Participatory Rangeland and Grassland Assessment (PRAGA) REPORT

Prepared by RBG Team

Table of Contents

Participatory Rangeland and Grassland Assessment (PRAGA) REPORT

Introduction

The PRAGA methodology is designed to bring together diverse stakeholders and different types of data and monitoring systems to ensure ownership, acceptance, access and use. The method links data across different spatial and temporal scales to inform decision making at multiple levels while supporting global and national comparability (e.g. global indicators) and balancing the needs of cross scale coordination with local ownership.

The PRAGA methodology is based on established approaches developed at IUCN and FAO as part of the FAO Land Degradation in Drylands (LADA) programme. The method uses a combination of local and scientific knowledge to monitor rangeland health based on local management objectives to improve targeting, policy development and even the SRM investments. A key element of this process is enhancing the participatory approach in the local communities and expansion to the national level. Key guiding principles for this approach include multi-functionality (applicable in homogeneous and heterogeneous landscapes and diverse land uses), cost effective (encouraging the use of a minimum indicator set), and participation (to enhance trust and empowerment), with scales of use guided by the scales of local decision making.

The Participatory Rangeland and Grassland Assessment methodology is designed to be a flexible and sustainable tool for assessing degradation and rangeland health across a range of grassland and rangeland ecosystems and land use systems (FAO and IUCN, 2018). The PRAGA methodology is a decision support tool to assess rangeland health according to the management objectives of local users by combining local and scientific knowledge. The method is intended to guide policy, assist in the identification and implementation of management options and interventions and track the state and trends of ecosystem "health" in space and time.

The PRAGA methodology consists of 9 Steps in 5 Phases (Figure 1):

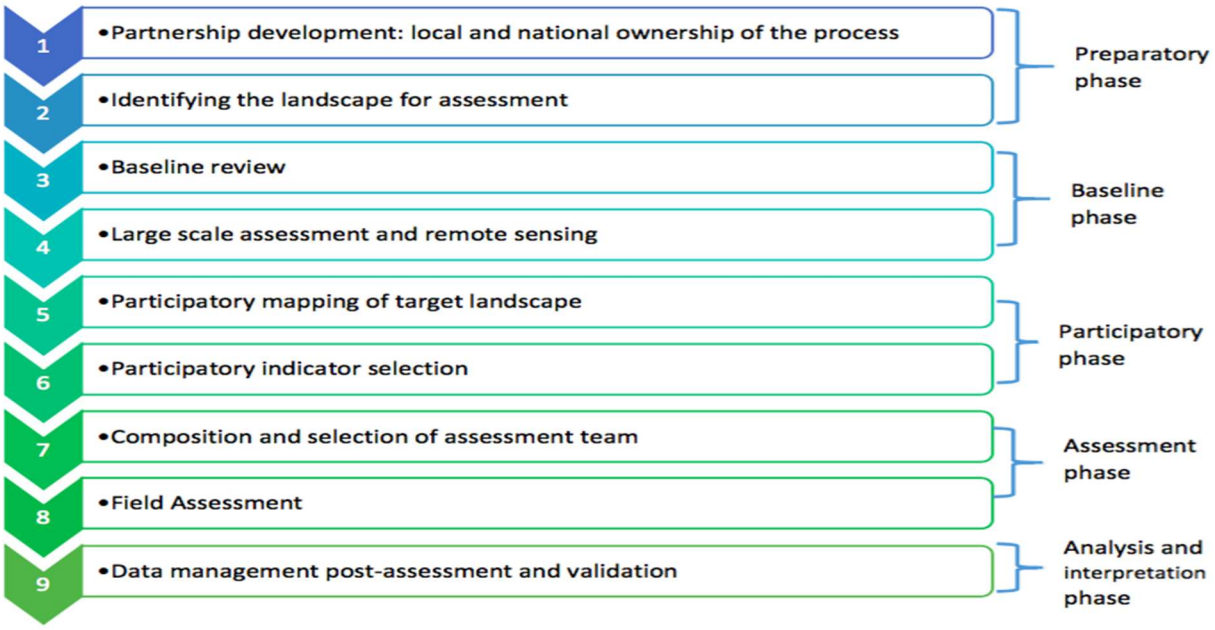


Figure 1: PRAGA methodology

PRAGA Steps:

1. Partnership Development
2. Landscape Identification
3. Baseline Review
4. Landscape scale assessment and remote sensing
5. Participatory mapping of target landscape
6. Participatory indicator selection
7. Selection of assessment team
8. Field Assessment
9. Data management, post-assessment and validation

PRAGA Phases:

1. Preparatory Phase
2. Baseline Phase
3. Participatory Phase
4. Assessment Phase
5. Analysis and Interpretation Phase

The project "Healthy Ecosystems for Rangeland Development (HERD): sustainable rangeland management strategies and practices" focuses on the iterative development and implementation of the PRAGA methodology with the objective of enhancing the capacity of local and national stakeholders in pastoral areas to assess land degradation and promote sustainable rangeland management approach (SRM). The project's objective is to "strengthen restoration and sustainable management of pastoral rangelands for the provision of ecosystem services and protection of biodiversity in Egypt and Jordan and catalyzing scale up regionally and globally**.**

The HERD approach aims to improve Rangeland governance at the local level of rangeland users (local communities) and the intermediate level of decentralized rangeland managers and service providers in districts and governorates level, at the national level and at the regional level. The project approach designed to support dialogue-based processes in which all rangeland users and stakeholders are involved in a shared search for negotiated solutions. Rangeland governance is, on this basis, 'improved' or 'good' if the process that leads to it is transparent, democratic, equitable, pro-poor, and gendered, and that these approaches are reflected in the outcomes.

One of the important aspects of Sustainable Rangeland Management (SRM) is the active participation of local communities and collaboration with relevant stakeholders during the different phases of the strategic planning process.

This project is conducted in four main landscape in Jordan. Middle part (Hima Bani Hashem) in addition to three other locations: Northern part of Jordan (SURA site), Southern part of Jordan (Al-Mansheyyeh/Ma'an) and Eastern part (Al-Hazeem).

The Project started with the inception workshops all over the sites discussing and explaining what this project will be holding and binging to the community.

Detailed PRAGA steps

Step 1. Partnership Development

1- Aim:

The aim of this step is to build a strong relationship with the local community to reach the goals through the project objectives.

2- Identification of key stakeholders

The identification of the stakeholders based on the site need and the local community will deal and collaborate during the whole life of the project and afterward through the sustainability approach.

Royal Botanical Gardens (RBG)	RGB's is a key project partner at the national level. Its role in supporting research on rangeland management is equally important. RGB is also a close project partner, co-financier and member of the project steering committee.
The Hashemite Fund for Development of the Jordan Badia (HFDJB)	The Hashemite Fund for development of Jordan Badia (HFDJB) is a key project partner at the national level and co-financier, and hence a member of the Project Steering Committee. Based in Amman and established in 2003 under Royal patronage, the Hashemite, the Fund's aim is to improve the socio-economic conditions in the Badia by building the capacities of local communities, and by implementing well-planned projects in various relevant sectors. The Fund way of working includes both direct and indirect involvement in development activities taking place in the Badia. It maintains a corps of research experts and networks with government, local NGOs, donors and community-based organizations, permitting it to implement a suite of projects relevant for Badia development. Previously responsible for Badia restoration projects, the Hashemite Fund for Development of the Jordan Badia can potentially play a role in the implementation of activities in relevant project components, the details of which will be clarified after due process.

Ministry of Environment (MoENV) Ministry of Agriculture (MoA) Ministry of Water and Irrigation (MWI)	Both ministries are project partners and co-financiers, responsible for ensuring the project is aligned with national priorities and investments and for supporting adoption of SRM approaches in national policies and budgeting processes. They are expected to participate actively in the Project Steering Committee. At the national level in Jordan, both line ministries will also facilitate for liaison with other ministries, sub-national governments (at the governorate and district levels e.g.), with local authorities and with foreign partners through LAS dialogue, to ensure coordination at the national and regional levels. The rangeland reserves are under the authority of the MOA and agreements are made to facilitate the accessibility and the rangers role to collaborate with the local herders as well.
Royal Society for the Conservation of Nature (RSCN)	Because of RSCN's role in supporting research relevant for the sustainable management of rangelands, they are well positioned to assist in the implementation of certain project activities. More specifically, of the selected landscapes (Hazeem) has protected areas is in its vicinity, under the responsibility of RSCN and collaboration with the project in the management of the wider landscape can be beneficial to both. The exact collaboration framework regarding the management of Al Hazeem's landscape will be further detailed during the project inception.
GIZ Jordan	A project partner and co-financier. GIZ and IUCN have been instrumental in supporting a PES project in Jordan through each a key study on the economic valuation of a large-scale rangeland restoration has been implemented in Jordan, building on the Hima system. The lessons from the PES project are crucial for disseminating the model in other sites in Jordan, besides the pilot in Bani Hashem and the Zarqa Basin.

3- Local inception process

The inception workshops were held in the four locations starting with an introduction to the project general objectives, inputs and outputs and the outcomes of each activity in the project.

Hima Bani Hashem

1-Location

HimaBani Hashem is located in Zarqa governorate, and about 12 Km to the northern west of Zarqa city. Hima Bani Hashem landscape covers an area of 5,058 ha. (Figure 1)

