



# A Natural resources-based planning through Land-use mapping in Al-Ghab plain in Syria

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**Abstract:** This text discusses the importance of natural resources in land use planning, focusing on their significance and the reasons for studying and classifying them[1]. By identifying natural resources at the beginning of the planning process, communities can determine where development is most appropriate, avoiding unintended consequences and guiding the plan accordingly. Natural resources should be protected, restored, and preserved through inventory and surveying, as well as management of lands and resources. The concept of land use, which is the final result of a regional plan, is based on natural resources. The types of plans and standards used in the land use plan are crucial, as is the importance of land management in land use and the success of the regional plan. The study emphasizes that natural resources are the basis for developing a land use map and regional plan, with inventorying and resource management being key to creating a balanced and comprehensive regional plan. The Al-Ghab Plain has been attracting development projects since the mid-20th century, leading to scattered population centers and high growth rates. The lack of spatial balance in the distribution of these projects has led to encroachment on agricultural lands and conversion to residential use, depleting many of the resources they contain. This research aims to evaluate the spatial suitability of the comprehensive development project for the Al-Ghab Plain through a spatial analytical methodology that seeks to preserve natural resources represented by agricultural lands and forest forests while not building at their expense. It also aims to develop a vision for the distribution of projects in the most appropriate locations given the characteristics of the place.

**Key Words:** Regional plan - physical planning - land management - spatial analysis- natural resources management

## I. INTRODUCTION

The development project for draining the forest stream is considered one of the largest and most important projects in Syria after the Euphrates Basin project. The project came into effect in 1953, as a result of which its swamps were drained and its waters were drained in 1959, and the reclaimed lands were laid out. Actual investment began in 1968 and several major dams and irrigation canals were constructed. And the secondary and secondary ones, to regulate the course of the Orontes River. From its entry point into the plain at Shaizar to its exit at the Qarqour Gate point, this was accompanied by a continuous increase in population and development. And the expansion of rural population centers, benefiting from the spatial development plans and projects that were successively implemented on the plain due to the wealth it contains[2]. And natural resources, as population growth rates reached record numbers exceeding the general population growth rate in Syria in the 1970s. And the eighties of the century. The twentieth. Spatial development projects for the plain also continued (as can be seen from the existence of development studies for the plain[3]. The forest was included in the successive five-year plans in Syria, the last of which was the Agropolis development project. However, this expansion of development projects lacked spatial balance in their distribution, as it did not take into account spatial suitability and privacy. The region, which led to encroachment on the uses of agricultural lands and their conversion to residential use and the depletion of much of the natural and human wealth and resources contained within the plain[4].

It is a process that puts the natural resource base at the forefront by identifying natural resources at the beginning of the planning process, the community can determine the most appropriate place for development. In this way, communities can avoid the unintended consequences of the typical planning process, such as open spaces becoming occupied in the wrong ways, water, soil, and climate resources deteriorating, and the character and identity of the community being jeopardized[5].

## II. A COMPREHENSIVE PLAN IN LAND-USE MAPS

A good comprehensive plan is not considered a "wish list" but rather a "rational list" of actions that are based on accurate information about the place in all its details[6]. Knowing and studying the inventories and assessments of the regional plan is a major step in the planning process at all levels, because it will help guide the plan about where development or other land use should occur and what natural resources should be protected, restored and preserved. This is done through:

Natural Resource Inventory(NRI) : It is information collected to determine the location, character and types of natural resources.

Natural Resources Survey( NRS) is an analysis to aid decision-making and management efforts resources, identifying development choices and needs, and reusing them in developing a plan in the future:

