

Addressing Spatial Disparity Geographically To Achieve Just Sustainable Development In Libya (A Comparative Deductive Analytical Study)

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Abstract

The study aimed to identify the population disparity gap in Libya, which the researcher perceived as hindering the implementation of sustainable development in the country. This led us to attempt to answer the main question of the study: Does addressing spatial disparity geographically play an active role in achieving sustainable development in Libya? In line with the overall objective of the study, which is to identify the types of natural resources in Libya to determine effective methods and their utilization for achieving sustainable development, the researcher employed an analytical and deductive approach to extract the study's results. Among the most important findings were the necessity of preserving stable and growing population density throughout Libya, dismantling the centralization that hinders the just implementation of development projects, ensuring human security and appropriate economic growth to achieve sustainable development. Furthermore, it highlighted the need to address the lack of a stable political climate and the absence of scientific administration, which negatively impacted the utilization of the nation's valuable resources, lowered the per capita income of Libyans, increased the prices of goods in their livelihoods, and the failure to provide genuine plans for implementing equitable and proper spatial development. This has halted sustainable development plans in the present and for future generations in these years. Moreover, exacerbating the problem is the concentration of human development in the cities of northern Libya, specifically in major cities, which has had a negative impact on neglecting towns and villages in the central, eastern, and southern regions. Additionally, equitable spatial development achieves the advantage of increasing individuals' sense of belonging to their homeland, eliminating cases of alienation and internal or external migration.

As sustainable development has become a strategic choice for the well-being of future generations, it takes on various forms.

Keywords: Human development, comprehensive development, spatial development, sustainable development.

Chapter 1: General Framework of the Study

Introduction

The concept of human development is widely discussed globally to enhance the status of individuals and as a central focus of any developmental process. Development, in general, refers to the growth and progress of human life in terms of living conditions, health, education, and security within a society. It depends on proper and fair implementation in environmental, economic, social, political, human, and spatial aspects. Development has four fundamental dimensions: human development, economic development, spatial development, and quantitative, qualitative, and temporal development. Furthermore, different forms of development are strategic choices for the well-being of nations and the economic strength of states in line with the advancements and technologies of the era. Sustainable development is an urgent necessity and an irreplaceable requirement in the stages of a nation's life. It aims to promote human development for all generations and address their economic and social issues. It represents "the objective of positive human struggle for humanity's preservation, security, and well-being, the sustainability of life on planet Earth, the equitable utilization of natural resources for all, and the assurance of the rights of future generations" (United Nations, 2003), considering all economic and geographic conditions. Sustainable development should be implemented through scientific methods and a well-defined scientific strategy in the long term. It should follow balanced and equitable development plans encompassing all segments of society within a single country. It should also address and bridge all negative economic gaps at the individual or state level in different age stages, whether in the present or the future. This is to raise the national income level and preserve the rights, needs, and requirements of the current and future generations in the long run, in light of the information revolution, technological advancements, and the world of interconnected networks. These factors assist in addressing the spatial disparities in implementing high-quality human development and consequently enable the application of balanced spatial development. By answering the questions posed in this study in order to implement sustainable development in Libya, including addressing the main question of this study, which is: Does addressing spatial disparities

geographically have an effective impact on achieving fair sustainable development? This study also works towards achieving the overall goal, which is to identify the best approach to harnessing natural resources in Libya in the right locations throughout the country without discrimination or spatial or social bias, and utilizing them for human and sustainable development, taking into consideration the positive Libyan characteristics, which include vast geographical area, the extension of the southern Mediterranean coast and northern Libya, abundant marine resources, mountains and plateaus rich in plants and trees, fertile agricultural lands, as well as the presence of natural resources represented in the barren deserts in the south, including oil, natural gas, and underground water located on the largest lake in the Great Desert within Libyan territory. It also enjoys the existence of precious minerals such as gold and diamonds in southern Libya, with a low population density that only requires the implementation of spatial development, which is considered the main gateway to achieving sustainable development in light of the spread of the information revolution, globalization, and the race to achieve the sustainability of life on planet Earth, ensuring the rights of future generations (United Nations Report, 2003). The descriptive-analytical approach was adopted to understand the concept of spatial development correctly and then assess the level of spatial development in Libya by monitoring developmental disparities and investigating their causes. The inductive method was also used to link theoretical study with practical study, and to analyze and draw conclusions by collecting information and data on population characteristics and natural resources for investment using the statistical program SPSS for analysis and inference, to extract results, recommendations, and answer research questions, as well as test the hypotheses of this study. From all of this, we seek to address the negative aspects of spatial disparities in development and the possibility of implementing balanced spatial development in Libya. The study has reached the following important results: the necessity of maintaining stable population density to achieve fair sustainable development by dismantling the centralization in implementing development projects fairly, thus achieving sustainable development in Libya.

Previous studies

Previous studies are characterized by providing an objective, comprehensive summary and a constructive critical analysis of research. They demonstrate the similarities and differences regarding the topic at hand. These studies have been previously conducted in the fields of scientific research, approved either through scientific theses, conferences, specialized scientific symposiums, or peer-reviewed scientific journals. They derive direct relationships between variables and serve as a basis for the

current study in terms of utilizing and comparing the findings, highlighting similarities, and reaching conclusions and recommendations. The following are examples:

First - Arabic Studies

Study 1: A study conducted by Mardi (2019/2020) titled "Unbalanced Spatial Development and Its Impact on Aspects of Deprivation in Al-Muthanna Governorate, College of Arts, University of Iraq."

This study focuses on the vast area and diverse resources of Al-Muthanna Governorate, which suffers from cases of deprivation in services and development projects. The research aims to study the dimensions and spatial distribution of development in Al-Muthanna Governorate, identify the main reasons for the spatial variation in development projects and deprivation in those areas. The study revealed disparities in population distribution, economic, industrial, and agricultural activities, as well as infrastructure projects such as water, sewage, roads, and housing units. These aspects are concentrated in the Al-Samawa district, the center of Al-Muthanna Governorate, and Al-Rumaytha district, while population numbers fluctuate and manifestations of deprivation are concentrated in Al-Salman district, which lacks projects and services. This disparity is attributed to two main factors: the nature of the desert region and the flaws in spatial and regional development policies for development projects in the study area.

Second Study: Study by Azaldin (2020) titled "The Impact of Weak Political Institutions on Sustainable Development in Libya."