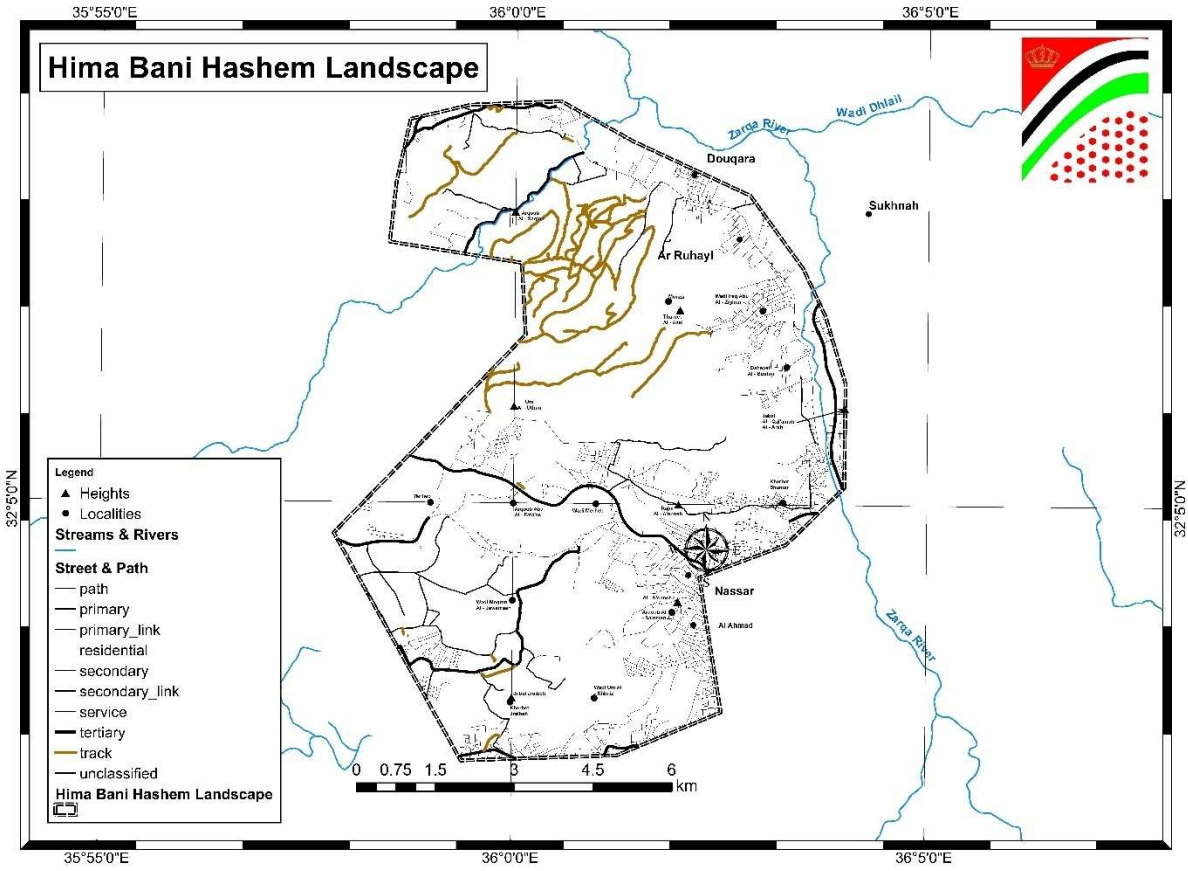


Figure 1: Hima Bani Hashem Landscape

2- Topography and Geology

The location of Hima Bani Hashem Landscape is mountainous with steep slopes (20-30%) in many parts. Two mainstreams are encountered and drains toward Zarqa River (Figure 1).The area is located in Northern Highlands Dissected Limestone that is ischaracterized by xeric soil moisture regime that characterizes Mediterranean areas.Soils are mainly Calcixerollic xerochrept, Typic xerochrept and Lithic xerothent and soil color is red to brown soils with a dry color of 5YR 5/6, according to Munsell system.Darker soils are found in the areas of wadis deposits.Hima Bani Hashem represents batha steppe vegetation zone.

Altitudes vary in Bani Hashem landscape between 467 meters in the east and 900 meters in the west (Figure 2). An altitude smooth gradient is obvious across the east-west direction in the whole landscape.

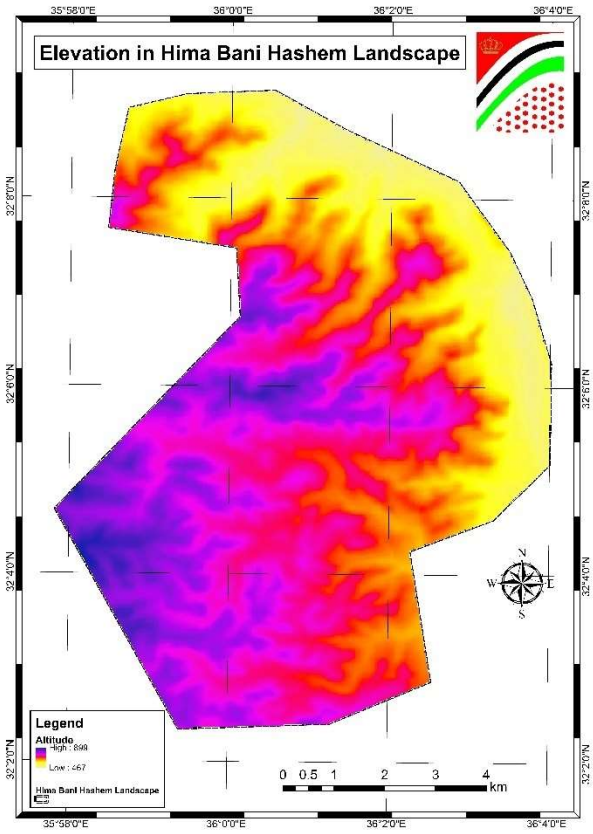


Figure 2: Elevation in Hima Bani Hashem

3- Climate

The local climate is characterized by humid, cool winters with temperatures reaching a minimum of 5 degrees Celsius and hot dry summers with maximum temperatures of 30 degrees Celsius. The average rainfall in the area is around 120 - 220 mm/year (Figure 3).

Site Climatic Conditions
-Bani Hashim

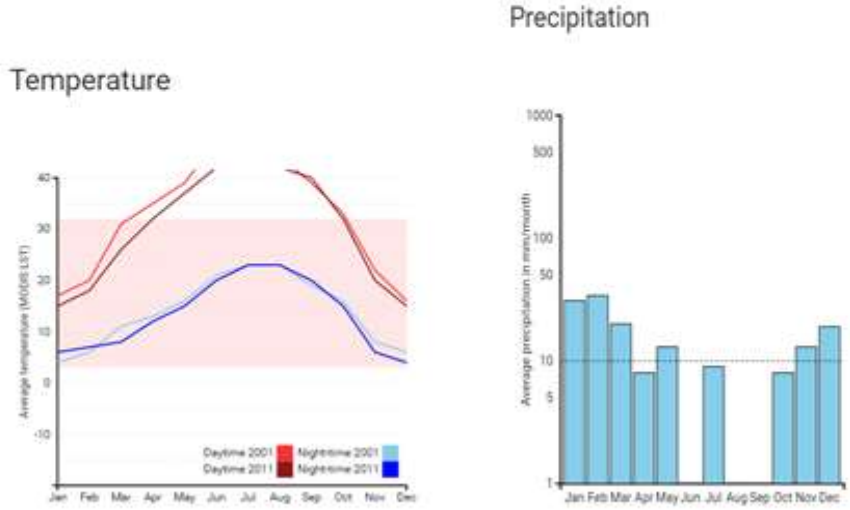


Figure 3: Temperature and Precipitation in Hima Bani Hashem

Team Members- RBG and Hima Bani Hashim local community

Many workshops were conducted in each site with the local communities to discuss primary assessment of the natural landscape areas through mental maps. Stakeholders were identified from local communities and representatives of governmental institutions.In Hima Bani Hashim landscapes, range reserve sites were chosen for intervention activities andthe proposed sites were selected by local community for the implementation of restoration activities.

List of local community members in each site

A local community committee was elected and defined according to the workshops and meeting held with the representatives of local communities.In the workshops groups were formulated and to define the threats that exists in the site and the proposed activities to overcome these threats and produce the participatory maps.

The field assessment was conducted with the local society “Hima Bani Hashem” society and the activities in the field were conducted with the local community. The participatory approach was successful and baselinedate were compiling for assessment.

Thepresentation to explain the problems facing the rangeland in Jordan and that affects the Hima bani Hashem site (by dr. Maher Tadros)

The participatory approach as fully explained and the audiences from the participant showed interactive approaches explaining the real issues facing the rangeland in there site.

Community discussions on the project activities and PRAGA

Step 2. Identifying the landscape for assessment

1- Aim

The aim of this step is to define the assessment site based on the different criteria in the whole project The Hima Bani Hashem site was the main pilot area that the HERD project is based on and to continue with the participatory approach with the local community.

Scale of assessment

The landscape approach on around 5000 ha of the total area and around 1000 ha to used as apilot site for restoration activity and community training.

2- Ecosystem and land use

Range condition was a general term describing the status of resources at a site with particular reference to livestock grazing. The rangeland condition usually carries a specific connotation, reflecting current status of the vegetation and soils occupying a site in comparison to the site potential. Range land condition status assessment Based on Vegetation cover at study area. Percent cover of vegetation at selected sites at HimaBani Hashem ranged between 5 % and 60 %. Averaged vegetation cover 25% the estimates of coverage were close to Poor conditionrange category - where the vegetation cover is less than 26% of the vegetation cover of the Rang sites. The rest is either urban of agriculture.

The Bani Hashem landscape proposed area is 5058 ha. In which the grassland decreased over the 30 years due to several reasons such as the urbanization, land degradation and overgrazing activities. The table below shows the increase of agriculture and urbanization on the expanse of the rangeland.

Bani Hashim LS	Year		%change
Land Use %	1985	2016	
Trees	23	48	25
Irrigated	0	9	9
Grassland	37	27	-10
urban	0	16	16
Bare soil	40	0	-40

Table (1): Land use characterization based on the Land Sat data analysis of the years 1985 and 2016.

Based on a recent date analysis of 2013 and 2018 an increase in the sparse vegetation is well notices (Figures ….)

As a participatory approach a drawing of a preliminary participatory map by the local community using aerial photo was conducted. In which all the indicators based on the local knowledge is mapped.

Timing of assessment

After consultation with community and all stakeholders PRAGA practice was conducted including the field survey during the May in the field and August for PRAGA of the year 2019.

Step 3. Baseline review

Sites, Vegetation Cover (Normalized Difference Vegetation Index (NDVI)) and Climatic Data

HERD SITES Hima Bani Hashem and other HERD sites in Jordan

Hima Bani Hashim located in the middle border Badia site and with an area of 5058 ha.

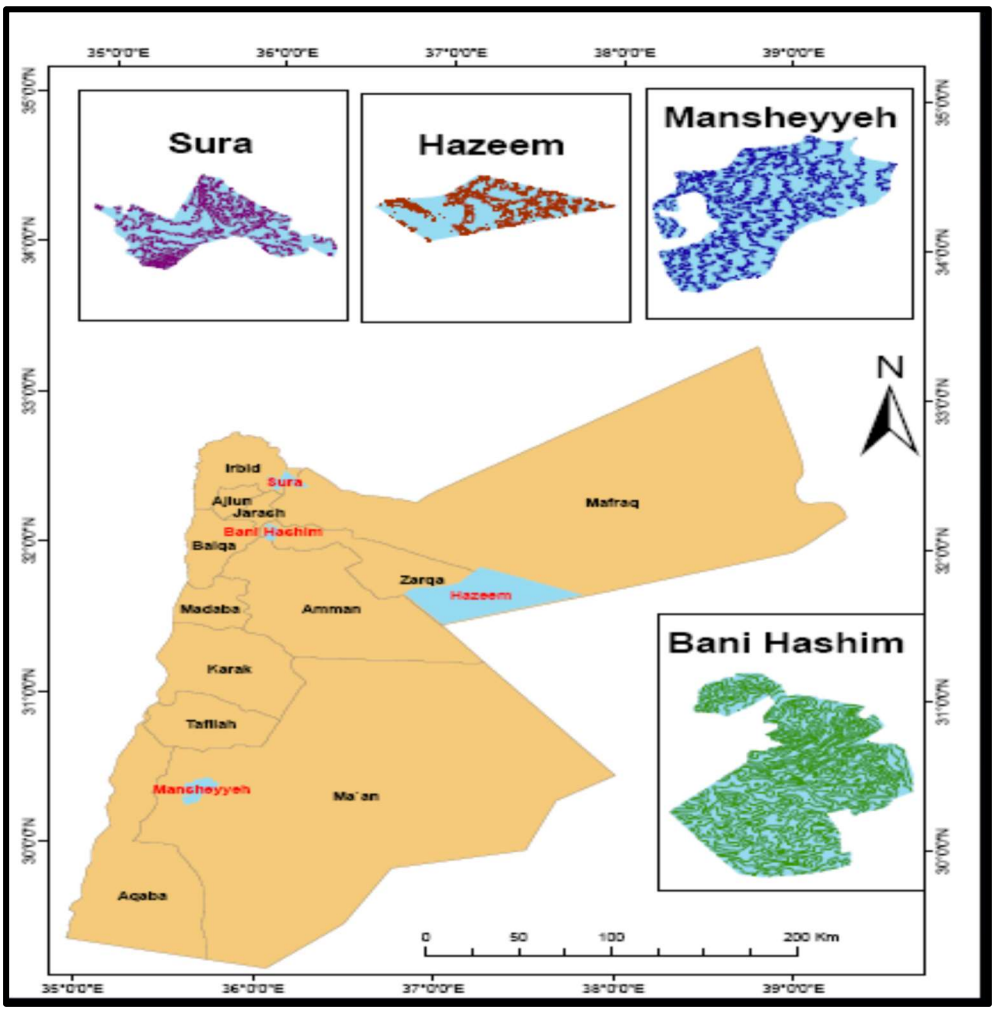


Figure 4: Hima Bani Hashem HERD site and the other three HERD sites in SURA, Almanshya, and Alhazeem.