- Land and natural resources management.
- Natural planning and types of natural resources in the natural plan: Any land use plan, and therefore the regional plan, is closely linked to the natural determinants of the region (the region's location - the nature of the land - land resources - water climate - plants), and the region has its economic basis. Regional preparation The term preparation is equivalent to the term - reclamation. Prepare something means to prepare it, and it also means human intervention in the field in order to prepare it, and preparation which is a special organization that guides the state in organizing the relationship between its disparate .regions to achieve equal opportunities" For each region, highlighting its latent natural talents and capabilities, supporting its local character, or restoring the balance between the different regions within the country by defining aregional preparation as a planned work to organize the region according to its natural resources, and from it we know natural planning : as preparing the study area and surveying it. Its resources and land management. In the following: We identify the most important resources[7].
- Natural resources in the regional plan to produce a balanced land use plan, humanuse the land for many things and purposes and the land is considered an invaluable wealth and the most important resource in any country Land use is defined as: the set of functions that humans apply to the land available to them[8].  
The study of land use is the study of how to manage, preserve, and invest land in a sustainable manner, and how to adapt the natural world to human needs. The process of dividing land is linked to land uses, and it is all linked to how governments organize a set of laws and control this use in an orderly and balanced manner. By specifying a specific area for humans and giving permission for a scientific process to carry out human activities such as agriculture, urbanization, industry, trade, reserves, and preserving the natural environment from exploitation, in order to make the region more quality, give it balanced development, control pollution, protect the environment, and create links in the region that are effective in the short and long term[9].

### III. RESEARCH METHODOLOGY

Information collected from the current reality of planning in the region. This is based on deducing and monitoring trends of change and dimensions affecting the formulation of the regional strategy[10] This research relied on two types of data and information[11]

- i. Information and data issued by government agencies and official sources:
- ii. Information and data resulting from field survey work

This data was analyzed and diagnosed for all specialties, and then an initial evaluation of the organizational plans for the :population centers located in the region was added to it. This was accomplished according to the following stages

- Field uploading and matching information with what is available from official sources
- Compare organizational chart areas
- Prepared planning programme
- Implementing infrastructure
- Implementation of the organization

#### 3.1.NRI Outputs maps

The information contained in the maps comes from a natural and cultural database, from sources at the state, regional, or plan level

It can be ministries, information exchange centers, regional data or observatories, and governorates centers, including decision support directorates in the governorates or Municipalities and other sources, climate, soil and water conservation bodies in the country, natural resources conservation bodies, and environmental protection organizations if they exist. The tool used to extract information is called Geographic Information Systems (GIS) . (GIS and this program It has the ability to display multiple layers of data such as (terrain, slopes, soils, water areas, precipitation, temperature, etc.) on top of each other

Develop a plan, develop, preserve resources and place, make decisions and develop with the aim of:

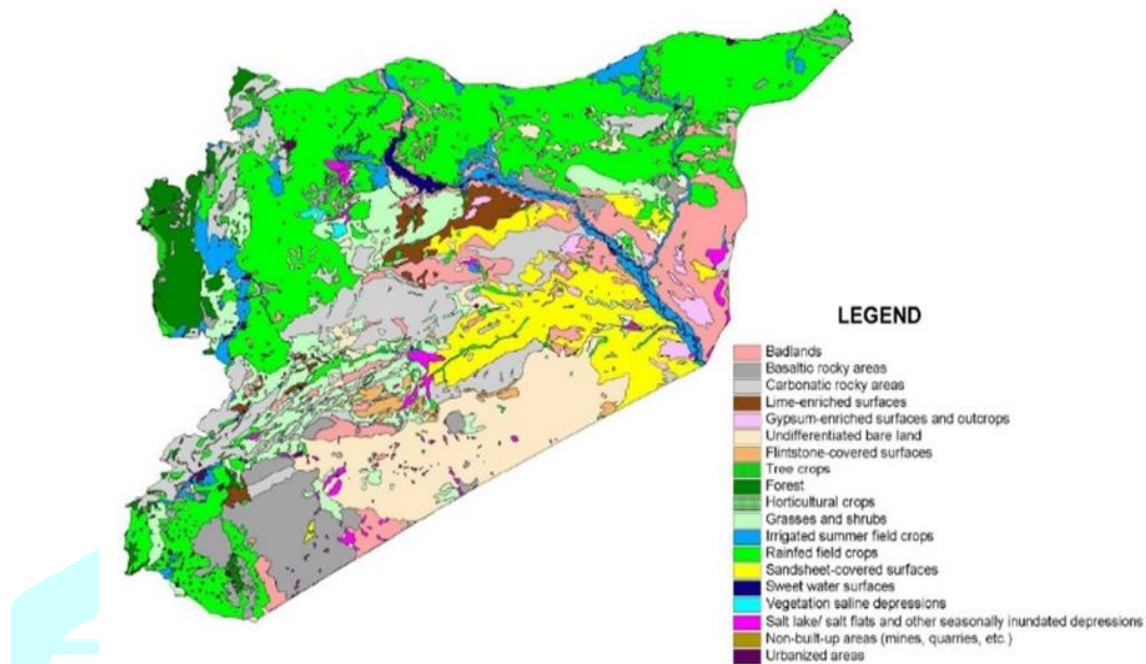
- Determine the current or future use or protection of natural resources.
- Provide a scientific basis for decision-making on both regulatory and non-regulatory approaches that conserve natural resources.
- Using inventory maps to show the location and extent of existing resources, such as location and its importance agricultural and urban lands, water of all types, surface and groundwater, and features related to underground resources.

