes were summarized in tables and displayed in maps. However, the following factors would play important role in distinguishing the NA among classes with the same suitability:

- **Household Status:**

The economic, natural and human capital of the household should be evaluated to help in prioritizing the land suitability for reclamation.

- **Environmental Status:**

The degree of land degradation in an area is an important factor that decides the priority for land reclamation. Soil erosion, soil salinization, soil pollution, etc are examples of land degradation processes.

- **Political Dimension:**

The viability of the land to be confiscated, demolished or closed by Israeli Military Occupation Authority, due to its vicinity to the separation wall, are important factors that should be taken into consideration in prioritizing land suitability for reclamation.

Second: Land Suitability for Reclamation of the Non-agricultural Land Inside Land Classified as Agricultural

The land suitable for reclamation of the non-agricultural land inside the land, which is classified as agricultural according to CORINE first level classification of land cover/use, would be considered as an important reserve for increasing the agricultural area. In BG, the area of the identified spots of the non-agricultural land inside the land classified as agricultural, is comparatively small (8.5 km²). Underutilization is mainly related to slope steepness and high percentage of rockoutcrop, in addition to being located mainly in arid area. In NG, the area of these identified spots is comparatively high (21.6 km²). Underutilization is mainly attributed to slope steepness (86%) and the high percentage of rockoutcrop. On the contrary to BG, the identified spots are mainly located in sub humid areas, which would be considered as a motivation to reclaim these spots.

The main reason for underutilization of these spots is natural rather than human. Investing in reclaiming these spots would be of great economic value, especially in the sub humid areas.

It is recommended to promote household economy as the core driving force of rehabilitation of the identified spots. Simultaneous promotion of the natural and human capitals for the deprived families that have land in these spots would be of both economic and social value.

Third: Land Suitability for Forest and Rangeland

As for the land suitability for forests and rangeland, taking the land suitable for reclamation and the livestock production in each governorate as indicators for determining the priority of land use as a rangeland, the priority for each governorate for rehabilitation land suitable for rangeland would be ranked as follows:

HG should have the first priority in land rehabilitation for rangeland followed by BG with higher priority than other governorates. These two governorates are followed by Ramallah, Nablus, Jenin, Jerusalem, Tubas, Jericho, Tulkarm, Salfit and Qalqilya Governorates respectively.

Fourth: Suggested Future Investigations

Based on the findings of this study and for the purpose of widening the future vision for better land development, the following actions are recommended to be taken into consideration in the future:

1. ***Modifying current implementation strategies:*** Utilizing the prepared database in this study necessitates the adoption of new or modified strategies for the selection of land to be reclaimed and designing the land development plans.
2. ***Adopting informative land development policies and strategies:*** Land use planning should be the main pillar lifting any future land development policies. The following would be sample of legislation and strategies to be implemented in this regard:
 - Issuing a legislation to prevent constructing residential buildings, industrial zones or stone quarries in areas identified as suitable for reclamation.
 - Issuing an ad-hoc legislation regulating the misuse of land suitable for forestation and rangelands.
 - Stop licenses for industrial zones, landfills, and sewage treatment plants without referring to the study's results.
3. ***Dissemination of the results and knowledge produced in the context of this Study.*** This would be done through the following actions: Conducting detailed workshops for all stakeholders in all governorates.
 - Training competent staff members on the practical use of the most important outputs of the study.
 - Providing the concerned directorates with the needed hardware, software and the relevant results to their work.
 - Establishing a serious coordination and cooperation network so as to enhance the coordination among all types of organizations that are operating in the selected sites.
4. ***Undertaking complementary studies and researches:*** The following are recommended studies that would optimize the utilization of the study outcomes and outputs:
 - There is a need to have a breakdown for land suitability in terms of deciding the most appropriate agricultural species that would be planted in each ecosystem and in each governorate. This action would optimize the agricultural productivity in terms of quality and quantity, in addition to give opportunities for introducing new species in some areas. This is one of the emerging needs during the process of land reclamation.
 - Identification of the sites that are suitable for reclamation within areas that are classified as agricultural lands, which is estimated to be 10% out of the total cultivated areas (1,518 Km²), that would be equivalent to 151 Km².
 - Delineation and description of existing forests - public or private.
 - Reassessing areas of public, state, and treasury land... etc with its current use, size of confiscated land and determining what is left to intervene.
5. ***An assessment of current technology used by Palestinian farmers and possibilities of upgrades:*** the basic level of existing agricultural technology farmers have access to; their minimal outdated knowledge of agriculture which depends to a large extent on inherited knowledge. An assessment of current technology used by the Palestinian farmer and possibilities of upgrading, combined with the level and basis of their knowledge, as well as techniques used, is a constructive starting point in the field project development.
6. ***Land tenure in the WB:*** it is highly recommended to undertake a comprehensive study to improve cadastral maps to strengthen the man-land relationship and impede land confiscation, is of pressing need under the current circumstances.
7. ***Collectivism in the WB:*** a remarkable phenomenon of collectivism; buying land on large-scales North of the West Bank, mainly by wealthy Palestinian businessmen and immigrants is largely witnessed, which confuses and worries landowners. A separate study may be conducted to further investigate this phenomenon, its dimensions and probable outcomes.