The NDVI shows that the vegetation distribution increased allover the past 10 years although the locations within the site is different depends on the grazing activity and the season. Figure (5) presented the Normalized Difference Vegetation Index (NDVI) showing the 2013 distribution of the vegetation and the other site description and the Figure (6) show the NDVI values in the year 2018

as an overall values allover the year and shows that the vegetation cover is increasing compared the years 2013 and 2016 as well. The lover the values of the NDVI the area is close to bare land and rock and the higher the NDVI values more vegetation exist. The area were the HIMA is located shows an improvement in site were sites are not accessible compared the sites subjected to heavy grazing and soil degradation. In Figure (7) shows around 88000 points were taken on site to compare the NDVI values between the year 2013 and 2018 (The same points). The differences show improvement but still showing degradation compared to the 2016 record in table (1). The points in green shows 2018 values and the red in 2013. The green is increasing covering the Red showing an improvement in the NDVI.The linear regression shows an improvement from 2013 to 2018 values (Figure 7).

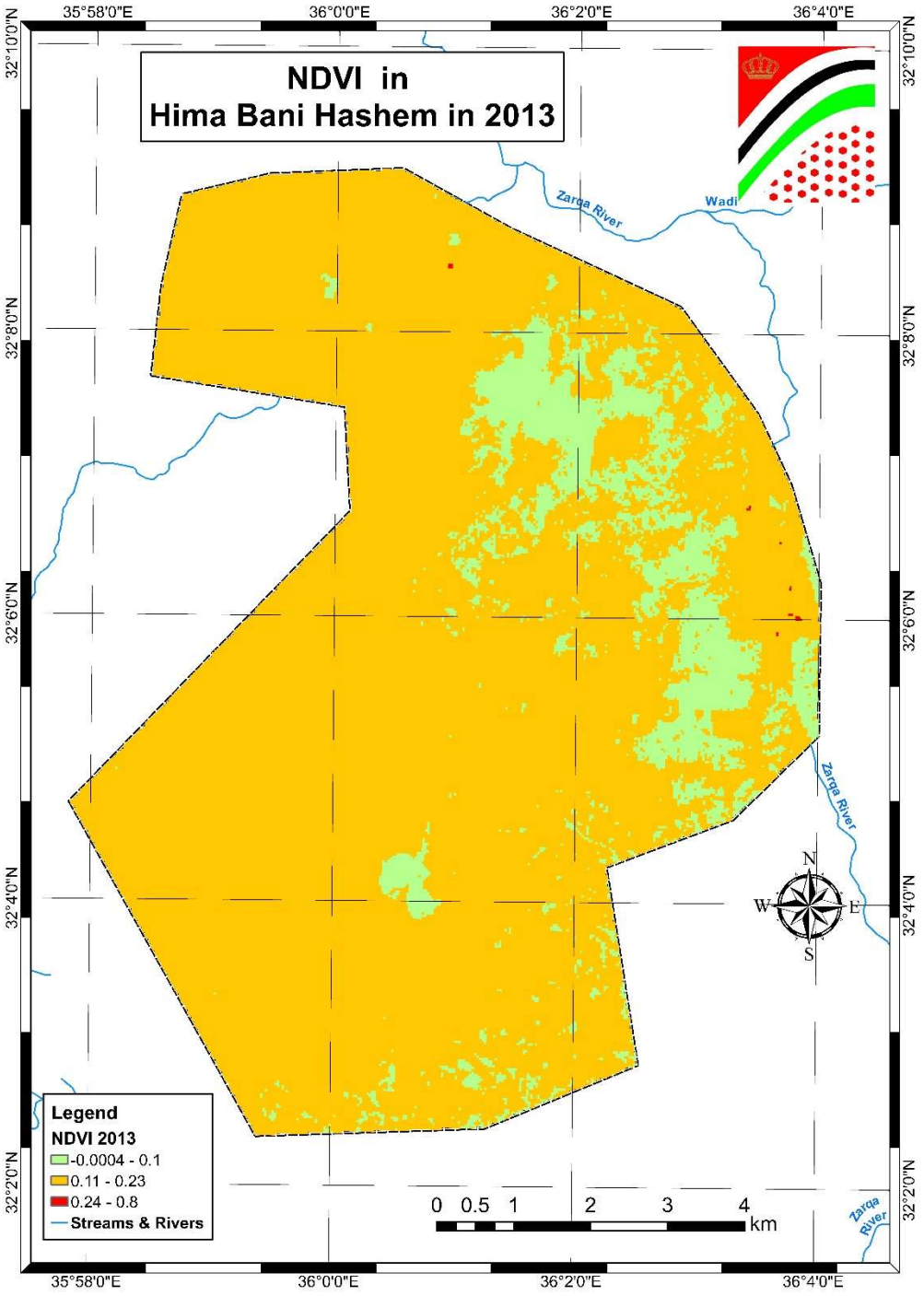


Figure 5: Hima Bani Hashem NDVI values of the year 2013

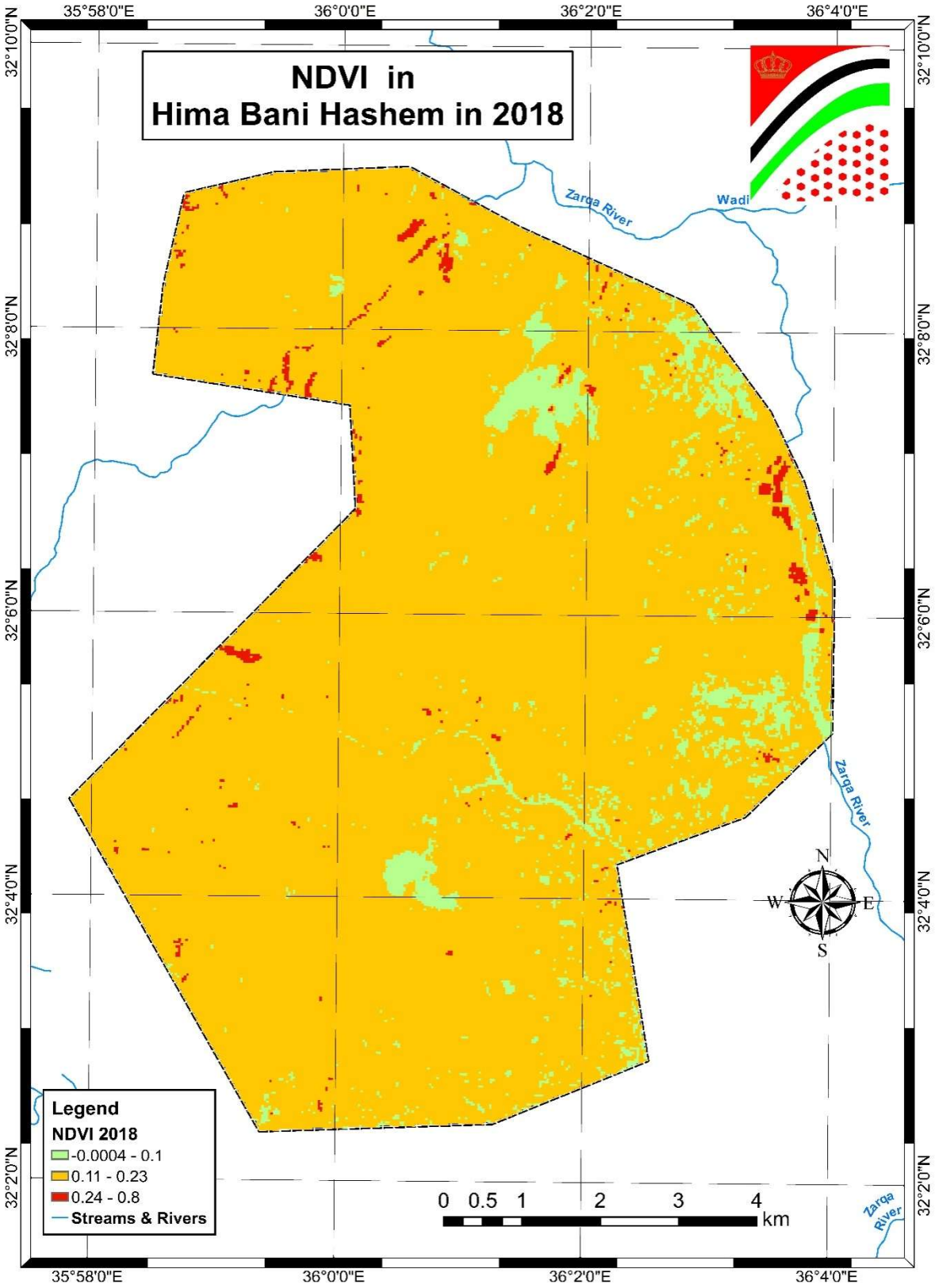


Figure 6: Hima Bani Hashem NDVI values of the year 2018

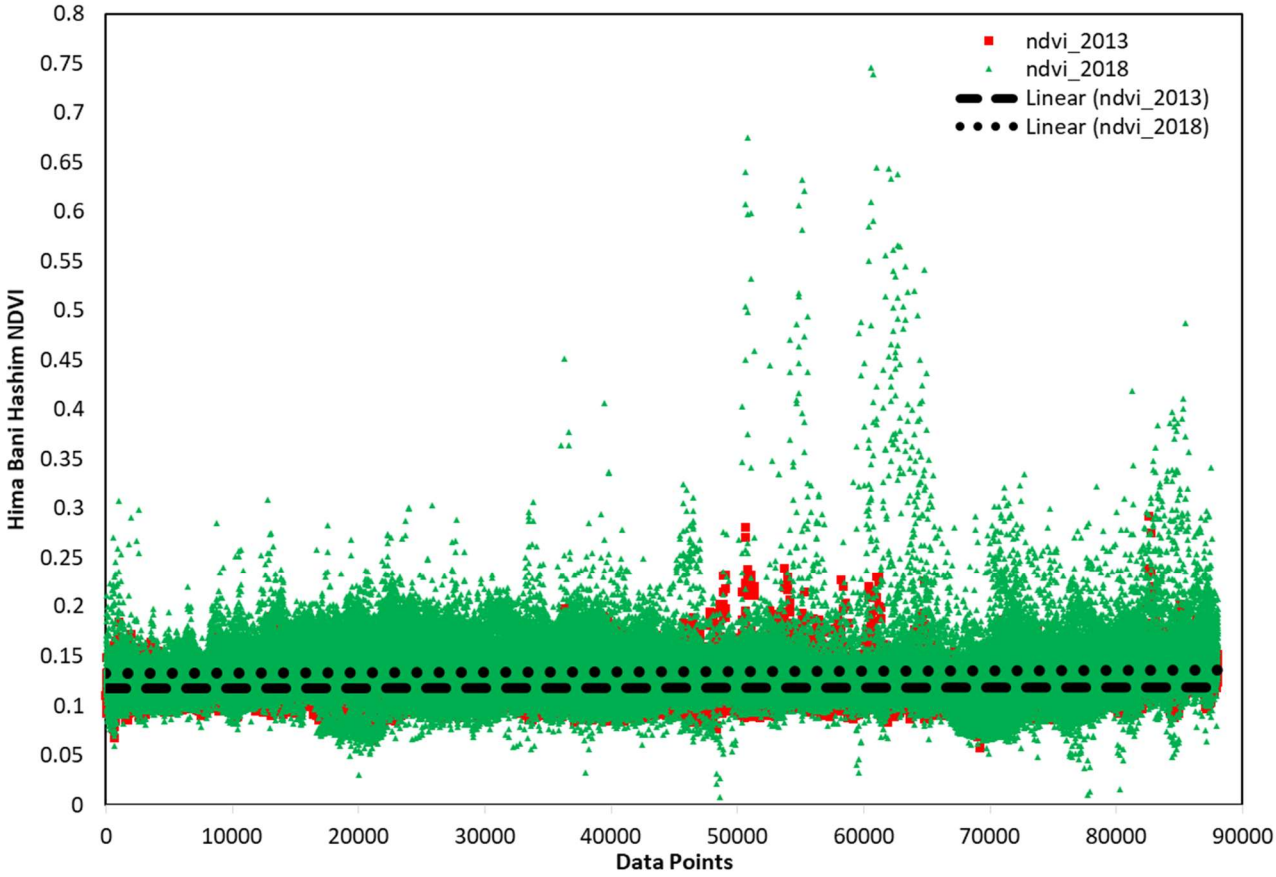


Figure 7: Hima Bani Hashem NDVI values in 2013 and 2018.

Site Characterization (vegetation cover, soil, wadies and water resources):

The land use in Hima bani hashim (Figure 8) show the sparse vegetation area coverage is high compared to the bare soil. The agriculture is in limited areas. This match the Figures of the NDVI higher values that the sparse vegetation is increasing allover the area. The water resources around the HIMA help to improve the site characteristics especially the agriculture around zarqa river.

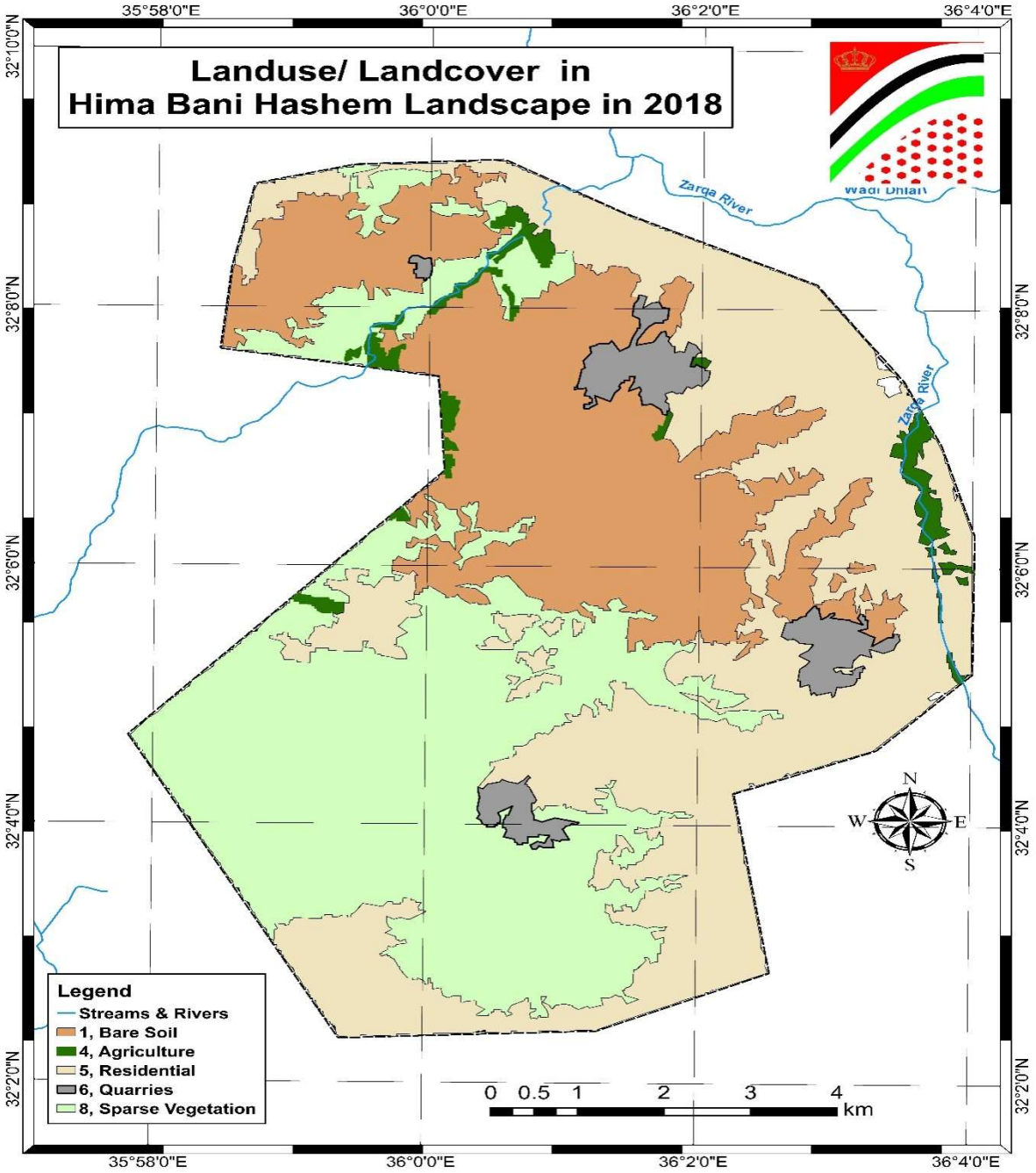
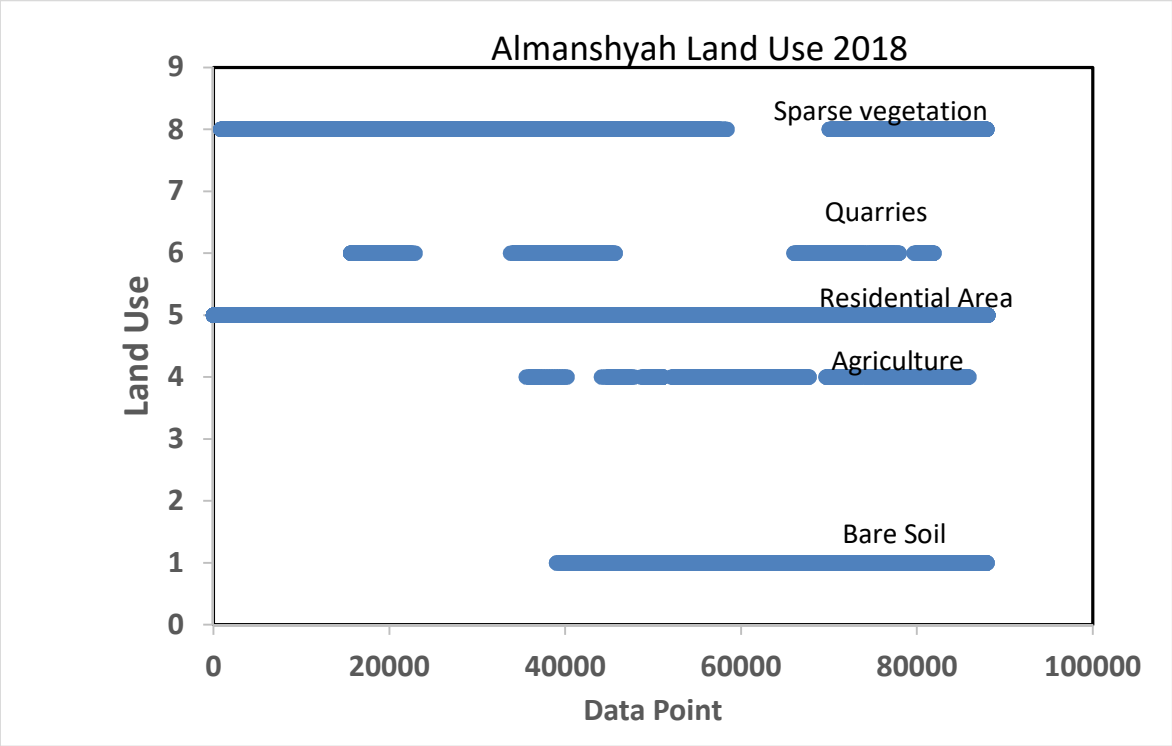


Figure 8: Hima Bani Hashem land use of the year 2018

The land use based on the NDVI values (88000 point distribution) can be classified as in figure (9). The sparse vegetation is more that the Agriculture, and bare soil. The bare soil is area were the restoration can be implemented.



Socio-economic data