#### 3.2. Strategy for theAl-Ghab area

- Converting resource advantages into sources of sustainable development, and the ability to create competitive advantage by finding new sources of added value and dynamic growth, with a focus on environmental commitment and social participation[7].
- The success of any development model in the region depends on the existence of an integrated approach to address critical problems in all sectors.
- The Al-Ghab region is one of the most important agricultural areas in Syria, as it is rich in water and characterized by fertile soil[12]
- "The Syrian government came up with the idea of establishing a special economic zone called "Agropolis in Al-Ghab in the period between 2000-2001, based on the observed wealth between the richness in resources and the small population. In 2007, the Syrian government signed a plan with the United Nations to start with the United Nations program. The development project aims to support theAgropolis project This region was chosen due to it being a region rich in natural resources, especially its fertile land and availability of water, its location in Aleppo, Latakia, Hama, and Idlib, and its location from the country. Also, from an economic point of view, this project is considered one of the most important development projects in Syria. At the local level, the region was divided into five main villages with municipalities, and each municipality was responsible for a group of smaller communities within the same zoning area[13].

### 3.3. Land uses in the Al-Ghab region

- The challenges in current land uses in the forests region are summarized as follows:
  - Integrated management of natural resources (water, land, climate, forests, energy)[14].
  - Participatory management of available resources according to the available resources (plant, animal).
  - Decrease in direct rent availability.
  - Lack of balance between cognitive level to meet the labor market and employment opportunities.
  - There is no enthusiasm among the labor force in the agricultural sector because: These jobs are of low value and income.
- Fragmentation of land ownership, which leads to weak returns resulting from pricing policies and the effects of small areas.



**“Figure 1” Simplified map of Land cover and Land-Use in Syria**  
**Source: Regional Plan for the Al-Ghab Region, Planning Authority)**  
**(regional)**

### 3.4. The project involves three stages

- The first stage (current situation) It is concerned with monitoring the current situation through a group of specialized studies and includes studies (natural - environmental - mining and petroleum resources - water resources - population - are conducted in parallel to arrive at results and recommendations[15].
- The second stage: Results: In light of these sector results of all previous specialized studies, a set of general results can be produced, and given the volume and overlap of information as well as the importance of the project, geographic information systems programs are used to conduct the analyzes required to reach the largest number of available alternatives according to a clear vision of future possibilities and expectations from By deducing the basic determinants from specialized studies affecting the process of selecting development areas, promising areas for urban development within the framework of the previous determinants and standards ( a succession of analytical processes using ( GIS ))[16]
- The third stage (recommendations): These are reached through previous studies of development areas in general, to which efforts must be directed, and through more in-depth and detailed studies at the lower and detailed levels[17].

## IV. RESULTS

The importance of this study comes from the fact that it reviews an applied experience of regional planning, from which all stages can be benefited from scientifically in terms of the methodology followed, work mechanisms, and approved information, and practically through the applied stages, strategic results, and development projects that have been reached

Firstly - Develop a targeted land use plan on a scale of 1/50,000 that determines the growth of population centers in a balanced and sustainable manner, achieves control of all types of pollution, and preserves the natural resources in the region

Second : Access to an integrated methodology and create a geographical database to provide the necessary information to ensure the proper functioning of the planning decision. This base can be updated and is linked to all parties concerned with development projects and regional planning[18] .