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Annexes

Annex 1: Landform Elements Distribution of the West Bank Governorates (%/: landform element/ non-agricultural area X 100%)

Governorate	Slope		Drainage Depression		Hillcrest		Footslopes		Total	
	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%
Hebron	159.0	64.7	29.8	12.1	55.9	22.8	0.9	0.4	245.6	100
Bethlehem	18.0	71.7	1.4	5.5	5.7	22.8	-	-	25.1	100
Jerusalem	31.8	57.4	5.7	10.4	17.9	32.3	-	-	55.5	100
Jericho	4.5	68.8	1.1	16.6	0.9	14.6	-	-	6.5	100
Ramallah	32.6	54.7	14.3	24.0	12.7	21.4	-	-	59.7	100
Salfit	0.8	19.6	3.1	71.6	0.4	8.8	-	-	4.3	100
Nablus	24.0	55.2	2.9	6.8	15.9	36.5	0.7	1.5	43.5	100
Qalqilya	1.7	62.9	0.6	20.8	0.4	16.3	-	-	2.7	100
Tulkarm	7.6	77.6	0.1	1.1	2.1	21.3	-	-	9.8	100
Jenin	6.1	72.8	0.3	4.2	1.9	23.0	-	-	8.4	100
Tubas	2.9	49.3	2.0	33.7	0.1	2.0	0.9	15.0	5.9	100

Annex 2: Slope Steepness Distribution of the West Bank Governorates (%: landform element/ non-agricultural area X 100%)

Governorate	Slightly inclined slopes - S0 - (<3%)		Gently inclined slopes - S1- (3-8%)		Moderately inclined slopes - S2 – (8-18%)		Steep slopes - S3 - (18-32%)		Total	
	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%
Hebron	8.9	3.6	60.6	24.7	99.1	40.3	77.0	31.4	245.6	100
Bethlehem	5.7	22.8	1.5	6.0	4.8	18.9	13.1	52.9	25.1	100
Jerusalem	17.9	32.3	1.6	2.9	14.1	25.4	21.9	35.5	55.5	100
Jericho	0.9	14.6	-	-	1.5	23.0	4.1	62.4	6.5	100
Ramallah	12.7	21.4	-	-	21.6	36.3	25.3	42.4	59.7	100
Salfit	0.4	8.8	-	-	3.4	80.0	0.5	11.3	4.3	100
Nablus	15.9	36.5	1.0	2.2	9.8	22.6	16.8	38.7	43.5	100
Qalqilya	0.4	16.3	0.2	4.4	1.1	41.3	1.0	38.0	2.7	100
Tulkarm	2.1	21.3	0.8	8.3	2.8	28.7	4.1	41.7	9.8	100
Jenin	1.9	23.0	0.2	2.0	2.4	28.2	4.1	48.5	8.4	100
Tubas	0.1	2.0	-	-	2.9	49.0	2.9	49.0	5.9	100

Annex 3: Aspect Distribution of the West Bank Governorates (%/: aspect area/ non-agricultural area X 100%)