Bani Hashim consists of four communities with a total population of 15,000, most of whom have Bedouin roots. This area, 21 km north of Zarqa, has been richly covered with vegetable cover and abundant water resources, which has encouraged a number of Bedouin tribes to settle there since the 1850s. However, factors such as population growth, urbanization and a trend towards public employment have all caused a deterioration in natural resources. A certain incident in 1954 accelerated this deterioration when malaria spread in the region, prompting people to move away from water sources and then sell their land and abandon agriculture and livestock.

The region is dominated by a climate of hot, dry summer and mild winter with an annual rainfall of between 170 and 220 mm. The region is one of the areas most threatened by desertification due to

climate change, droughts and human activities such as overgrazing and quarrying. Sources of income include military and civilian jobs, while about 20% of households are totally dependent on livestock farming. The average monthly income for households that do not depend on livestock is 200 dinars. The number of affected people within the project boundary is as follows:

SITE	**Male**	**Female**	**Total**
Site 1 Bani Hashim	***8,500***	***6,500***	***15,000***
Site 2 SURA	*98*	*36*	*134*
Site 3 Hazeem	*45*	*25*	*70*
Site 4 Jafir-AlManshyah	*2,141*	*1,815*	*3,956*

Table (2) : number of affected people within the project boundary

A brief description to the Hima Bani Hashim site presented in table (3) were the for baseline data.

Table 3: ***Brief Hima Bani Hashim Site Description Matrix***

Landscapes and their surface	**Administrative unit**	**Stakeholders**	**Key characteristics**
Bani Hashim Targeted area: 5,089 ha Rangelands area: 1,636 ha Agriculture area: 545 ha Forestry area: 2,908 ha	Zarqa Governate	1. Royal Botanic Garden (RBG) 2. Ministry of Environment (MoEnv) 3. Hashemite Fund (HFDJB) 4. Ministry of Agriculture (MoA): • Rangeland Department • Forestry Department 5. National Center for Agricultural Research and Extensions (NCARE) 6. Royal Society for Conservation Nature (RSCN) 8. Royal Administration of Environmental Protection 9. Local communities 10. Pastoralists	Site was a subject of restoration under HIMA.

Table 4 shows the baseline analysis for cause of land degradtation in Him Bani Hashim Site. The most causes of the LD is the grazing and water erosion (Strong). The loss in biodiversity and soil quality are moderate as well as human pressure and the mills.