The study aimed to highlight the weakness of institutions in the country, which is considered one of the main indicators of failure in building stable political institutions capable of overcoming major crises in the country. The state is a project capable of achieving sustainable development that meets the present needs without compromising the ability of future generations to meet their needs. The study focused on rationalizing spending and consumption since sustainable development seeks to improve living conditions for all members of society. The study emphasized the importance of the topic as one of the development goals adopted by the United Nations in 2015, which relies on the principle of strong institutions to achieve sustainable development. It shed light on the political institutions in Libya, measured the extent of weakness experienced by the country, and its impact on sustainable development. It also clarified the concept and importance of sustainable development, identified the impact

of weak institutions on sustainable development in Libya, and addressed the main question: To what extent does the weakness of political institutions affect sustainable development in Libya? The study consisted of two main axes: theoretical frameworks and identifying political institutions in Libya, and sustainable development, its concept, and importance. The second axis examined the impact of weak institutions on sustainable development in Libya, including the weakness of political institutions in Libya and the effect of this weakness on sustainable development. The study concluded with several results, including the fact that divisions, conflicts, and wars are the main causes of weak political institutions in Libya, which is considered one of the main reasons for the failure to achieve sustainable development goals.

Third Study: Study by Shertel and Wandsh (2021) titled "The Role of Misurata University in Activating Sustainable Development from the Perspective of Faculty Members (College of Arts as a Model)."

The study aimed to identify the role of Misurata University in activating sustainable development by improving the quality of life, as it has a significant and effective impact on the social, environmental, and economic aspects of society. Due to the significant role played by universities through their educational institutions in achieving economic and sustainable educational development, which positively reflects on the surrounding environment. The study addressed the problem through the following questions: What is the role of Misurata University in activating sustainable development from the perspective of faculty members in the College of Arts? The study covered various areas, including social, economic, environmental, and technological aspects. The study used statistical methods such as mean and standard deviation, as well as the t-test for two independent samples based on the study's variables. The study found that there is a general weakness in the role of Misurata University in activating sustainable development from the perspective of faculty members.

Fourth Study: Study by Sultan and Al-Jubouri (2022) titled "Contemporary Perspectives in Geography and Development, Iraq."

The study aimed to highlight the interdisciplinary nature of geography and its study of the relationships and mutual influence between phenomena and humans. This comprehensive view of geography studies multiple phenomena while targeting humans at the same time. Despite the existence of specialized sciences that study the topics addressed by geography, there is still a pressing

need for it. This has led geographers to acquire the ability to contribute to solving many global problems and engage in various different applied fields. The study used an inductive methodology to clarify the nature and subject of geography, its problematics, and its objectives in order to redefine its concept. The study found that geography, as an applied science, plays a significant role in studying development, whether in terms of its material foundations or through the study of spatial and regional variations. However, there are many obstacles and problems that hinder sustainable development, with an important one being unbalanced population growth, which acts as the core that revolves around other environmental problems.

Second - Foreign Studies:

First Study: Study by Dhiaulhaq and Brett (2020) titled "Achieving the Sustainable Development Goals Requires Transdisciplinary Innovation at the Local Scale."

The study aimed to achieve sustainable development through innovative approaches at the local level. The diverse local conditions across regions present numerous challenges and opportunities for implementing global sustainability frameworks, such as the Sustainable Development Goals. The transformative grassroots change led by local communities, cities, and local businesses can offer a promising approach to achieving sustainability. This approach is designed specifically for the unique circumstances of each context, relying on a systematic review of scientific and policy experiences. The study explores some key challenges in local sustainability, such as conflicts over local priorities, competing interests among different stakeholders, and the risks posed by future uncertainties. It proposes a transdisciplinary agenda that integrates effective collaboration and genuine stakeholder engagement to address these challenges. The proposed agenda is crucial for mobilizing cooperative efforts that enhance joint learning among scientists and stakeholders in the pursuit of sustainability through metrics. The study highlights the need for an effective approach to integrate and activate local sustainability in a more consistent manner, emphasizing the important role of institutions, policies, and strategic partnerships in shaping this approach. It emphasizes the significance of cross-methodological efforts that can integrate diverse perspectives and engage with different stakeholder groups (both academic and non-academic) through effective partnerships.

Second Study: Study by Yang Zhou (2021) titled "Territory Spatial Planning and National Governance System in China."

The study explores the concept of spatial planning and its relationship with the national governance system in China. Spatial planning refers to the long-term planning and overall arrangement of land resources and spatial organization under the jurisdiction of a country or region. Its objective is to achieve effective control, scientific management of regional space, and enhance the balance between development and protection. Spatial planning is considered an effective tool for promoting sustainable regional development management. The study systematically reviews the history of spatial planning in China, the key issues it faces or brings about, and analyzes the main measures and potential challenges undertaken by the state. It proposes countermeasures and suggestions to enhance the establishment and implementation of the National Territory Spatial Planning (NTSP) system. The results show that as the largest developing country in the world, China faces several problems in spatial planning, such as different types, overlapping conflicts, complex approval processes, recurrent planning reviews, and implementation difficulties. These issues have led to an imbalance in regional development, ecological degradation, resource constraints, and regional imbalances in development. To address these problems, China is innovating to establish a unified system of spatial planning and promoting the transformation of spatial planning from sector-specific, private, or fragmented planning to an integrated approach. China actively works on legislation, which will play a prominent role in enhancing state affairs and spatial management through the law.

Problem of the Study

Currently, the Libyan administration is facing confusion and dispersion in implementing human development projects due to the state's control over economic activities throughout Libya and the expenditure on activities in the economic development process. This has led to the dominance of the public sector. However, the rentier economy has failed to achieve its development goals, and the rentier economic model continues to govern economic activities, leading to a lack of appreciation for the importance of fair regional development or the implementation of precise strategic planning to apply sustainable development. The reason behind this is the concentration of developmental projects of various kinds in the capital and some major cities in northern Libya, while neglecting the central, peripheral, and southern cities. As a result, human development has not reached most regions of Libya, which truly need short-term and long-term developmental investments to preserve the Libyan society's structure and stability across all Libyan territories. This lack of equity in distribution and achieving returns to promote homogeneity among different

regions in the Libyan state has created a sense of injustice and marginalization among the inhabitants of these regions. Consequently, it has led to internal migration from the south to the north among the population and the migration of scientific minds beyond Libya's borders. This motivated the researcher in this study to attempt to develop scientific research programs aimed at achieving a balance between stable population growth and equitable economic growth in Libyan society. The aim is to address disparities and fill the gaps in regional development policies. The problem of this study revolves around attempting to answer the following main question:

Does addressing geographical spatial disparities play an active role in achieving sustainable development?