Governorate	Flat (No)		North (N)		Northeast (NE)		East (E)		Southeast (SE)		South (S)		Southwest (SW)		West (W)		Northwest (NW)	
	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%
Hebron	14.7	5.9	13.7	5.6	19.9	8.1	43.7	17.8	27.2	11.1	28.9	11.8	42.8	17.4	35.0	14.3	19.7	8.0
Bethlehem	5.7	22.8	0.5	2.1	1.8	7.2	2.6	10.4	5.4	21.4	2.6	10.2	5.3	21.1	0.5	2.1	0.7	2.8
Jerusalem	17.9	32.3	6.8	12.3	4.0	7.1	6.0	10.8	4.4	7.9	8.8	15.9	2.4	4.3	3.7	6.7	1.6	2.8
Jericho	1.1	16.9	1.3	20.5	0.4	6.9	2.1	32.2	1.0	15.2	0.5	6.9	0	0	0.1	1.0	0.1>	0.7
Ramallah	12.7	21.4	6.7	11.2	4.8	8.0	5.6	9.4	7.9	13.2	9.8	16.4	7.0	11.7	2.9	4.9	2.3	3.8
Salfit	0.4	8.8	0.2	5.6	0.1>	1.1	0.2	5.6	0.1	2.4	0.6	14.8	0.7	16.0	1.2	26.8	0.8	19.0
Nablus	15.9	36.5	0.8	1.9	4.3	9.8	4.8	11.0	5.6	12.8	4.8	11.0	4.9	11.3	1.1	2.6	1.3	3.1
Qalqilya	0.4	14.5	0.3	10.5	0.3	11.0	0.4	14.5	0	0	0.4	14.5	0.3	10.5	0.4	14.5	0.2	0.6
Tulkarm	2.1	21.3	0.9	9.2	0.9	9.2	0.6	6.2	1.0	9.8	0.9	9.2	0.9	9.2	1.1	11.6	1.4	13.9
Jenin	1.9	23.0	0.3	3.7	0.9	10.9	0.3	3.7	0.8	9.2	0.7	8.6	1.7	20.2	0.7	8.6	1.0	12.1
Tubas	0.1	1.3	0	0	1.5	25.8	0.2	3.2	0.3	5.5	0.3	5.5	3.2	54.0	0.1	1.3	0.2	3.2

Annex 4: Percent and the Size of Rockoutcrop Area Distribution in the West Bank Governorates

Governorate	0%		5%		10%		20%		30%		40%		Total	
	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%
Hebron	1.1	0.5	2.7	1.1	8.2	3.3	68.2	27.8	115.6	47.1	49.7	20.2	245.6	100
Bethlehem	0	0	2.9	11.6	9.1	36.1	3.8	15.3	5.1	20.2	4.2	16.8	25.1	100
Jerusalem	0	0	0	0	28.3	51.1	7.2	12.9	10.3	18.5	9.7	17.5	55.5	100
Jericho	0	0	0	0	0.1>	0.2	1.7	26.0	3.1	47.5	1.7	26.2	6.5	100
Ramallah	0	0	0	0	1.9	3.2	24.0	40.2	8.6	14.4	25.1	42.1	59.7	100
Salfit	0	0	0	0	0.1	2.1	3.1	71.6	0.2	5.3	0.9	21.0	4.3	100
Nablus	0	0	0.3	0.7	3.7	8.6	8.4	19.3	13.4	30.8	17.7	40.6	43.5	100
Qalqilya	0	0	0	0	0.2	8.7	0.8	29.5	0.9	32.4	0.8	29.5	2.7	100
Tulkarm	0	0	0	0	0.3	3.1	0.1	1.0	2.6	26.2	6.8	69.7	9.8	100
Jenin	0	0	0.2	1.9	0.9	11.0	2.1	25.3	2.3	27.2	2.9	34.5	8.4	100
Tubas	0	0	0	0	0	0	2.0	33.7	0	0	3.9	66.3	5.9	100