Type of threat	Cause of Land Degradation	Hima Bani Hashim	How land degradation manifests itself in the project areas:
General	Biodiversity loss	2	Loss of natural habitats due to disturbance, introduction of alien species and/or overharvesting of (e.g. of medicinal plants)
	Soil quality reduction	2	Soil is mostly sandy loam and increasing losing fertilitysoil and water degradation; soil chemical pollution is affecting all three sites
	Human Pressure	2	Increased pressure on water resources, increasing water deficits
	Animal Pressure	3	Increased pressure on natural pasture leading to overgrazing
	Water Erosion	3	Increased soil erosion, top soil washed away, formation of gullies and even canyons near steep slopes; loss of water regulation function
Specific	Fire	0	Loss of ecosystem goods; changing soil composition.
	Agriculture expansion	1	Loss of vegetation; increased water demand for irrigation; water and soil contamination from excessive fertilizer use
	Overgrazing	3	Alterations in plant composition and productivity of natural pasture; increasing exposure and erosion of soil
	Irrigation	1	Increased salinization; increase water deficits; high indices of inefficient soil-water-plant management (36% efficiency)
	Mining (rocks; lime; gold; oil)	2	Increased soil alkalinization and salinization; decreased quality and quantity of water, groundwater contamination.
Emerging	Climate change	2	Increase in extreme events; increased water and soil erosion and loss of fertility

Table (4) Baseline Status Analysis of the Hima bani Hashim Site based on the data collected in 2010 to 2016

Guiding legend for the overall intensity of land degradation

1. Light: The terrain has somewhat reduced agricultural suitability, but is suitable for use in local farming systems. Restoration to full productivity is possible by modifications of the management system. Original biotic functions are still largely intact.

2. Moderate: The terrain has greatly reduced agricultural productivity, but is still suitable for use in local farming systems. Major improvements are required to restore productivity. Original biotic functions are partially destroyed.

3. Strong: The terrain is non reclaimable at farm level. Major engineering works are required for terrain restoration. Original biotic functions are largely destroyed.

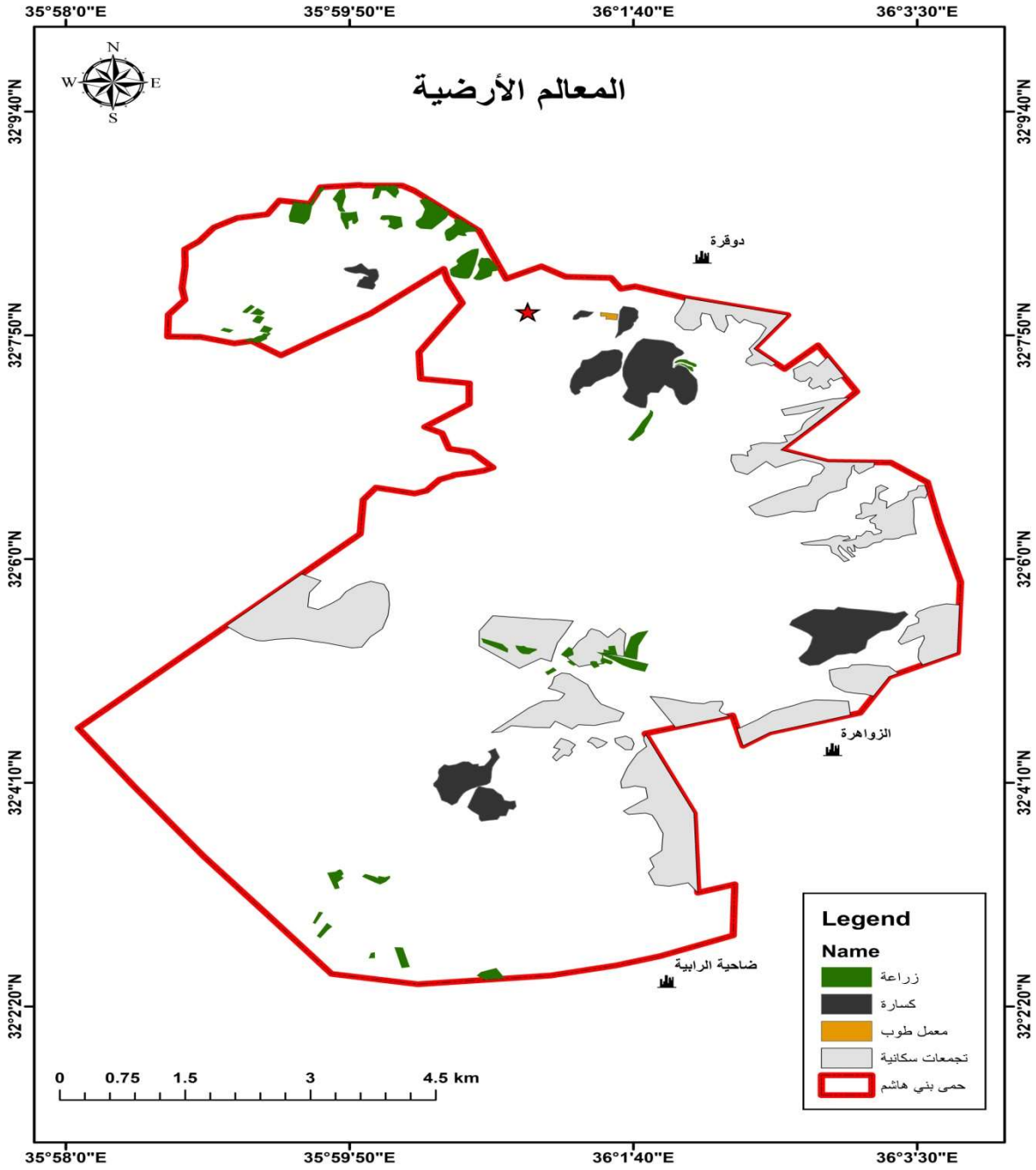
4. Extreme: The terrain is unreclaimable and beyond restoration. Original biotic functions are fully destroyed.

Step 4. Landscape scale assessment and remote sensing

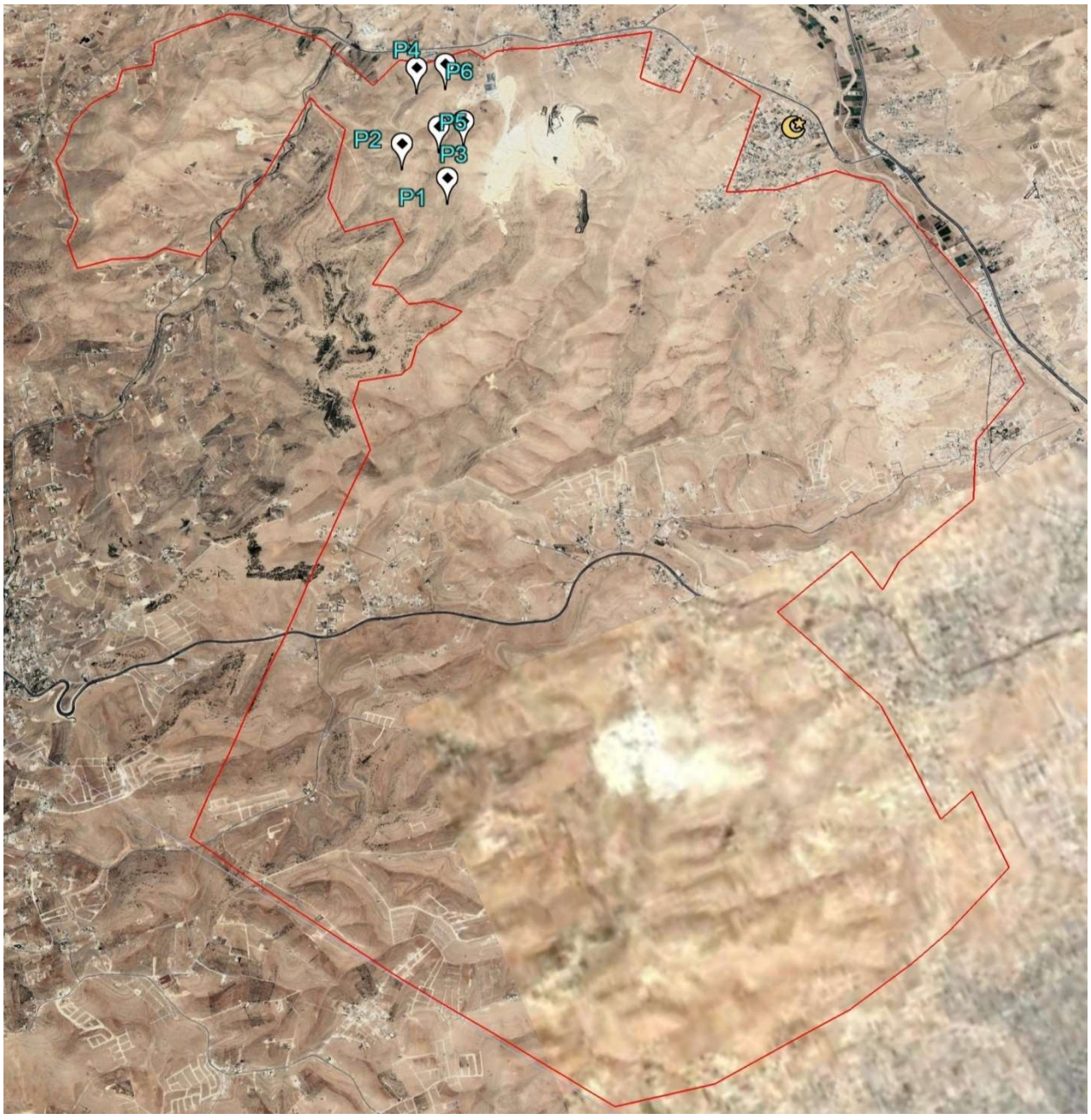
1- Aim

The main objective is to map the site and check the boundaries and the existing landscape

The Hima Bani Hashem site map with Selection of indicators for landscape-scale (remote sensing) assessment :



The site map using the land sat image showing the local community site selection in the first 1000 ha assessment and is the base for the PRAGA methodology implementation.Remote sensing was used as a tool in the in landscape-scale assessment processes.



What is landscape scale assessment?

Based on PRAGA and the site analysis of the indicators. The assessment will be extended to whole landscape based on further PRMP.

Step 5. Participatory mapping of target landscape

1- Aim

In this step of PRAGA the landscape participatory approach in the rangeland management was achieved through meeting with the community of Hima Bani Hashem in which the local knowledge was implemented and focused on the participatory maps.

2- Rationale for the participatory approach

A training on the bioindicators that are important in the site were explained to the local community and were defined to show how these are important to the rangeland and the existance of biodiversity on the site.

The local community were asked to draw and put all there knowledge on the map and show the main three bioindicators (water, vegetation, and soil) on the map.

The bioindicators and Participatory identification of criteria for defining zones:

1- Water: the existence of water resources on the site, direction of water flow, dams , wells, ground water reservoirs availability. All participants were asked to state site problems (Erosion, contamination, etc..) with the resources exist and what is needed to maintain such resources.

2- Soil: indicate the type of soil, the fertility, the slope, erosion, organic matter, salinity, roads, access to the site etc.

3- Vegetation: the existence of species and type as possible, distinct species, low density vegetation, overgrazing, endangered species, land use, the benefits of the vegetation to the locals.

After completion to add all information to the map a list problems and the suggested solution in the locals opinion are written of sheets and them a discussion is conducted.