Study Questions:

1. Is there an active role for addressing population density distribution in achieving sustainable development in Libya?
2. Is there an active role for equitable spatial development distribution in achieving sustainable development in Libya for the entire Libyan society?
3. Is there an active role for utilizing all natural resources in Libya to achieve sustainable development?
4. Is there an active role for the presence of railways throughout Libya in achieving sustainable development?
5. Is there an active role for the availability of infrastructure services through electronic administration in achieving sustainable development in Libya?
6. Is there an active role for encouraging foreign investments to operate in remote areas in achieving sustainable development in Libya?
7. Is there an active role for attracting rare scientific competencies internally or externally to achieve sustainable development in Libya?
8. Is there an active role for political stability and human security throughout Libya in achieving sustainable development?

Importance of the Study:

The importance of the study lies in adopting development topics in all their fields, which are closely related to improving human life and the role of natural resources, including energy, water resources, oil, gas, and precious minerals, in sparsely populated areas. Geographical treatment of the development topic with its economic, social, and spatial dimensions is necessary. Development must have a spatial dimension to manifest its effects in the surrounding environment or end with geography. These effects vary at different levels, meaning that development conceptually begins with human settlements.

Study Objectives:

The study aims to clarify the nature of the relationship between geography and development in Libya, as follows:

1. Identifying the types of natural resources in Libya to determine successful methods and their utilization to achieve sustainable development.
2. Recognizing the population variation, potentials, and development capabilities within the geographical area of Libya.

Study Boundaries:

1. Spatial Boundaries: The study is limited to the known administrative boundaries of Libyan cities and villages.
2. Time Boundaries: The study's time boundaries extend from the year 1961 to the present, based on data collected from official sources for the study, aligning with the Sustainable Development Conference at the University of Jordan

Research Methodology:

The deductive methodology was adopted for interpretation and analysis, followed by the descriptive-analytical comparative methodology and then the inductive methodology to link theoretical study with practical study regarding environmental, economic, social, and urban aspects. The deductive method was used to draw conclusions and answer research questions, as well as to test hypotheses.

Terminology:

1. Development:

The word "development" in the language refers to growth and elevation. The term development conceptually refers to the process of improvement, progress, and advancement towards a better stage. This definition can be further detailed based on the field of development application. Development can be defined as the practical implementation stage of developmental theories and principles, as the practical extension of theoretical aspects. It may have a social orientation, where social development is defined as "a phenomenon that can create influential movement in the political, social, and cultural fabric of human society" (Al-Mizert, 2005:217).

2. Sustainable Development:

It refers to "utilizing the resources needed by individuals in the long term to create an environment and preserve life." In language, it signifies increase, abundance, growth, multiplication. In terms of the concept, it represents intentional changes in a state, which can be social, economic, or political, aimed at

transitioning from the current situation to a preferred and desirable state. This enables the state to achieve development, continuously improve its conditions, and enhance the well-being of its population by utilizing all available resources in the appropriate locations to achieve equity.

3. Spatial Development:

It is the developmental process aimed at improving the living standards of individuals within their environment, promoting leadership, social, and environmental sectors in comprehensive integration that leads to achieving goals without causing harm to the place's resources. This is known as the sustainability of spatial development. "Those changes that occur in the condition of a region intentionally with the aim of improving the living conditions of its inhabitants among its different parts, reducing human spatial disparities by optimal utilization of its resources, and improving the efficiency of its human potentials in all its details" (Abdel-Aal, 1992:4).

Chapter 2

First: Concepts of Development and Their Characteristics

Introduction:

Human development is the process of expanding human choices, options, and capabilities for a decent life. It involves living a dignified and healthy life, acquiring knowledge, and accessing the necessary resources for a decent standard of living. Development is a crucial priority in social protection and long-term development programs that target all members of society, with a particular focus on marginalized and vulnerable groups. Its aim is to eliminate poverty and reduce all forms of inequality. It focuses on addressing all weaknesses within a society, whether they are economic, political, or social. Internal and external forces contribute to progress and development in various dimensions, working to strengthen existing weaknesses and unleash potentials.

Human Development:

Development means movement and growth, and growth implies increase or (decrease). In accordance with these meanings, the concept of development is used as a synonym for the concept of modernization. Human development is the expansion of people's choices to live a long life in good health, acquire useful knowledge, and enjoy a decent level of political freedom and human rights (United Nations Development Report: 14:2003). Development emphasizes the economic aspect by improving material and economic conditions to raise individuals' living standards and social lives. It is not solely focused on income or the economic

aspect but also on building the human being itself (Atwa, 2004: 26).

Spatial Development:

Geography, as the science of spatial variation, deals with the real variation of developmental indicators, their geographic distribution, temporal evolution, and the type of relationships that govern them. From this perspective, the geography of development emerged as a branch of human geography, from which sustainable development also emerged. It refers to the optimal management of natural resources, focusing on maximizing the benefits of economic development while preserving the services of natural resources. However, it faces several obstacles and problems, including unbalanced population growth because "population growth is influenced by a system of social, economic, environmental, psychological, and political variables" (Al-Akras, 1980: 109). One of the important elements of spatial development in any country is the establishment of clear and ambitious strategic development plans, overcoming obstacles that hinder self-development and spatial development, and supporting individual and community work programs within the state. This is achieved through coordination and cooperation between relevant entities to achieve sustainable development, whether in advanced countries or ambitious developing countries with rich natural resources. Spatial development is a crucial element that helps in engineering spatial economic development, which has four fundamental dimensions: the location of development (territorial), the amount of development (quantitative), the type of development (qualitative), and the duration of development (temporal). Geographic human development refers to the properties of different regions with the aim of meeting the needs of the population and improving their living standards (Dabbasalti, 2006: 4).