Annex 5: Climate classes distribution in the West Bank Governorates

Governorate	Arid		Semi Arid		Sub Humid		Total	
	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%	Area (km ²)	%
Hebron	162.9	66.3	66.1	26.9	16.6	6.8	245.6	100
Bethlehem	19.6	78.5	1.7	6.6	3.8	14.9	25.1	100
Jerusalem	43.8	79.0	8.5	15.3	3.1	5.7	55.5	100
Jericho	4.5	69.7	2.0	30.3	-	-	6.5	100
Ramallah	26.2	44.0	19.1	32.1	14.3	24.0	59.7	100
Salfit	-	-	0.1	1.9	4.2	98.1	4.3	100
Nablus	11.4	26.2	17.9	41.2	14.2	32.6	43.5	100
Qalqilya	-	-	1.1	40.1	1.6	59.9	2.7	100
Tulkarm	-	-	4.1	42.1	5.7	57.9	9.8	100
Jenin	1.1	12.9	3.3	39.5	4.0	47.9	8.4	100
Tubas	3.9	66.7	2.0	33.3	0	0	5.9	100

Annex 6: The Socio-economic survey questionnaire

Arab Studies Society
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مركز أبحاث الأراضي
القدس

يقوم مركز أبحاث الأراضي بدراسة تهدف إلى تحليل الوضع الاقتصادي والاجتماعي لأصحاب الأراضي القابلة للاستصلاح الزراعي في مدن وقرى الضفة الغربية لقياس جدوى وأولويات الاستصلاح والتنسيق بين مشاريع تطوير الأراضي المختلفة من أجل نتائج أفضل.

صمم هذا الاستبيان بهدف جمع معلومات حول موضوع الدراسة. ومن هنا يرجى الإجابة على الأسئلة بمصادقية شاكرين لكم تعاونكم ومؤكدين استخدام المعلومات المصرح بها لأغراض البحث العلمي فقط.

القسم الأول: معلومات عامة

1. العمر:

18 - 30 □ 31 - 40 □ 41 - 50 □ 51 - 60 □ 61 فأكثر □

2. النوع:

ذكر □ أنثى □

3. الدرجة العلمية:

□ لا يوجد (أمي) □ ابتدائية □ اعدادية □ ثانوية □ دبلوم □ بكالوريوس فأعلى □

4. عدد أفراد الأسرة في المنزل: _____ فرداً

5. المحافظة:

□ جنين □ طوباس □ نابلس □ طولكرم □ قلقيلية □ سلفيت □
□ أريحا □ رام الله □ بيت لحم □ الخليل □ القدس □

6. المدينة / البلدة: _____ القرية _____ الخربة _____
الموقع _____

7. تصنيف الموقع حسب الدليل _____ (للباحث فقط)

8. المهنة الأساسية الحالية:

□ مربّي أغنام/دجاج/نحل □ مزارع □ موظف □ عامل □
□ رجل أعمال(أعمال حرة) □ (حرفي) صاحب صناعة □ متقاعد □ عاطل عن العمل □

9. المهنة الثانوية التي تمارسها إذا وجدت:

□ مربّي أغنام/دجاج/نحل □ مزارع □ موظف □ عامل □
□ رجل أعمال(أعمال حرة) □ (حرفي) صاحب صناعة □ متقاعد □

10. معدل الدخل الشهري بالشيكّل (من المهنتين):

□ أقل من 1000 □ 1000-2000 □ 2000-3000 □ 3000-4000 □
□ 4001-5000 □ 5000-6000 □ 6000-7000 □ أكثر من 7000 □

11. معدل إنفاق العائلة شهرياً بالشيكّل:

□ أقل من 1000 □ 1000-2000 □ 2000-3000 □ 3000-4000 □
□ 4001-5000 □ 5000-6000 □ 6000-7000 □ أكثر من 7000 □

12. نسبة الادخار من الدخل الكلي للمهنتين: _____ %

13. ما هو النشاط الاقتصادي الأرقى بالنسبة إليك من الأنشطة الاقتصادية التالية (اختر إجابة واحدة فقط):
- ☐ الوظيفة ☐ التجارة والأعمال الحرة ☐ الزراعة ☐ تربية المواشي/الدجاج/النحل
- ☐ حرفة أو صناعة ☐ العمل في إسرائيل ☐ غير ذلك _____

القسم الثاني: معلومات عن الزراعة (للمزارعين فقط)