Participant were divided in three groups and three participatory maps were created and each group was instructed to suggest the best three areas in this landscape to focus on the restoration activities.

3- Selection of participants

The participant were invited from the local community through the local COBS and through the Governate and municipality to ensure all are interested and have the knowledge to participate are invited.

4- Participatory landscape mapping and considerations

The participants were introduced to the bio-indicators in general and were asked to implement their knowledge in this practice. A presentation was given site map and three maps including borders of the

landscape were printed on A3 paper and colors were used as indicators (Blue for water, Green for vegetation, Red for Soil, and black for roads).

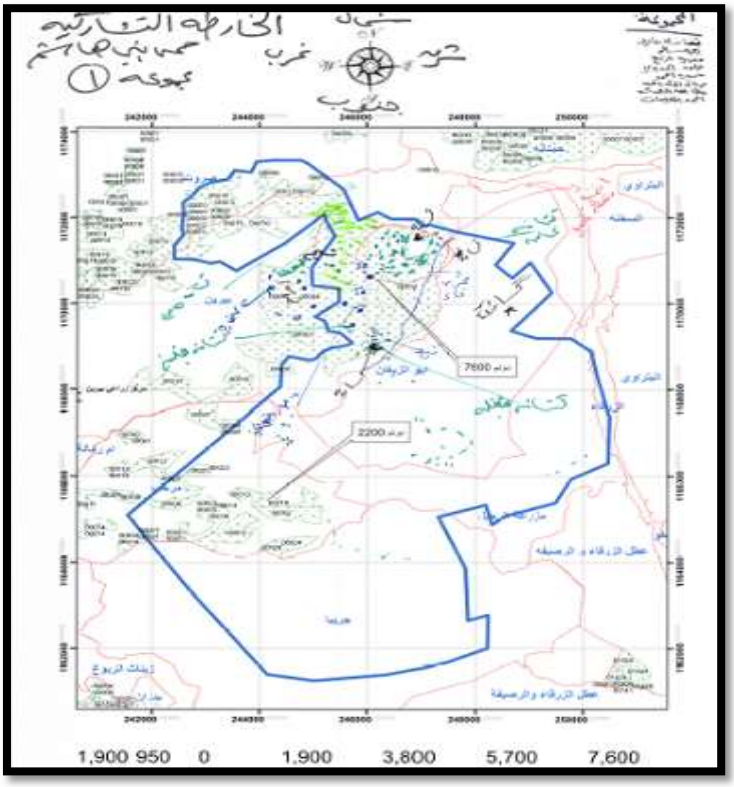
5- Main steps in the mapping exercise:

Three groups were formed for the participants

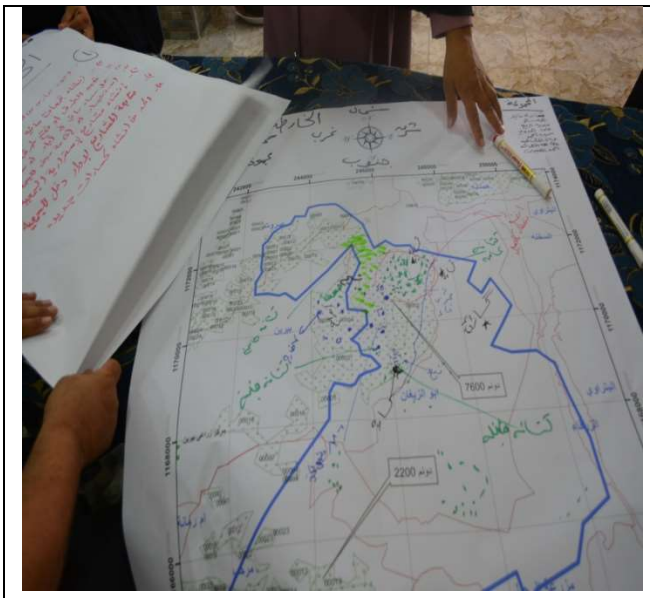
Group One:

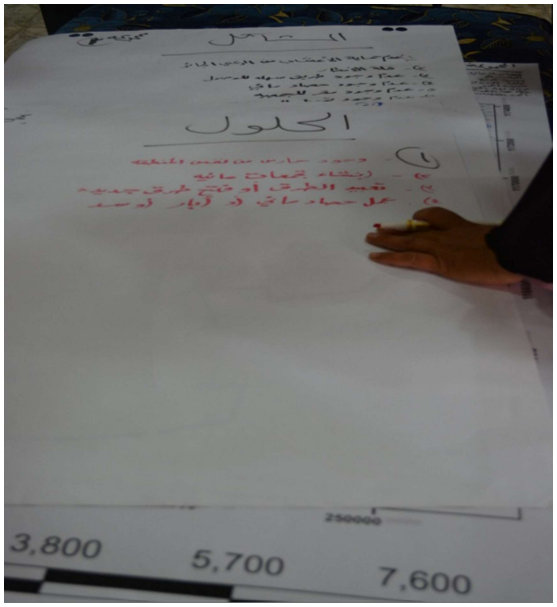
8 participant (6 females and 2 males)

Map1: GROUP one :



Participatory practices:





After the participatory map is completed , they discussed the problems and the solutions from their point of view in the rangeland management and land conservation and suggested projects to maintain the sustainability.

Table (5): Group One - The problems and suggested solutions and projects in Hima Bani Hashem site

Suggested Solutions and Projects	Problems	
1- The presence of a guard from the same area **2- Establish water gatherings** (harvesting) **3- Roads maintainance or opening new roads work to easy access ALHIMA site** **4- Water resources such as Harvesting water or wells or dam** **5- Rental or the construction of building for the association** **6- Establish sustinable projects for the association** **7- Follow-up projects to generate income for the association** **8- Cease by law the establishments and permits for new Sawmills and crushers** **8- Rehabilitation of the building located inside the ALHIMA site.**	**1- Lack of protection of herbs from overgrazing.** **2- Lack of rain (water resources)** **3- Lack of easy way to reach (Easy Accessibility to the sites)** **4- The lack of water harvest (Water harvesting problems- Water runoff)** **5- lack of headquarters for the association** **6- lack of funding for the association** **7- unsustainable projects** **8- presence crushers in the area** **9- Cutting forest trees**	**Group One**

Group Two:

5 participants (3 males and 2 females)

Participatory Practices:

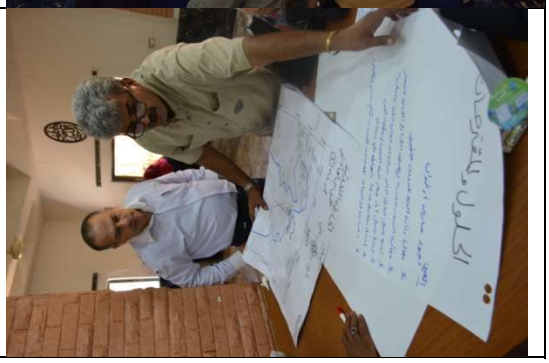
<table>
<tr>
<td>One member is a legal hunter and use the GPS and google map to define the site
  </td>
<td>  </td>
</tr>
<tr>
<td>  </td>
<td>  </td>
</tr>
<tr>
<td>  </td>
<td>  </td>
</tr>
</table>

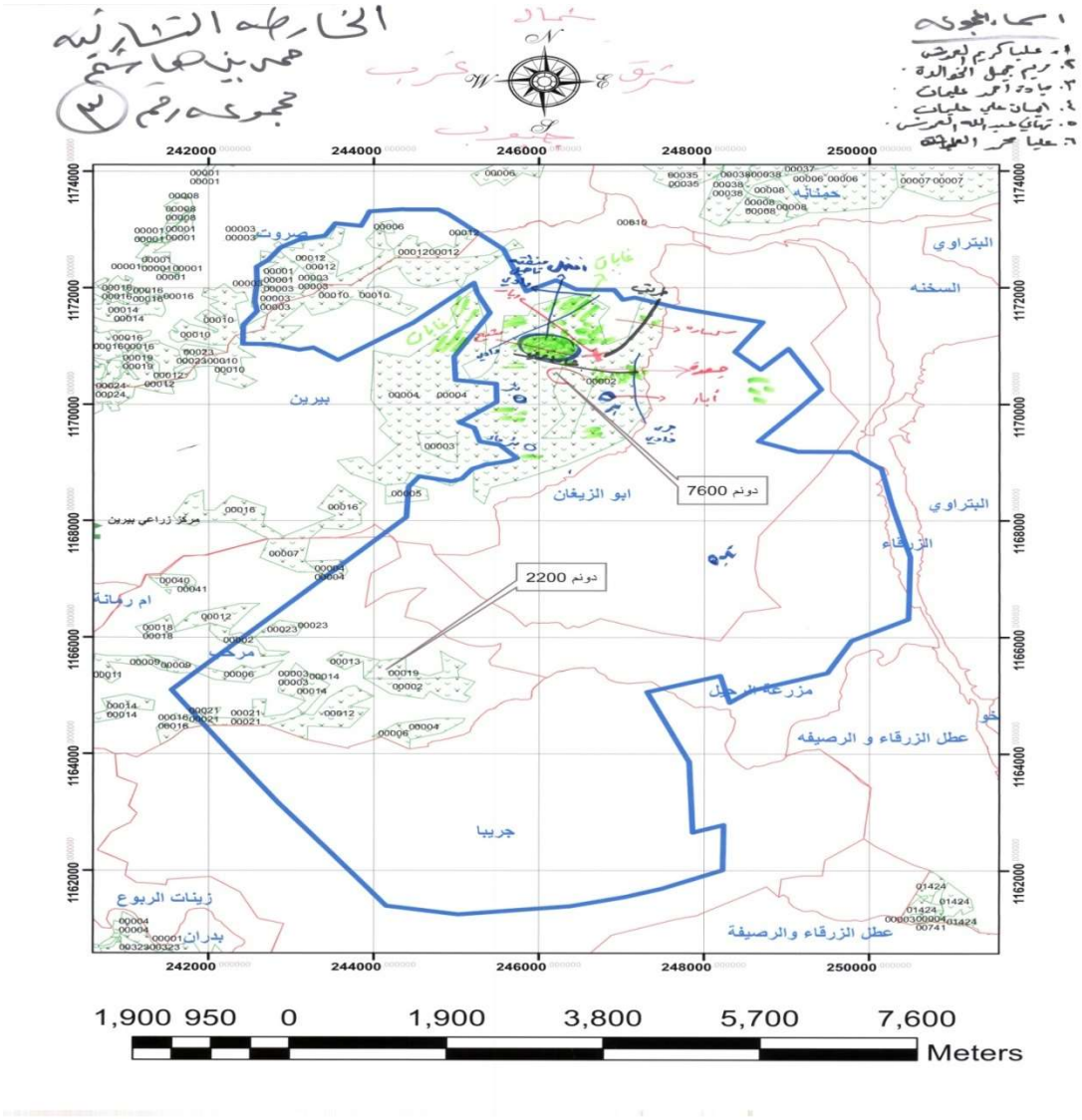
Table (6): Group TWO - The problems and suggested solutions and projects in Hima Bani Hashem site

Suggested Solutions and Projects	Problems	
1- Appointment/ The presence of a guard or raft 2- Addressing the Ministry of Environment to reduce the explosion in the crushers 3- Addressing the concerned authorities pave the street leading to the ALHIMA 4- Rehabilitation of the vegetation of medicinal and aromatic herbal plants. 5- Rehabilitation of water collection wells in the area of Al Hima to establish new projects and maintain their sustainability 6- Support one of the societies allocated In Alhima.	1- Overgrazing 2- The presence of crushers 3- Difficult to reach the site of 4- The lack of biodiversity in the site 5- Lack of plant diversity - due to overgrazing 6- Lack of water resources. 7- Lack of sustained projects 8- Lack of any funding for Hima Bani Hashem	**Group TWO**