Comprehensive Human Development:

It is a gradual process of changing the quality of human life, making it the focus and main subject of development. This process involves economic growth with social justice, transforming production methods and consumption patterns while maintaining ecological balance and bio-support of the region. It ensures respect for human dignity and cultural diversity, as well as enhancing full citizen participation in harmonious coexistence with nature. The importance lies in the need to preserve natural resources for future generations. Cultural development aims to elevate the level of culture in society, promote human beings, and enhance their cultural capabilities to confront cultural and

intellectual invasion. Some argue that the term "human development" is preferable to "humanitarian development" because the former implies a higher state of human existence (United Nations, 2003). "Development is not about owning natural resources or importing the latest technologies, but developing human capabilities and caring for development projects such as culture, civilization, education, and health" (Alhadoul, 2003, p. 56). Economic growth refers to sustained long-term increase in gross national product, while economic development encompasses structural and significant changes in economic, social, political, and demographic aspects. Therefore, economic development is broader and more comprehensive than growth (Al-Qurayshi, 2007, p. 121). However, individual income in all countries does not necessarily reflect a ranking compared to the average income in other countries, including economically advanced ones. This cannot be considered a good indicator of growth and development. In Libya, this has been achieved due to oil and gas revenues and other abundant natural resources. Economic growth alone does not equate to development. Comprehensive development means building an integrated civilizational project that achieves integration and balance between economic, social, and cultural aspects. Today, it is not acceptable to ignore the social, historical, and cultural content of both development and underdevelopment (Adda'bousi, 2010).

Concept of Sustainable Development:

It is the process of maintaining and sustaining multiple resources in the environment, meeting the current social and economic needs of humans, and managing them with advanced technology and long-term planning to ensure resource continuity for the well-being of future generations (Abbass, 2010, p. 17). Sustainable development refers to international measures in the field of development and the environment that must serve the interests and needs of all countries. Sustainability is a thinking model about the future that takes into account economic, environmental, and social considerations within the framework of improving the quality of life and striving for future generations' development. The domains of sustainable development (economic, social, and environmental) intersect with each other in the present and future (UNESCO, 2013, p. 6).

Foundations of Sustainable Development:

The concept of sustainable development is based on a set of foundations or guarantees aimed at achieving its goals concerning humans, nature, and technology (Supreme Council for Education, 2002:61). The most important of these foundations are:

1. Development should take into account the preservation of the characteristics and performance level of current and future natural resources as a basis for the partnership of future generations in the available resources.
2. Development should not only focus on the economic growth returns but also on the quality and distribution of those returns, and the resulting improvement in living conditions for citizens when linking development policies to environmental preservation.
3. It is necessary to reconsider current investment patterns while promoting the use of environmentally compatible technologies that aim to reduce damage and environmental imbalance and preserve the continuity of natural resources.
4. It is not enough to only modify investment patterns and production structures; it also requires adjusting prevailing consumption patterns to avoid wastefulness, resource depletion, and environmental pollution. The sustainability, continuity, and resilience of production systems are the basis for preventing the potential collapse of development components, especially in developing countries that rely on traditional systems linked to natural environmental components (Barbara, 1995).
5. The concept of development returns must include everything that benefits society, not limited to returns and costs, based on the return of indirect environmental impacts and the resulting social costs that reflect shortcomings in natural resources (Ibrahim, 2004: 6).

Goals of Sustainable Development:

The goals of sustainable development aim to achieve the following (Ghanem & Alzant, 2016):

1. Achieving a better quality of life for populations: This involves maintaining a focus on the relationship between population activities and the environment, both in the short and long term. It deals with natural resources and their content based on human well-being through measures of environmental quality, reform, and an integrated and harmonious relationship.
2. Enhancing population awareness of the environment: This involves developing a sense of responsibility among the population and encouraging their active participation in finding appropriate solutions through their involvement in the preparation, implementation, monitoring, and presentation of sustainable development programs and projects.
3. Respecting the natural environment: This is achieved by establishing a positive and beneficial relationship between population activities and the environment, and dealing with

nature and its content based on a better human life from the environment in the present and the future.

4. Achieving rational utilization and use of resources: Here, development deals with resources as limited, preventing their depletion or destruction, and working towards their rational use and utilization to achieve sustainable development.
5. Using modern technology and aligning it with societal goals: Development attempts to employ modern technology in a way that serves the goals of society by raising awareness among the population about the importance of various technologies and how to use existing and new technologies to improve the quality of community life. This should not lead to negative environmental risks, or at least have appropriate solutions to mitigate such impacts.
6. Appropriate changes in the needs and priorities of society: By adopting an approach that aligns with capabilities and achieves a balance through which economic development can be activated and all environmental problems can be addressed.
7. Achieving sustainable economic growth: Achieving growth that preserves capital, including natural and environmental resources. This, in turn, requires the development of sound economic institutions and the establishment of suitable scientific risk and volatility management, as well as equality in wealth distribution among successive generations.

Characteristics of Sustainable Development:

1. Sustainable development has several characteristics, including the following (Al-Faraji, 2021):
2. Achieved in the long-term strategic perspective: Sustainable development is achieved over a long-term time frame, considering both the qualitative and quantitative dimensions. It prioritizes meeting the basic needs of individuals and preserving the natural environment and its contents.
3. Considers the preservation of community diversity and uniqueness: Sustainable development values the preservation of community diversity in terms of religion, civilization, culture, and the rights of future generations to natural resources. One of its primary goals is to develop and focus on poverty alleviation.
4. Based on international coordination and integration: Sustainable development relies on international coordination and integration in resource utilization, as well as organizing and coordinating the relationship between rich and poor countries.

Principles of Sustainable Development:

1. The principles of sustainable development are based on the relationship between human development on one hand and the environment on the other. The most important principles include (Al-Faraji, 2021):
2. Adoption of planning approaches: Some countries seek to implement sustainable development through the adoption of development plans. These plans aim to achieve sub-systems that lead to environmental balance and meet the needs of present and future generations.
3. Popular participation: Sustainable development relies on the participation of local community institutions in the development of plans and strategies aimed at achieving economic and social development in the region. Local community members can better determine development priorities.
4. Optimal utilization of economic resources: It is essential to maintain a balanced environmental equilibrium by optimally utilizing diminishing resources. This allows economic markets working towards sustainable development to function more effectively.
5. Improving decision-making by governments: Sustainable development entails governments adopting a comprehensive and integrated approach to improving policies. This approach includes the integration of all levels of government and ministries, as well as involving all stakeholders in achieving the best possible outcomes for society.