14. لماذا تزرع؟ (يمكن اختيار أكثر من جواب)
- ☐ الإنتاجية والربح (مصدر رزق) ☐ الاستهلاك المنزلي ☐ حب الأرض
- ☐ لوقف مصادرة الأراضي والحفاظ عليها ☐ لوقف التصحر ☐ عادة متوارثة
- ☐ تسليية في أوقات الفراغ ☐ غير ذلك _____
15. ما هو مصدر معرفتك بالزراعة: (يمكن اختيار أكثر من جواب)
- ☐ بالخبرة المتوارثة ☐ دورات في الزراعة ☐ دراسة جامعية
- ☐ إرشادات زراعية من مزارعين ☐ غير ذلك _____
16. ما هي سنوات خبرتك بالزراعة: _____ سنة
17. ما هو معدل الدخل الشهري من الزراعة بما فيه قيمة ما يتم استهلاكه منزلياً؟ _____ شيكل
18. عدد أفراد الأسرة - غيرك - المشارك ولو بشكل بسيط في العمل الزراعي: _____ شخص
19. إذا كان هنالك من يساعدك في العمل الزراعي من أفراد العائلة فهم: (يمكن اختيار أكثر من جواب)
- ☐ من الإناث (الزوجة/ الأم/ الأخت/ الابنة) ☐ من الذكور (الأبناء/ الأخوة/ الزوج/ الأب)
20. عدد أفراد الأسرة - غيرك - الذي يعمل معك في الزراعة على الأقل 15 ساعة أسبوعياً دون أجر: _____ شخصاً
21. عدد أفراد الأسرة - غيرك - الذي يعمل معك في الزراعة على الأقل ساعة واحدة أسبوعياً بأجر: _____ شخصاً
22. عدد العمال - عدى أفراد العائلة المقيمين معك في نفس المنزل - الذين يعملون معك في الزراعة بأجر: _____ شخصاً
23. الأصناف التي تزرعها هي: (يمكن اختيار أكثر من جواب)
- ☐ أشجار مروية ☐ أشجار بعليّة ☐ خضراوات بعليّة ☐ خضراوات مروية ☐ زراعة حقلية
24. هل تصدر أي من منتجاتك خارج الضفة الغربية؟ (يمكن اختيار أكثر من جواب)
- ☐ إلى غزة ☐ إلى إسرائيل ☐ إلى دول أخرى عن طريق وسيط إسرائيلي
- ☐ إلى دول أخرى دون وسيط إسرائيلي ☐ لا تصدر
25. هل تجد صعوبة في تسويق (فائض) منتجاتك؟
- ☐ نعم أجد صعوبة ☐ لا أجد صعوبة
26. إذا كنت تجد صعوبة في تسويق منتجاتك فالمشكلة هي: ؟ (يمكن اختيار أكثر من جواب)
- ☐ الأسعار المنخفضة ☐ منافسة البضائع الإسرائيلية ☐ الحواجز على الطرق
- ☐ لا أجد التسويق ☐ غير ذلك _____
27. أين تبيع فائض منتجاتك إذا وجد؟ (يمكن اختيار أكثر من جواب)
- ☐ تاجر جملة ☐ تسويق ذاتي ☐ الحسبة ☐ غير ذلك _____
28. ما هو مصدر الماء الزراعي المتوفر لديك؟ (يمكن اختيار أكثر من جواب)
- ☐ لا يوجد ☐ آبار جمع ☐ مياه ينابيع مشاع ☐ آبار ارتوازية
- ☐ شبكات مياه ☐ تنكات مياه ☐ غير ذلك _____

29. إذا كنت تستخدم المياه في الزراعة، فإن كمية المياه المتاحة إليك من أجل الزراعة يمكن وصفها بـ:
☐ وفيرة ☐ كافية ☐ غير كافية

30. ما هو مصدر بذورك وأشتالك؟ (يمكن اختيار أكثر من جواب)
☐ مشتل محلي ☐ مشتل إسرائيلي ☐ جمعية زراعية
☐ إنتاج ذاتي ☐ غير ذلك _____

31. الأرض التي تزرعها:
☐ ملك (ملك العائلة) ☐ تضمين ☐ اعمل فيها كأجير ☐ غير ذلك _____