Group THREE:

Participants 6 (all Females: four in the picture, 2 for cultural reason did not show)

Participatory MAP (Group three)

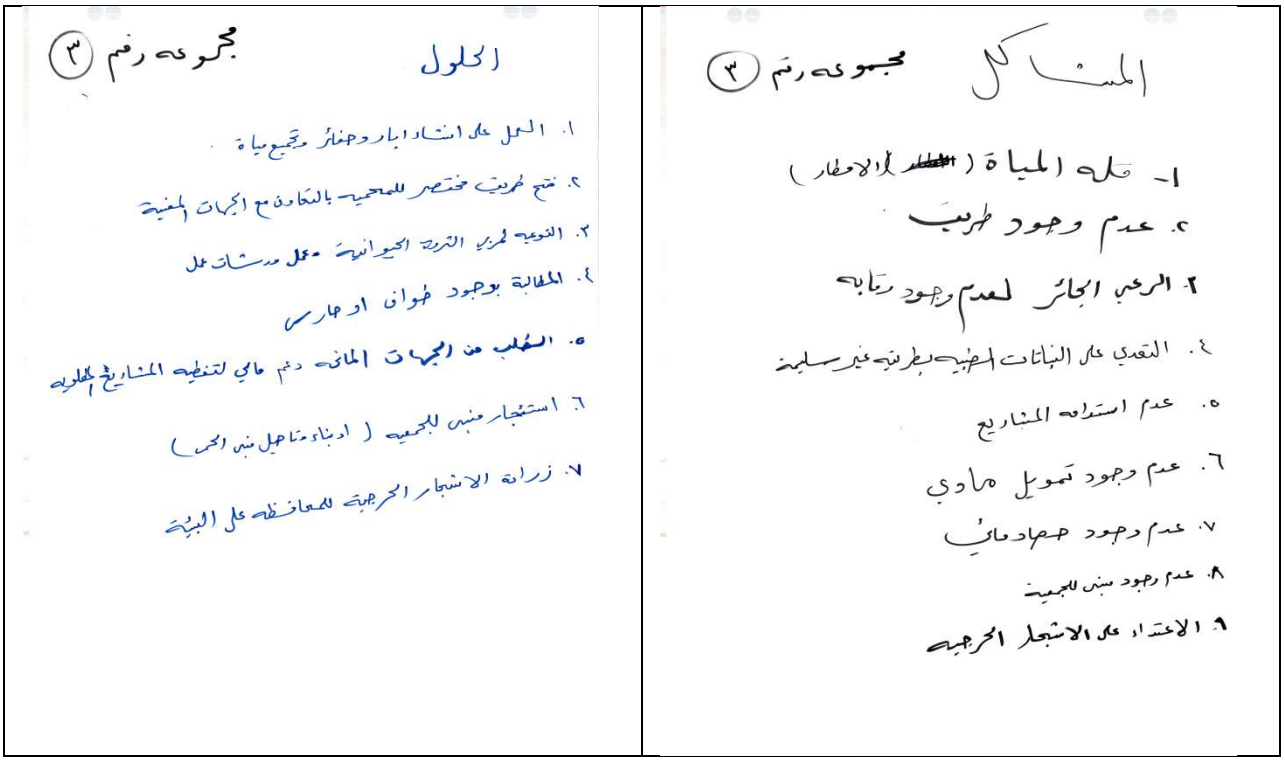


Participatory practices:

Suggested Solutions and Projects	Problems	
. 1- To establishment water wells and the collection of water (Water Harvesting) 2- Opening a shortcut (accessibility) to the reserve in cooperation with the authorities. 3- Awareness to livestock owners and herders–through workshops. 4- Appoint a guard or ranger to control and protect the site. 5- Look for funding through the organizations and donors for financial support proposed projects in site. 6- Rent of a building for the association Head quarter or maintenance of the building exists in Hima bani Hashem Site. 7- Planting forest trees in the site.	1- Lack of water (rain) 2- Lack of monitoring the grazing route and practices, 3- Lack of control on collection of medicinal plants, 4- Projects implemented lack of sustainability, 5- Lack of financial funding to the community projects, lack of water harvest, 6- Lack of a building for the association 7- Attacking forest trees through cutting	**Group THREE**

Table (7): Actual notes by the local community during the PRAGA practice – Participatory mapping

(Suggested solutions) الحلول	(Problems) المشاكل
مجموعة ① الحلول ١) - وجود حارس من نفس المنطقه ٢) - انشاء تجمعات مائيه ٣) - تعبيد الطرق أو فتح طرق جديده ٤) عمل حصاد مائي أو آبار أو سد ٥) - استئجار أو إقامة مبنى للجمعيه ٦) - إنشاء مشاريع لإستمرارية الجمعيه ٧) - متابعة المشاريع لإدار دخل للجمعيه ٨) - الحد من انشاء كسارات جديده ٩) - تأهيل المبنى الموجود داخل الحمى	مجموعه ① المشاكل ١) عدم حماية الأعشاب من الرعي الجائر ٢) - قلة الأمطار ٣) - عدم وجود طريق سهله للوصول ٤) - عدم وجود حصاد مائي ٥) - عدم وجود مقر للجمعيه ٦) - عدم وجود تمويل للجمعيه ٧) - عدم استدامة المشاريع ٨) - وجود الكسارات في المنطقه ٩) - الإعتداء على الأشجار الحرجيه
مجموعه (٢) الحلول والمقترحات ١ التعيين وجود حارس أو طواف ٢ مخاطبة وزارة البيئة للحوض التغجير ٣ مخاطبه الجهات المعنية لتعبيد الشارع المؤدي للحمى ٤ إعادة تأهيل الغطاء النباتي من النباتات العشبية الطبية والعطرية ٥ إعادة تأهيل آبار جمع المياه الموجوده في منطقة الحمى ٦ إنشاء مشاريع جديدة والمحافظة على إستدامتها ٧ دعم: من الجهات المخصصة للحمى - كدعم مادي ومعنوي	مجموعة رقم ② مجموعه (٢) المشاكل ١ الرعي الجائر ٢ وجود المحاجر ٣ صعوبة الوصول لموقع الحمى ٤ قلة في التنوع النباتي - السبب الرعي الجائر ٥ شح الموارد المائيه ٦ عدم إستدامة المشاريع ٧ عدم وجود أي تمويل مادي للحمى



Step 6. Participatory indicator selection

1- Aim

The aim of this step is to select indicators in the site that is important and affect the management practices. The participatory approach is based on the several factors on the site affect the management especially in the rangeland. As a result of the participatory meeting with the local community, the following indicators were discussed and explain the effects on site and utilization in the healthy rangeland management.

The target from this practice is to identify natural landscape area by determining the geography natural landscape area, identifying the local communities, ecosystems of the area and shown in the participatory practices.

The indicators explained and also implemented on the map.

1.Abiotic factor Indicator:

1. Soil:
   A. Soil type (clay, loam,)
   B. Soil fertility

2. Water**:**

   A. Precipitation annual rainfall
   B. Number of Water well at area

C. Water utilization from these well
D. Water quality

2. **Biotic factor indicator (Biodiversity)**
   A. Increase plant growth (Height and size)
   B. Increase medicinal plants at
   C. Increase flora diversity
   D. Increase fauna diversity (Birds)

The indicators were mapped on the participatory map based on the local knowledge and experience on the site.

Step 7. Composition and selection of assessment team

1- Aim

The aim of this step is to formulate a assessment team in the field in which we selected based on the community knowledge and supported with the RBG team.

2- Size of assessment team

The Team composed of representatives of each group and local elected committee members as well as the experts from the RBG (including the Ecology expert, field (Site) officer, Botanist). Mainly three group total of 12.

3- Skills

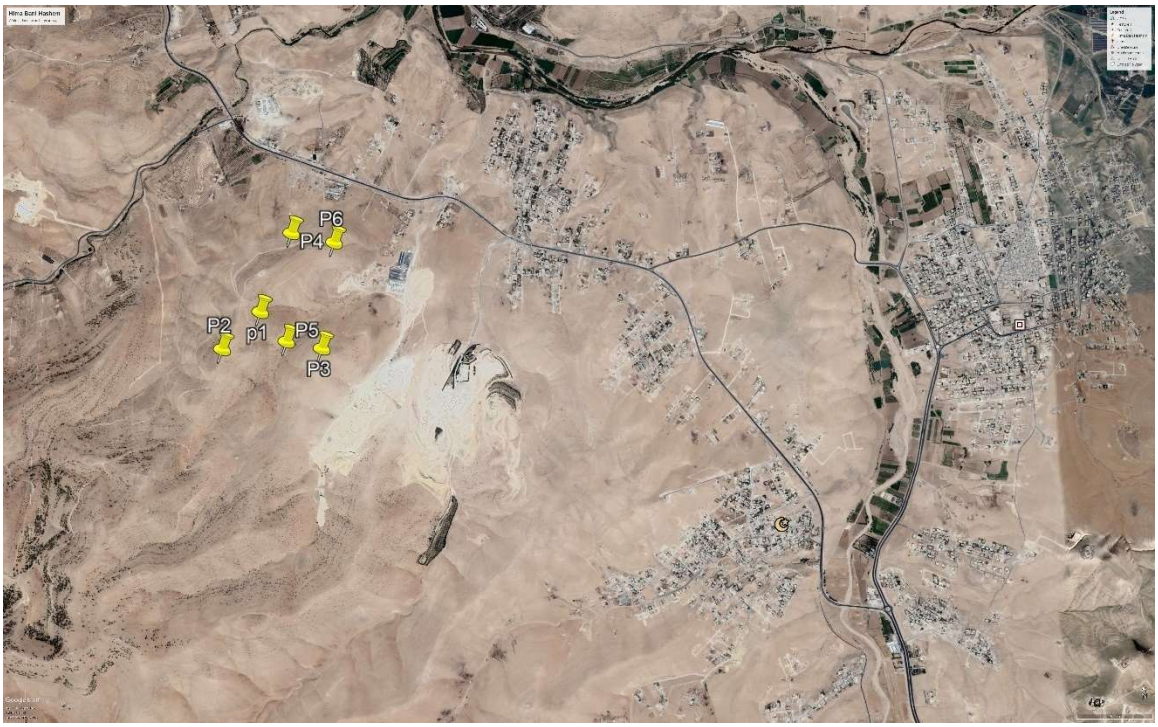
Local community experts (local knowledge experts) in the sites and vegetation and women who work and collect the medicinal plants in the site, and the botanist (scientific knowledge in plants and its uses), ecology and management expert (knowledge in plants growth and availability, response of plants to stresses), field officer the community contact points.

4- Training of the assessment Team

The Team was given a tutorial of who the process is conducted what to evaluate and collect data based on the data sheet.

Step 8. Field Assessment

The community pointed on the participatory map several location on the site based on there natural knowledge in the area and what is the possible site for intervention. Sites were visited and data were collected and suggested to go with the first 1000 ha to start with. And then to go up on the landscape level for 5000 ha. The map below shoed the 6 selected points within the protected area. (Figure 6



The map created is including the sites proposed by the local community on the participatory map created by the groups. The final results showed that 6 sites were in agreement with all the 3 groups. All data points were defined on the one map and then went to the field for clarification or Ground truthing. Out of the 6 sites, the community and the experts agreed on four intervention sites.

The second step was the field assessment based on the data comparison between the baseline and the community participatory mapping:

The field assessment was conducted with the community representatives of the three groups presented during the PRAGA participatory mapping practice.

The sites selected on the participatory maps were visited and assessed based on the three indicators presented on the maps (vegetation, water and soil).



Figure (9) show the disturbance of the mill and cement in the biodiversity.

For the biodiversity, plant species distribution, the species uses and endangered species, distinct species as well as new plant species exist after the protection for the government. The carrying capacity, grazing ability and possibility of restoration of certain species valuable to the site.

The data collected are summarized below:

1- Point One (P1): based on the participatory maps (copies were provided) and discussion for the data collection
    a. Plant species were identified and the most common plant species were listed (such as in common names : Alodo, Kadha, Harmal, Camel thorn)
    b. Location of water runoff in wadies and how this will affect the site and vegetation and grazing after word).
    c. Selection of areas best for restoration and rocks and hills, erosion, soil color and fertility related issue
    d. Soil color is reddish in areas and light brown in the other
    e. This site is suitable for intervention (Planting, no erosion).
    f. Unfortunately the site was subjected to heavy grazing due to lack protection.

2- Point two (P3 on Map)
    a. Plant species (ratam, khweka, Qeba, Alsur).
    b. Validate the water runoff sites, water resources and water collection wells)
    c. Soil is light brawn with moderate salinity, range plants can be planted, no erosion
    d. The site was subjected to heavy grazing activities due lack of protection.

3- Point three (P6 on Map)
    a. Plant species common in this site (wild Zatar (Thyme), Qeba, Sheeh, Alsur).
    b. Water runoff was validated and water collection wells were presented (need maintenance).
    c. Erosion (soil and water that need terraces and water harvesting contours).
    d. Soil is light brown with moderate salinity (based on local knowledge).
    e. The area is suitable for restoration of species.
    f. Subjected to heavy grazing due to lack protection.

4- Point Four (P4 on Map)

a. Plant species were identified (AlSheeh, Jaddah, Qeba, Ratam, Rotha (salsola))
b. Water resources are available through water harvesting and contours , and available water wells cannot hold water need maintenance.
c. The sites for restoration were defined and the soil erosion to be controlled through terraces and contour line maintenance.
d. This site the best suitable for medicinal plants and range plant restoration as identified by the local community.
e. The site was subjected to moderate grazing.

A summary for the local community knowledge on the site

The site need protection more than planting since seed bank in the site as well as the perennial plants are available and needs time to regrow, the overgrazing and uncontrol grazing management is the problem behind the decrease the plant density all over the periods outside the protection.

The sites based on the GIS mapping showed that the plant density is improving from 2013 till 2018 were the site was protected by the local community and the ministry of agriculture rangers. When no control is available the overgrazing decrease plant density and cause soil degradation especially erosion. Planting plant species that are palatable is favorable to the animals to graze.

The observed fact that when the plant desnity of the different plant species increased the wildlife is enriched in the site (such as Falcon, birds (ferre, Habari).

P6 → 7.3

Rangeland assessment datasheet

County and sub-county Name: ____________ Assessment date: ____________

Name of assessor/team: ____________

Site Name: ____________ Plot ID/Ref: (e.g. Danyere_01) ____________

Site geo-reference (GPS in Decimal Degrees): 0218971 Z 635

Photo no - (Plot ID_GPS coordinates): 3559206

Landscape context

Predominant land use type: grazing, browsing, cropping, forestry, protected area, other: ____________

Seasonal land-use type: wet season grazing areas, dry season grazing areas, other: ____________

Slope (circle any present): flat, gentle, medium, steep and sharp

Shape (circle any present): convex (hill), concave (valley), straight, swamp

Land ownership (circle appropriately): communal, private and government

Soil type: clay, silt, sand, loam, rocky

The distance to water from the plot: 0-1km, 1-2km, 2-5km, 5-10km, 10+km

Soil indicators

Soil disturbance indicators	High	Moderate	Slight/low	None
Number and extent of rill				
Comments:				
Number of gullies and gully associated erosions				
Comments:				
Extent of sheet erosions				
Comments:				
Photo no_ plot ID, GPS coordinates and date.				

Soil health indicators (Soil life)	Presence/absence of earthworms and other living organism in first 10cm		Absence of earthworms and other living organism in first 10cm	
Observable salinity	Yes		Comments:	
	No			
Visible organic litter	High, moderate, low, none			
Soil colour	Black - black cotton soil Kotich/Athable)	Reddish (Rama,	Grey white (Biye Bor, Boji, Rama)	Other colours (specify)

		Wayam soils)		
Soil structure	Loamy-clay	Loamy-sand	loam	Clay
Grazing potential	High	Moderate	low	

Water indicators

Drying up of wells	Yes, No	Presence/absence of trees showing high water table	
Change in well recharge rate	(1hr	2-4hrs	above 5hrs)
Other indicators (specify)			

Biotic condition indicators

Land cover type	Current			10 years ago		
	none	little	dominating	none	little	dominating
Bare ground						
Grass	✓					
Riverine						
Woodland/forest						
Shrub	✓					
Settlement/infrastructure						
Crop/tillage						
Other						
Photo no.						

(Visual image of approximately, 200 x 200m)

Extent of ground cover (areas that is visible from the stand point, use vertical photos from 1-2 meter elevation)	>50% bare soil		10-50% bare soil	>10% bare soil
% vegetation cover (current state)	>10%	10-50%	50-70%	>70%
% palatable species		✓	✓	
% perennials species				
% annuals grasses and forbs				
% vegetation cover (current state)	>10%	10-50%	50-70%	>70%
% palatable		✓		
% perennials		✓		
% annuals				

Record top 5 most abundant species within 100m of the point (in order of abundance)	Changes over the time period 20 – 30 years (increased, constant and decreased)		
1. Anabasis syriaca			
2. Noae mucronata			
3. Onopordum			
4. Phanagton rupston			
5.			
Range Utilization states (biotic disturbance measure)	Intact	Modified	Over-utilized
Absence/presence of ecto-parasites	Yes, No		
Comments:			

Step 9. Data management, post-assessment and validation

Aim

The use of DPSIR Analysis based on the partners (stakeholders form the local government and also from community

The community has a suggested vision based on their activities and knowledge in the Hima Bani Hashim Site: “To achieve an Ideal pastoral community that promotes the sustainability of the pasture and the diversity of sources as well as provide income for the community”.

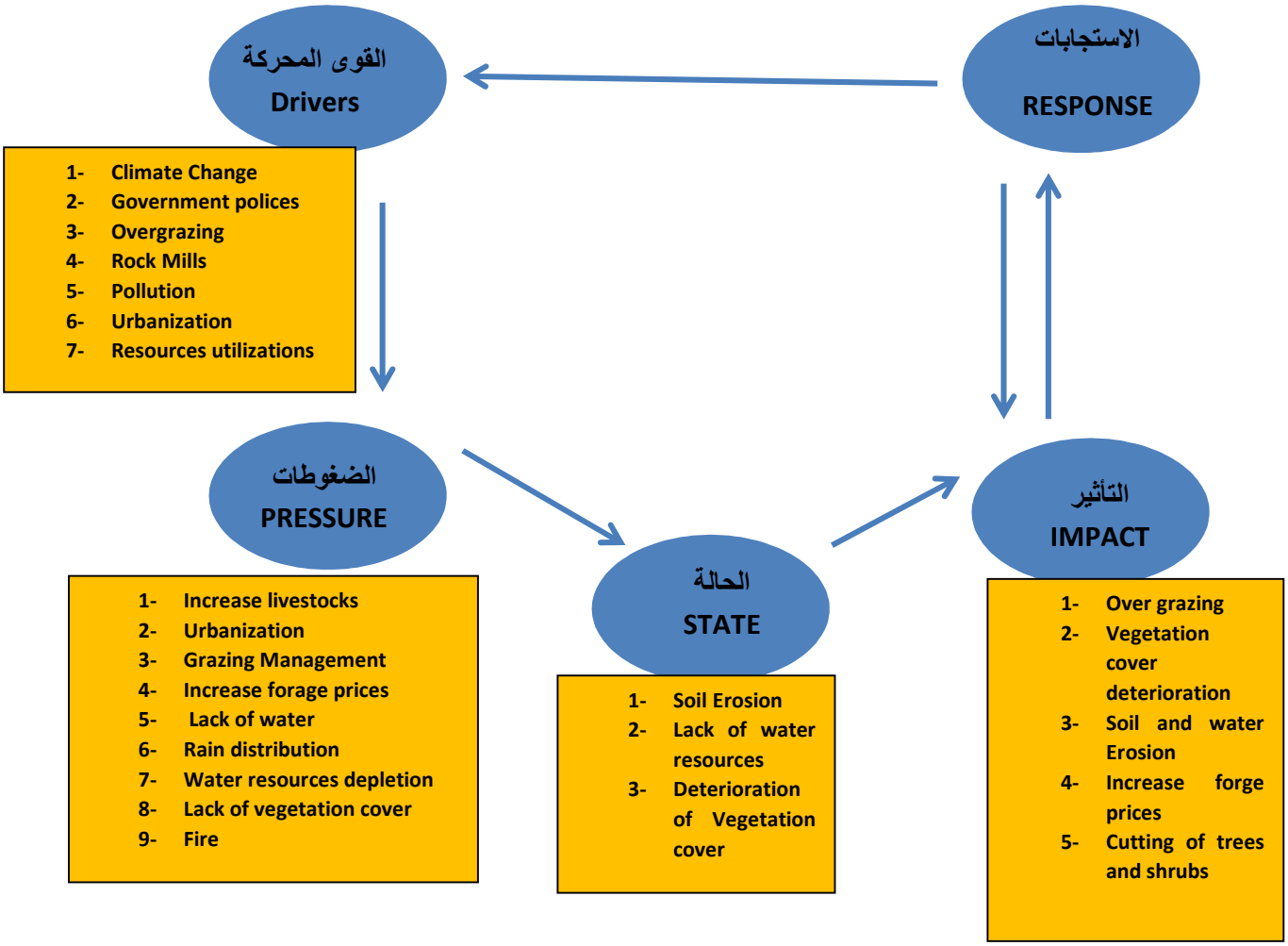


Figure (10) The DPSIR Analysis for the HIMA BaniHashim

Based on the suggested activities the analysis presented in DPSIR method were the State in HIMA Bani Hashim showed that the soil erosion, lack of water resources and the deterioration of the vegetation cover are recent cases exist in Hima Bani Hashim and the cause if such state is the Increase livestocks, Urbanization, Grazing Management, Increase forage prices, Lack of water, Rain distribution, Water resources depletion, Lack of vegetation cover, and Fire such all factors. The driving forces behind these is major climate change in temperature and rainfall causing low productivity in the rangeland and affects the prices of production of forages since the demand will increase due to the loss in the productivity. Also one of a major issue is the policies constructed by the government regarding the grazing in the wild through the permit to grazing in the open areas without planning and carrying capacity. Urbanization and land use is considered a driving force to decrease the areas for rangeland thus decreasing the density of the forages in nature.

In this workshop we validate the data of the baseline and community participatory mapping and DPSIR analysis to the results.

Figure (11). The community analysis using DPSIR method