The study attempts to show the importance of the local forces driving regional development, which in themselves constitute relative independence by re-exploiting them to achieve optimal development of the region and the resulting repercussions This may include the following:

Searching for environmental emergency solutions and protecting natural resources, especially water ones, and their good management (sewage treatment plants, protecting groundwater basins, developing a master plan for treatment plants in coordination with other studying bodies)

Emphasizing the protection of natural environmental scenes due to the spatial specificity of this area in harmony with its religious - and archaeological importance

Considering agricultural activity as a major resource in the region and encouraging and protecting it to ensure economic returns - through a series of supportive, value-added projects from the food industry, organizing modern irrigation networks, and raising livestock, especially poultry farms

Developing tourism in the region in coordination with approved ministerial plans and expanding it to target cultural, - archaeological and environmental tourism. The project's goal is to create and improve links between sectors (agriculture and traditional crafts) and the tourism sector. This will be achieved if tourism takes its role in society and achieves long-term benefits[19].

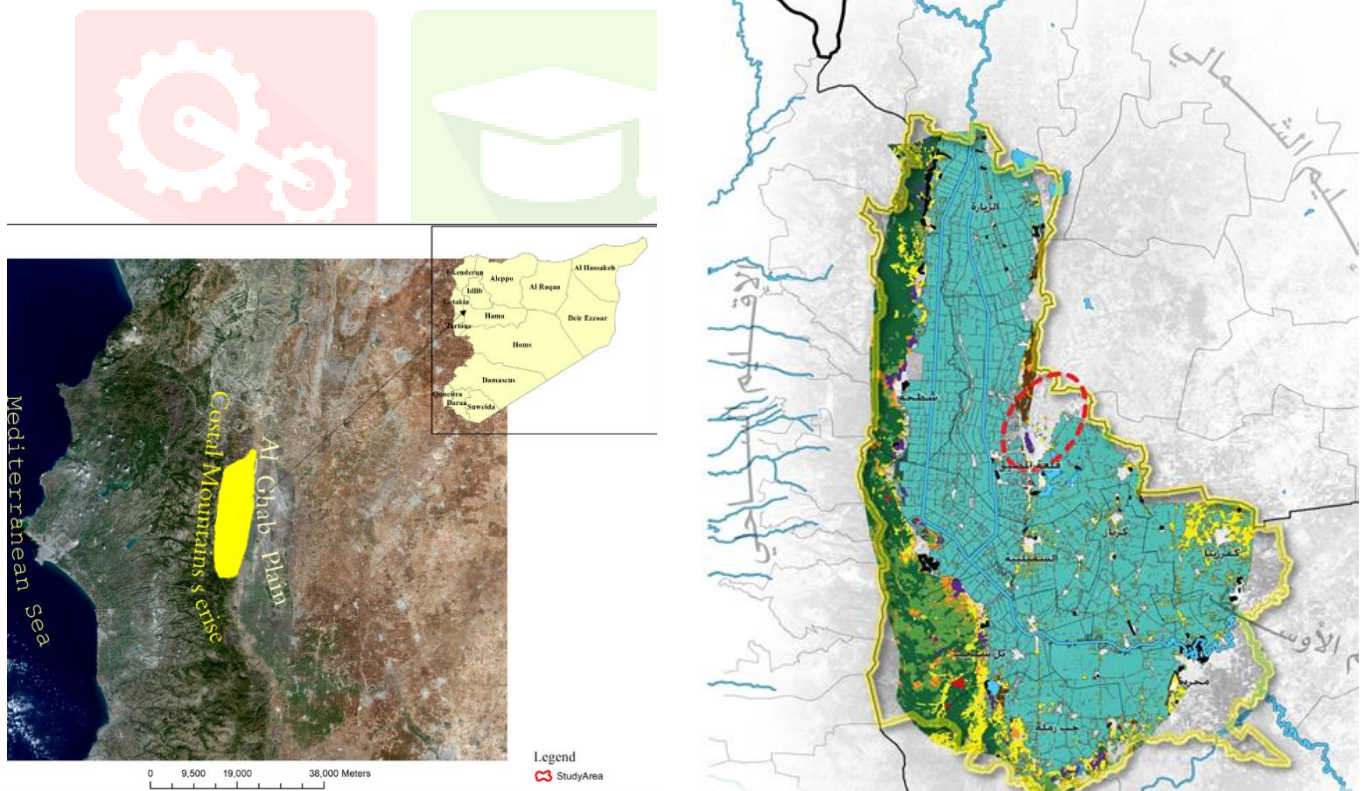
The limited income generated from the tourism sector shows that few local producers have a relationship with workers in the tourism field, and given the impossibility of visiting Hama Governorate, it is difficult to determine the reasons

There is a need to find mechanisms to support organic food production with relevant traders and open markets as a first step to help local producers enter tourist markets

The situation is different for the handicrafts sector, as Al-Ghab's location in the center of the country prompts artisans to offer unique products to visitors who are usually in the middle of their trip. It is well known that tourists tend to buy souvenirs within the last 24 hours of their stay. That is, fragile industries such as pottery are not popular among international tourists. However, it can be of great benefit to domestic tourism.

#### 4.1. The most important proposals for developing the land use approach as they are the most important chapters of local regional and national development

- ❖ Prepare a national map of land use at the national level and observe (advantages, disadvantages, and obstacles), no matter how high the costs are and how long the time is
- ❖ This map constitutes the general framework guiding planning operations at all levels, especially natural resources
- ❖ This map constitutes the general framework for preparing local planning documents, especially directive plans and detailed regulations for regions, urban and rural areas, and also gives clear indications of some sector policies related to land use for one purpose or another, such as land-filling, waste water drainage, industrial facilities, and many others, factors.
- ❖ Note the change in land use[20].
- ❖ Regulating land uses in areas not covered by directive plans and approved regulations and awaiting their coverage must be organized and plans prepared for them
- ❖ The spirit of the comprehensive plan directions for implementing projects in these or those areas should be adopted after preparing a national land use map
- ❖ With regard to the processes of construction and secretion, these areas are supposed to be subjected, pending their organization, to a "system general For regions not the organization", Inspired from principles use Lands in Regulated areas
- ❖ Predict a possible future scenario up to 2050 for the land use map
- ❖ Preparing good human resources represents an important foundation for achieving good land management in general, and data collection processes in particular, in addition to the uses of the various elements of land management.



“Figure 2” current land uses in the Al-Ghab Region  
Source: Regional Plan for the Al-Ghab Region, Planning Authority regional

## V. DISCUSSION

### 5.1. Proposed strategies for linking the relevant sectors

Supporting the efforts of local producers to provide products and services to those working in local tourism and aiming to improve the quantity and quality of supply and strengthening links between farmer producers and food manufacturers including organic agriculture, on the one hand, and tourism companies, on the other hand

Increasing the ability to supply various local handicrafts, and synchronizing them with the tourism market. Strengthening the ability of craftsmen to provide suitable products to local and international tourists

Bringing tourists to local producers is a strategy followed in developing countries where trips offer new and different activities to increase the duration of the visit and increase spending by tourists in the forests area and its surrounding areas. The ITC proposes that visitors be given a choice of several excursions (farm trips, workshop visits, etc.) that complement the activities undertaken under the first strategy.

But regardless of what tourism in the region will lead to, this report proposes a model for each project: tourism agriculture and tourism crafts. It also recommends organizing a workshop to discuss and evaluate the results and proposals of this study, to exchange ideas, and to encourage participants to start this project[21].