32. إذا كنت تزرع أرضاً لا تمتلكها، هل تمتلك أرضاً غير مزروعة؟
☐ نعم ☐ لا

القسم الثالث: الخدمات المقدمة للقطاع الزراعي

33. هل أنت عضو في جمعية زراعية؟
☐ نعم ☐ لا

34. هل تتلقى إرشادات زراعية؟
☐ لا أتلقى ☐ نادراً ☐ أحياناً ☐ دائماً

35. إذا تلقت إرشادات زراعية فهي من: (يمكن اختيار أكثر من جواب)
☐ مرشدي دوائر الزراعة ☐ مؤسسات زراعية ☐ مزارعين ذوي خبرة ☐ غير ذلك _____

36. طبيعة العلاقة مع مديريات الزراعة في منطقتك:
☐ لا يوجد ☐ تواصل بالصدفة ☐ تواصل شبه دوري ☐ تواصل دوري

37. طبيعة العلاقة مع المؤسسات غير الحكومية العاملة في القطاع الزراعي في منطقتك:
☐ لا يوجد ☐ تواصل بالصدفة ☐ تواصل شبه دوري ☐ تواصل دوري

38. إذا كنت تتلقى مساعدات زراعية فهي عادة: (يمكن اختيار أكثر من جواب)
☐ مالية ☐ بذور أو أشاتل ☐ آلات ومعدات لتأهيل الأرض ☐ معدات للحصاد والدرس
☐ أسمدة ☐ مبيدات ☐ أعمال زراعية (عمال، جني الثمار، نقل المحاصيل)
☐ مواد وعدد زراعية مساعدة ☐ غير ذلك _____

القسم الرابع من الاستمارة للمالكين الأراضي أو لمن له حق التصرف بأرض ما فقط

القسم الرابع: معلومات عن الأرض

39. هل تمتلك أراضي في هذه البلدة/ القرية/ الخربة أو لك حق التصرف فيها؟
☐ نعم أمتلك أرض ☐ لي حق التصرف بأرض

40. إذا كنت تمتلك أرضاً، هل تواجه مشكلة في إثبات ملكيتك لأرضك؟
☐ نعم ☐ لا

41. ما نوع الوثيقة التي تمتلكها لإثبات الملكية؟
☐ طابو خاص (تسجيل مجدد) ☐ مالية (إخراج قيد) ☐ عقد (حجة) بيع أو شراء
☐ غير ذلك _____ ☐ لا يوجد

42. عدد المرات التي تتردد بها على أرضك:
☐ يوميًا ☐ مرة أو أكثر في الأسبوع ☐ مرة أو أكثر في الشهر
☐ موسميًا ☐ نادراً ما أتردد عليها ☐ لا أتردد عليها

43. هل هي ضمن المخطط الهيكلي للبلدة أو خارجه؟

☐ ضمن المخطط الهيكلي ☐ خارج المخطط الهيكلي ☐ لا أعرف

44. كم تبعد عن مكان سكنك؟

☐ أقل من 100 متر ☐ من 100 - 1000 متر ☐ من 1001 - 5000 متر
☐ من 5001 - 10.000 متر ☐ أكثر من 10.000 متر

45. هل تعاني مشكلة في الوصول إلى أرضك؟

☐ نعم ☐ لا

46. إذا كنت تواجه مشكلة في الوصول إلى أرضك فالسبب هو: (يمكن اختيار أكثر من جواب)

☐ عدم وجود طرق تصل إليها ☐ حواجز عسكرية إسرائيلية ☐ الجدار
☐ اعتداءات المستوطنين ☐ غير ذلك _____

47. هل هنالك تواجد استيطاني أو عسكري إسرائيلي في حدود 1 كم من أرضك؟

☐ نعم ☐ لا

48. هل تعد أرضك عرضة للمصادرة؟

☐ نعم، لماذا؟ _____ ☐ لا

49. ما مساحتها الكلية؟

☐ أقل من دونم واحد ☐ 1-2 دونم ☐ 2.1-5 دونم
☐ 5.1-10 دونم ☐ 10.1-20 دونم ☐ أكثر من 20 دونم

50. ما هي خططك المستقبلية لهذه الأرض؟ (يمكن اختيار أكثر من جواب)

☐ لا يوجد خطط ☐ بيعها ☐ زراعتها
☐ تضمينها ☐ البناء ☐ غير ذلك _____

51. هل هي مستغلة في شيء ما حالياً؟ (يمكن اختيار أكثر من جواب)