Characteristics of Sustainable Development:

Sustainable development has three main dimensions, as follows (Abdul Jalil, 2014: 220):

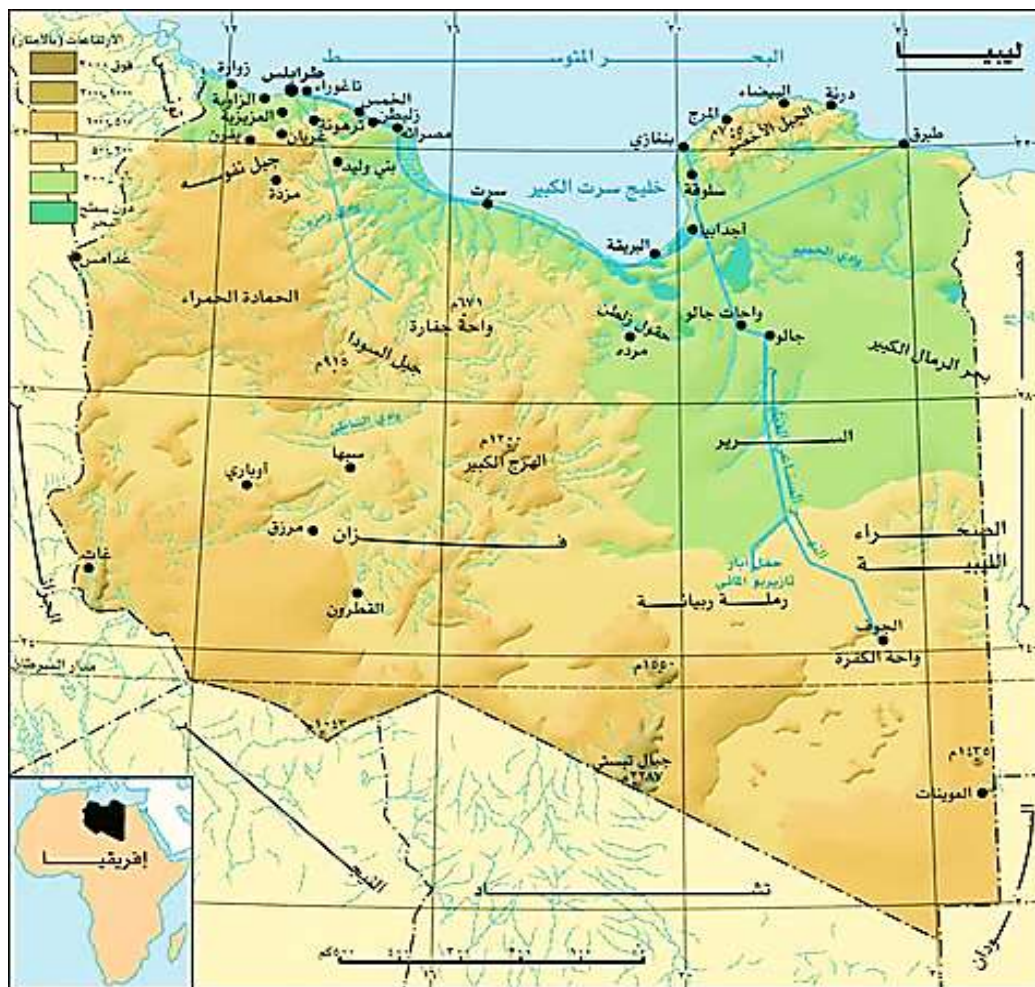
1. Environmental dimension: It concerns the natural resources and their utilization for the benefit of humanity without causing disruption to the components of the environment. This includes caring for biodiversity, discovered and stored renewable and non-renewable energy resources, and environmental pollution that affects the health of living organisms.
2. Economic dimension: Sustainable development aims to improve the level of well-being by increasing individuals' access to necessary goods and services. This is achieved by providing the necessary elements of production, enhancing efficiency and effectiveness through implementing development policies and programs to increase growth rates in various production sectors.
3. Social dimension: It includes human components and the relationships between individuals and communities. It

involves cooperative efforts to meet needs, address empowerment issues through community awareness and the importance of contributing to the future and establishing a unified society with shared goals and responsibilities.

Secondly - Spatial Development (Population Density in Libya):

Libya is a sovereign state in North Africa with characteristics related to the development process, as follows:

Area: Geography is the science of place that provides us with a logical and reasonable explanation of the distribution of phenomena in space. Geographic character arises from studying a large number of unique features and relationships of a place (Hartshorn, 1985: 339). Libya is bordered by the Mediterranean Sea to the north, Tunisia and Algeria to the west, Egypt and southeastern Sudan to the east, and Chad and Niger to the south. Its area is approximately 1.8 million square kilometers. Moreover, cities and population density are concentrated in northern Libya, as shown in the following map:



Source: <https://ar.wikipedia.Libya>

Map No. (1) shows the locations of cities in Libya.

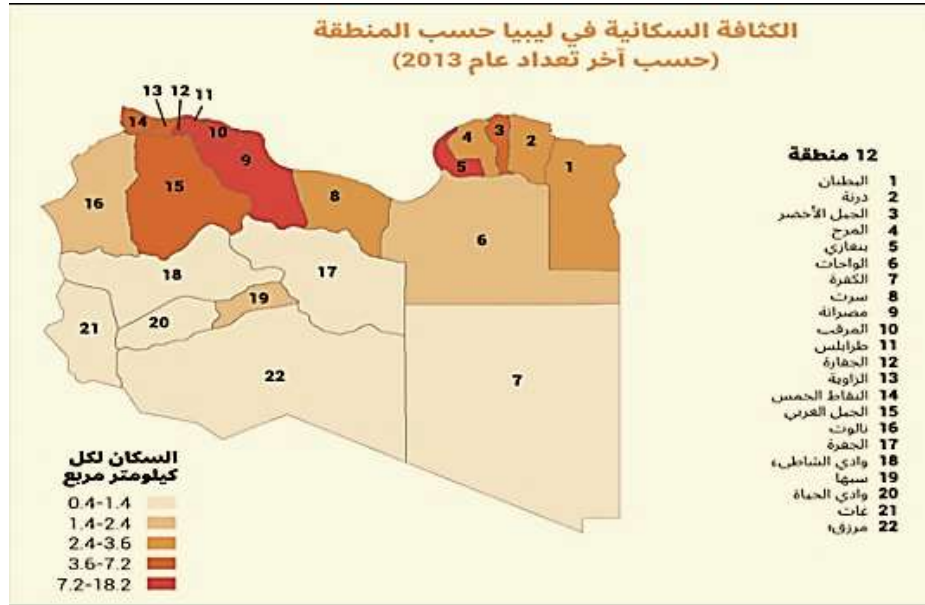
According to Table No. (1), the variation in population density is evident through the concentration of cities in northern Libya and its impact on achieving sustainable development. Despite Libya's distinctive geographical features that contribute to sustainable development, such as its ownership of a 2,000-kilometer coastline on the Mediterranean Sea and coastal plains like the Jafara Plain, the Khoms Plain, the Misrata Plain, the Sirte Plain, and the Benghazi Plain, there are also highlands like the Green Mountain, the Batnan Plateau, the Dafnia Plateau, and the desert range, as well as plateaus like the Al-Hamada Al-Hamra Plateau and the northern depressions like the Jaghbub Depression, the Awjila and Jalu depressions, the Murzuq Basin, and the Kufra Basin. In the south, there are the Black Mountain, the Haruj Mountain, the Tibesti Mountain, the Al Awaynat Mountain, and the Akakus Mountain, as well as valleys like the Shati Valley, the Hayat Valley, and parts of the Great Desert with solar energy capabilities and diverse desert resources. Additionally, scattered oases are found throughout the country, with a total area of 1,750,540 square kilometers, along with sand plains. To address the spatial variation in achieving sustainable development, the following question is raised: Is there an active role in achieving sustainable development in population distribution in Libya?

Population in Libya: The population of Libya includes population density, ethnicity, and education level. The population density is around 50 people per square kilometer (130/sq. mile), and ninety percent of the population lives in less than 10% of the area, primarily along the coast. Approximately 88% of the population resides in urban areas, with the majority concentrated in the three largest cities: Tripoli, Zawiya, and Benghazi. Estimates indicate that thirty percent of the population is under the age of 15, but this percentage has significantly decreased over the past decades. In the northern regions of Tripoli and Cyrenaica, the population was estimated to be around 6.87 million people in mid-2020, according to World Bank data, with 87% primarily living in three major cities: Tripoli, Benghazi, and Misrata.

Characteristics of population density in Libya:

The population in Libya was estimated to be around 6.87 million people in mid-2022, according to the World Bank data. During that period, the number of males in Libya reached 3.47 million, accounting for 50.48% of the total population, while the percentage of females was 49.52% of the total population. The annual population growth rate in Libya was recorded at 1.33% in 2019. The presence of immigrants constituted approximately 12% of the total population, according to the World Bank data. This

number and the growth rate of immigrants from neighboring African countries to Libya have been steadily increasing and can multiply due to the unstable political and challenging security conditions that Libya has been experiencing in recent years. Furthermore, Libya has a population density of around 50 people per square kilometer (130/sq. mile) in the northern regions of Tripoli and Cyrenaica. However, in other areas, the population density is less than one person per square kilometer (2.6/sq. mile). Ninety percent of the population lives in less than 10% of the area, primarily in the northern regions of Libya along the coast.



The map number (2) shows the population density in each municipality in Libya,

indicating the population density per square kilometer for each municipality.

تقدير السكان الليبيين حسب المناطق لسنة (2020)

نسبة السكان	2020	المناطق
2.81	195088	طبرق
2.91	201639	برقة
3.61	250020	الجبل الأخضر
4.13	286045	المرج
11.05	807255	بنغازي
3.08	213728	اجناديبا والواحات
0.80	55495	الكفرة
2.47	170869	سرت
0.88	60853	الجفرة
9.58	663853	مصراته
7.68	532227	العرقب
18.66	1293016	طرابلس
7.92	548855	الجفرة
5.07	351306	الزاوية
5.05	349755	المنطقة الغربية
5.41	374911	الجبل الغربي
1.64	113586	نقوت
2.21	153454	سبها
1.37	95294	وادي الشاطئ
1.32	91749	وادي الحياة
1.36	94088	مرزق
0.40	27675	فكات
100	6931061	Total المجموع

Table number (1) shows the population in each Libyan city

The Importance of Libya's Climate (Al-Khattal, 2006):

The climatic conditions in Libya are influenced by the Mediterranean Sea to the north and the Libyan Desert to the south, resulting in a sudden transition from one weather type to another. The broad climatic divisions can be described as follows:

The Mediterranean coastal strip is characterized by a dry summer and a relatively wet winter. The Nafusa Mountains and the Green Mountain have higher elevations and a climate that facilitates rainfall, with lower temperatures in winter, including snowfall on the hills.

Moving southward towards the interior, the climatic conditions are dominated by the pre-desert and desert regions, with fluctuating temperatures and significant daily temperature variations. Rainfall is rare and irregular, gradually decreasing towards zero.

The annual rainfall is extremely low, with approximately 93% of the land receiving less than 100mm per year. The highest rainfall occurs in the northern region of Tripoli (Nafusa Mountains and Jafara plains) and in the northern region of Benghazi (Green Mountain). These are the only two regions where the average annual rainfall exceeds the minimum value (250-300mm) necessary for sustaining rainfed agriculture. Rainfall occurs during the winter months (October-March), but significant variations are observed from place to place and from year to year. The average annual rainfall for the entire country is 56mm. Temperature ranges from over 40 degrees Celsius in summer to below freezing in winter.

Therefore, we can draw the following conclusions:

Geography, as an applied science, plays an important role in studying development, both in terms of its physical foundations and through the study of regional spatial variations. Comprehensive development is at the core of geographical studies because geography is the most suitable science for studying comprehensive development due to its features and comprehensive view of environmental resources. It becomes clear to us to answer the question of the axis, which is: Is there an active role in the fair distribution of spatial development for the entire Libyan society in achieving sustainable development in Libya? As shown in Figure (1), there is a concentration of cities in northern Libya and scarcity in other locations. Figure (2) illustrates the population density per square kilometer for each municipality in Libya, which is very weak given the vast area of Libya. Figure (3) shows the population density and its proportions for each municipality in Libya, which are highly variable. This confirms that population density varies in quantity and quality, indicating the presence of real attractive factors for the population in these cities, whether large or small, and other repelling factors in remote areas of Libya. Libya is a region with all the means of sustainable development due to its natural resources and the small population density.

Third - Sustainable Development and Natural Resources in Libya: Natural Resources in Libya:

Libya possesses natural resources, including the largest oil reserves in Africa, which is the main source for all Libyans. Additionally, there are other natural resources such as natural gas, which amounts to 53,113 billion cubic feet of natural gas. There are also gypsum reserves estimated at 9.2 million tons, with the Jebel Gharin having the highest concentration of pure gypsum in the world. Potassium, magnesium, silica phosphate, limestone, petrochemical resources, and iron are also present in Libya. Libya has massive iron ore deposits in the Wadi Shati near Sabha in Fezzan, occupying an area of 1,544 square miles and holding up to 5 billion metric tons of various types of iron, including 900 million metric tons in Tharot Lens, 750 million metric tons in Ruwaisa Lens, and 500 million metric tons in Ashkida Lens. The country's iron ore reserves are the third largest in the continent. Additionally, there are fertilizers, cement, construction materials, and others. To emphasize the importance of these resources, we pose the following question:

Is there an active role in utilizing all the natural resources in Libya to achieve sustainable development in the country?



Figure 1:: provides a comprehensive illustration of all the natural resources throughout Libya.

Source: : <https://www.almayadeen.net/infograph.Libya> .

Figure (1) demonstrates the types and quantities of natural resources across Libya.

The distribution of olive, palm, and almond trees in each region, along with the numerical development between the 2001 and 2007 censuses

Region	2001 Population			2007 Population			Numerical Development between Censuses		
	Olive Trees	Palm Trees	Almond Trees	Olive Trees	Palm Trees	Almond Trees	Olive Trees	Palm Trees	Almond Trees
Al-Batnan	10980	6447	26351	27438	9232	17631	16758	2785	-8720
Darnah	4027	1494	54929	15314	1724	38290	11287	230	-16639
Al Jabal Al Akhdar	12961	587	44756	15232	152	56510	2271	-435	11754
Al-Marj	25329	3531	158878	15767	1423	104049	-7562	-2108	54829
Benghazi	89677	16459	166597	22793	4967	3262	-66884	-11490	-16335

Al-Wahat	17440	408950	10851	472410	983814	445	454970	574864	-10406
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Table (2) shows the quantities of fruit-bearing trees in Libya.

In Table (2), it becomes evident that there is a positive abundance of high-quality, globally sought-after fruit-bearing trees, which Libya possesses and that the global market demands. This abundance, compared to the requirements and consumption of the Libyan society, enables the achievement of sustainable development throughout Libya, benefiting all inhabitants of both large and small Libyan cities and eliminating other deterrent factors in remote areas of Libya.

Requirements for Sustainable Development from Competent Human Resources in Libya:

Sustainable development is considered an urgent necessity to meet the requirements of the environment, economy, and society, given the availability of natural resources, the variation in population stability, and the lack of development projects implemented across Libya. This necessitates the application of sustainable development, which has become an urgent ethical and economic necessity. Contemporary environmental changes have become a problem and an existing danger due to human mismanagement of the environment. Ensuring the rights of future generations through achieving sustainable development and addressing the obstacles that hinder it, particularly imbalanced population growth, is of utmost importance.

Fruit-bearing Trees in Libya:

Fruit-bearing trees provide humans and animals with fruit filled with essential nutrients and are an integral part of the life cycle of certain animals.

The distribution of olive, palm, and almond trees in each region, along with the numerical development between the 2001 and 2007 censuses

Region	2001 Population			2007 Population			Numerical Development between Censuses		
	Olive Trees	Palm Trees	Almond Trees	Olive Trees	Palm Trees	Almond Trees	Olive Trees	Palm Trees	Almond Trees
Al-Batnan	10980	6447	26351	27438	9232	17631	16758	2785	-8720
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Al Marj	25329	3531	158878	15767	1423	104049	-7562	-2108	54829
Benghazi	89677	16459	166597	22793	4967	3262	-66884	-11490	-16335
Al-Wahat	17440	408950	10851	472410	983814	445	454970	574864	-10406

Al-Kufra	5323	279018	100	61592	496209	90	56269	217191	-10
Sirte	223047	46256	31867	298932	381767	28218	70885	335511	-3649
Al-Murqub	1707356	417628	1297496	1124824	132391	783215	-5825321	-285237	-514281
Tripoli	101541	49244	12428	142073	89177	29717	40532	39933	17289
Al-Jafara	1040684	263669	68378	68378	279032	26106	-153994	15363	-42272
Al-Zawiya	275852	77137	3670	469734	272529	5340	184882	195392	1670
Al-Nuqat al-Khams	1214413	251347	232790	800993	175109	123275	-413420	-76238	-109515
Nalut	72085	55763	11177	103039	59962	12081	30954	4199	904
Sebha	6641	165421	1178	54965	284100	1480	48324	118679	302
Al-Shati	2920	220052	947	11823	258734	421	8903	38682	-526
Murzuq	5537	267397	1274	144602	549476	358	139065	282079	-916
Ubari	5595	314518	2086	14516	274993	279	8921	-39525	-807
Ghat	1288	60626	436	3289	86470	264	2001	25864	264
Total	5679964	3494497	2429308	5792713	4999902	1506119	111825	1505405	-923189

The natural resources of animal wealth in Libya: Table (4) Quantities of animals in Libya

Region	2001 Population			2007 Population			Numerical Development between Censuses		
	Sheep	Goats	Camels	Sheep	Goats	Camels	Sheep	Goats	Camels
Al-Batnan	286784	65055	10682	206258	59171	9250	-80526	-5884	-1432
Darna	192023	52446	3294	147542	52879	3923	-44481	433	629
Al Jabal Al Akhdar	175783	60699	2929	178978	63020	3938	3195	2321	1009
Al Marj	218572	43477	1784	354538	64817	3622	135966	21340	1838
Benghazi	642773	42599	4793	138322	18575	2392	-50445	-24024	-2401
Al-Wahat	258396	48256	13591	269422	59044	8167	11026	10788	-5424
Al-Kufra	20014	6791	191	30547	13990	1105	10533	7199	914
Sirte	663900	14832	30267	329494	120677	21511	-344406	-27655	-9756
Al-Murqub	55556	34020	5362	34860	25168	1951	-20696	8852	3411
Tripoli	250063	51944	6644	392337	100358	8717	142274	48414	2073
Al-Jafara	751503	14216	1921	315680	69197	1269	-435823	72959	-652

Al-Zawiya	32521	1801	495	52592	4333	721	20071	2532	226
Al-Nuqat al-Khams	417363	33206	1220	275428	14463	1692	-141935	-18743	472
Nalut	178596	14209	2456	337214	38731	8519	158618	-24522	5973
Sebha	444164	65978	17459	200316	40329	10523	-243848	-25649	-6936
Al-Shati	669702	17611	13018	268807	98550	5843	-400895	-135862	-7175
Murzuq	130320	61430	6890	148430	70802	6161	18110	9372	-729
Ubari	30250	12863	1902	62246	30216	3126	31996	17353	1224
Ghat	107457	27566	3862	88057	41040	3222	-19400	13474	-640
Total	57285	26429	2689	85447	46821	2450	28162	20392	-239

The Need for Railways in Libya:

In this context, the following question must be raised: Is there an active role for the presence of railways throughout Libya in achieving sustainable development?

The history of railways in Libya dates back to 1965, with the first railway line being established in 1901. It was a very short line built by the Ottomans for transportation between the port of Benghazi and a former quarry for limestone extraction in the suburb of Al-Baraka in the city. After the Italian invasion of Libya, Italy focused on building railway lines in Benghazi and Tripoli. Between 1914 and 1927, Italy constructed three relatively short railway lines in Benghazi: the Benghazi-Al-Rajma line, initially 30 kilometers long in 1914 and later extended to Al-Abyar in 1927, making Benghazi a major station for Benghazi. There was also the Benghazi-Al-Marj line and the Benghazi-Suluq line, with a length of 56 kilometers, which opened in 1921. In Tripoli, the Italians built a 13-mile railway line connecting Tripoli city to Al-Azizia in 1913. During the British military administration period, and during World War II, a railway line was extended between Tobruk and Alexandria in Egypt via Marsa Matruh for military financing purposes. This line remained in use even after the war until the British military administration sold the railway tracks between Tobruk and Gebel El-Salum in December 1946. As for the railway project, the implementation of its network began in Libya in 1992. Law No. 14 of 2003 was issued to establish the "Railway Implementation and Management Authority." The expected length of the railway network in the country is approximately 3,170 kilometers, with 75 stations and 168 bridges, connecting the towns of Ras Ajdir and Amssaad, i.e., the international borders of Libya with Egypt and Tunisia. However, the project remained stagnant and perhaps just ink on paper.

Chapter 3 - Conclusions and Findings of this Study

Introduction:

Libya is a sovereign state with an important geographical location and access to abundant resources of various natural types, which have significant global value for national income. It also possesses human capabilities in various specialties and high qualifications. Its vast and diverse land area has high-quality resources and a very low population density compared to the availability of natural and human resources within it. Some of these resources are concentrated in major cities in northern Libya, while they are scarce in the cities and villages in central and southern Libya. This has prompted researchers and research centers in Libya to search for solutions, alternative approaches, and successful experiences to achieve comprehensive human development and ultimately achieve sustainable development. This study aims to draw conclusions from the components of natural resources in Libya to achieve sustainable development, by achieving the general objective of the study, which is: clarifying the nature of the relationship between geography and development in Libya, understanding the extent of spatial variation in population, resources, and development capabilities within the territory of Libya, and attempting to answer the main question of this study, which is:

Does addressing geographic spatial variation have an active role in achieving sustainable development in Libya?

And then answering the questions, each of which is represented by the following questions:

1. Is there an active role for addressing population density distribution in achieving sustainable development in Libya?
2. Is there an active role for human distribution throughout Libya in achieving sustainable development in Libya?

To reach the results in this study, we summarize them as follows:

Spatial development with fairness for all Libyan society in achieving sustainable development in Libya?

3. Is there an active role for investing in all natural resources throughout Libya in achieving sustainable development in Libya?
4. Is there an active role for the presence of railways throughout Libya in achieving sustainable development in Libya?

5. Is there an active role for providing infrastructure services and e-governance throughout Libya to achieve sustainable development in Libya?
6. Is there an active role for encouraging foreign investments to work in remote areas in achieving sustainable development in Libya?
7. Is there an active role for attracting rare scientific competencies from within or outside the country to achieve sustainable development in Libya?
8. Is there an active role for political stability and security?

First - Results of previous studies:

Clear similarities emerged with what was reached in the current study in the study by (Marzi 2019/2020), which showed variation in population distribution and economic activities in Iraq. The study by (Azaldin 2020) indicated that the weakness of conflicting political institutions is a cause of failure to achieve sustainable development in Libya, and the same situation was reached in the study by (Al-Danish 2021) and also in the study by (Sultan and Al-Jubouri 2022), which concluded that geography plays an important role in implementing sustainable development with social justice. Furthermore, in foreign studies, the study by (Dhiaulhaq 2020) emphasized the need to activate local sustainable development in all parts of the country, and the study by (Yang 2021) highlighted that China faces a problem in sustainable development due to the neglect of spatial planning, which led to an imbalance in achieving sustainable development in China.

Second - Addressing population density variation to achieve sustainable development:

1. Stable and growing population density throughout Libya contributes to achieving fair sustainable development in the whole society.
2. Spatial development ensures well-being and human security for the entire Libyan society, facilitating sustainable development in Libya.
3. Investing in natural and human resources throughout Libya achieves sustainable development, human security, and sound economic growth in Libya.
4. Establishing railways in Libya opens up opportunities for internal and external connectivity, promoting the implementation of sustainable development.
5. Attracting and appropriately settling competent human resources in all parts of Libya ensures the implementation of sustainable development in Libya.
6. Achieving political stability and implementing modern e-governance create ample opportunities for sustainable development implementation.

Third - Recommendations:

1. It is essential to maintain stable and growing population density throughout Libya to support fair sustainable development.
2. Implementing spatial development based on geography in Libya is necessary to encourage population stability in central and southern regions, thereby achieving sustainable development in Libya.
3. Investing in all diverse natural resources throughout Libya geographically and developing plans for their implementation is crucial to achieve sustainable development in Libya.
4. Encouraging scientific competencies among the human resources, whether domestic or international, is important for achieving sustainable development in Libya.
5. Emphasizing the attainment of political stability and human security throughout Libya is essential for achieving sustainable development.
6. Expanding railway lines to connect all Libyan cities opens up investment opportunities from within and outside the country, contributing to sustainable development.
7. Implementing e-governance throughout Libya ensures speedy completion of sustainable development initiatives.

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