**Table 1. Summary of most important point to produce Land-Use map**

forests experience (local)	Analysis and study
<p>The forest in the national framework Administration Integrated For resources Natural agricultural Development agricultural Regions agricultural Private And its connection With the axes Developmental An integrated development focus with broad development features and qualifications Providing this development hot spot with the infrastructure to help transform it into a highly qualified agricultural-industrial complex of seven specialized industrial poles</p> <p>The most prominent of these areas are those proposed in Al-Ghab Plain for agricultural industries targeting export</p>	Strategies
<p>Integrated agricultural development, creating a special economic zone for agricultural industrialization</p> <p>And tourism development of the forests region by focusing on developing agricultural and environmental tourism with the aim of improving the standard of living of local residents and providing them with job opportunities, Developing and sustaining the environmental and natural resources of the forest area</p>	Desired results
<p>Legal framework for a special area in the forests</p> <p>Proposals for organic farming in the forests</p> <p>Specialized agricultural area</p> <p>Tourism investment and protection of natural resources, forests and fertile lands</p> <p>Water resources management plan</p> <p>Plant production and its problems</p>	Priorities
<p>The Al-Ghab region is one of the most important agricultural areas in Syria, as it is rich in water and characterized by fertile soil</p> <p>The country suffers from a water shortage accompanied by a severe shortage of agricultural land. Al-Ghab is considered one of the few remaining areas in the Orontes Basin in which irrigation can be continued depending on groundwater, as it is able to replenish the shortage in the groundwater reservoir from rainfall</p> <p>These facts make the Al-Ghab area one of the vital areas in terms of Syrian food security</p>	Priority actions of the land use framework
<p>Legal definition of forest</p> <p>Establishing a legal framework for forest management (the General Authority for Forest Management and Development, activating its role and defining its powers</p> <p>Determining the types of holdings in Legislative Decree No. 66 of ( Agricultural tenure system ) Tenure ranges from 1969 / 30 - 25 / acres of irrigation</p> <p>Legislative Decree No. 161 of 1958 (Social Units System).</p> <p>Utilization ranges from 80 to 250m<sup>4</sup>.per year</p> <p>Identifying development projects and evaluating their impacts</p>	Guidelines

<p>The General Authority for Forest Management and Development is a public authority of an administrative and service nature, with its main headquarters in the city of Suqaylabiya. It has a legal personality and financial and administrative independence and is linked to the Minister of Agriculture and Agrarian Reform. The Authority replaces the General Corporation for the Management and Regulation of Forest Investment and the Directorate of Agriculture and Agrarian Reform in the Forest, with their rights and duties</p>	<b>Resource Management</b>
<p>The first stage: Study and analysis of the current situation  The second phase: Setting regional perceptions and trends within the framework of national guidelines  The Third Stage  Formulating the regional plan and formulating development strategies  Regional land uses  Updating and reviewing the regional plan  The fourth stage  Converting the regional plan into executive sector plans  Follow up on plans and implementation mechanisms</p>	<b>Plan stages</b>

## VI. CONCLUSION AND RECOMMENDATIONS

Effective regional planning is crucial for the efficient management of resources and the development of human civilizations. It involves a strategic approach that considers the interconnections of geographical, administrative, and institutional areas, aiming to provide a long-term framework that recognizes the links between functional regions like urban-rural and inter-dependencies. The regional plan is based on presenting the natural resources available in a region and the activities intended to be conducted within it. Natural resources are essential elements found in nature, such as air, water, soil, and plants, which are considered part of the main parts of life. They are essential for human survival, improving income and standard of living, and contributing to the economy. Natural resource planning (NRP) is a process that puts the natural resource base at the forefront, allowing communities to determine the most appropriate place for development.

A good comprehensive plan is not a wish list but rather a rational list of actions based on accurate information about the place in all its details. This is done through natural resource inventory (NRI), which is information collected to determine the location, character, and types of natural resources. Natural Resources Survey (NRS) is an analysis to assist in decision-making and resource management efforts, identifying development choices and needs, and reusing them in developing a plan for the future.

Developing a land use approach is one of the most important chapters of local, regional, and national development. This includes preparing a national map of land use, adopting the spirit of the comprehensive plan's directions, and anticipating possible future scenarios. Preparing good human resources is an important foundation for achieving good land management in general. As well as data collection processes and the uses of various elements of land management are also important steps in the planning process. Land use plans are considered the visual result of the land use planning process, while its corresponding land use policies are considered the written result of that process. The process is more like zones, with some theories raising the issue of assigning land uses to a certain area, leaving the rest of the areas to see the regional plan and its directions, and then later expecting other uses.

In conclusion, effective regional planning is essential for the efficient management of resources and the development of human civilizations. By focusing on natural resource inventories, developing comprehensive regional plans, and ensuring the preservation and protection of natural resources, communities can work towards achieving their goals and promoting sustainable development.

## VII. ACKNOWLEDGMENT

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