☐ لا (غير مستغلة) ☐ في الزراعة ☐ في الإسكان (البناء)
☐ في تربية المواشي ☐ في الصناعة (محاجر) ☐ غير ذلك _____

52. ما النسبة غير المستغلة من الأرض؟ % _____

53. إذا كانت أرضك بور وغير مستغلة في الزراعة أو مستغلة زراعياً بشكل جزئي فقط. ما السبب وراء عدم استغلال أرضك في الزراعة أو استغلال جزء منها دون الباقي؟ (يمكن اختيار أكثر من جواب)

☐ الزراعة غير مجدية مادياً ☐ عدم وجود طرق تصل إليها
☐ قلة المياه ☐ العجز المادي
☐ ضيق الوقت ☐ أنا لست مزارعاً ولا أريد أن أزرع
☐ قرب المنطقة من المستوطنات ☐ يعيق (يمنع) الإسرائيليون الوصول إليها
☐ لا أعرف كيف أزرع ☐ المساحة قليلة وزراعتها غير مجدية
☐ الجفاف ☐ منافسة البضائع الإسرائيلية
☐ لا يوجد سوق ليستوعب المنتجات ☐ طبيعة الأرض لم ولن تكن صالحة للزراعة
☐ الأرض بحاجة إلى تأهيل ☐ امتلاكها لغرض الاستثمار أو حفظاً للثروة
☐ أخطط للبناء فيها ☐ غير ذلك: _____

54. إذا كنت تمتلك أرضاً قابلة للاستصلاح الزراعي فإن استصلاحها يعد بالنسبة إليك:

☐ من أولوياتك العاجلة ☐ جيد لكنه ليس من أولوياتك حالياً ☐ ليس مهماً ☐ لا ترغب في استصلاحها

55. إذا كنت تمتلك أرضاً غير مستغلة وقابلة للاستصلاح الزراعي هل ترغب في استثمارها زراعياً؟

☐ أرغب بشدة في استثمارها زراعياً ☐ لدي الرغبة في استثمارها زراعياً ☐ لا بأس من استثمارها زراعياً
☐ لا أرغب في استثمارها زراعياً

56. إذا أجبت على السؤال السابق بأنك ستزرع هذه الأرض فالسبب هو: (يمكن اختيار أكثر من جواب)
☐ الإنتاجية والربح (مصدر رزق) ☐ الاستهلاك المنزلي ☐ حب الأرض
☐ لوقف مصادرة الأراضي والحفاظ عليها ☐ لوقف التصحر ☐ عادة متوارثة
☐ تسلية في أوقات الفراغ ☐ غير ذلك _____

57. إذا تمكنت من استصلاح جزء من أرضك، من سيقوم بزراعته؟ (يمكن اختيار أكثر من جواب)
☐ أنا شخصياً ☐ أفراد من عائلتي ☐ غير ذلك _____

58. إذا كنت أحد مالكي هذه الأراضي وترغب في استصلاحها فما هي أعلى نسبة مئوية من التكاليف يمكن أن تشارك بها في عملية الاستصلاح كمالك للأرض؟ _____ %

59. إذا كنت أحد مالكي هذه الأراضي وترغب في استصلاحها فما هو أقصى مبلغ - للدوئم الواحد - يمكن أن تشارك به في عملية الاستصلاح كمالك للأرض؟ _____ شيكل

60. ماذا تحتاج أرضك لاستصلاحها؟ (يمكن اختيار أكثر من جواب)
☐ توفير آلات ومعدات لتأهيل أو إعادة تأهيل الأرض ☐ مساعدات عينية (بذور، أشاتل، أسمدة، مبيدات) ☐ مساعدات مالية
☐ معدات للحصاد والدرس ☐ أعمال زراعية (عمال، نقل المحاصيل... الخ)
☐ جدران وسناسل ☐ كسوها بالتراب ☐ توصيل الأرض بالمياه
☐ غير ذلك _____

61. هل حصلت فيما سبق على مساعدة لاستصلاح أرضك؟
☐ نعم ☐ لا

62. ماذا حل بالأرض التي تم استصلاحها؟
☐ ما زالت مزروعة حتى اللحظة ☐ توقفت عن زراعتها ☐ غير ذلك _____

63. ماهي مشاكل الاستصلاح برأيك؟

64. ملاحظات وتعليقات:

