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Evaluating the reality of the green economy under the war in Syria

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ABSTRACT:

As all countries and global organizations make efforts to preserve the environment and establish an economic model that ensures sustainable development, the concept of the green economy becomes clear. The United Nations has defined it as an economy that leads to the improvement of human well-being and social equity while significantly reducing environmental risks and ecological scarcities. Like other countries, Syria sought to transition to this economic model at the beginning of the third millennium. However, the war in Syria imposed many challenges that obstructed this transition and caused significant losses across various sectors, leading to a trade balance deficit.

Therefore, this research addresses an analysis of these challenges and an assessment of the state of the green economy in Syria across all sectors. It was found that most sectors of the green economy in Syria need development and rehabilitation and face several obstacles, the most significant of which are climate changes, the scarcity of natural resources, and the war, which played the largest role in tightening the noose and imposing sanctions on Syria's economy.

Using SWOT analysis, the main strengths, weaknesses, opportunities, and threats facing the green economy in Syria were identified. The research also reviewed the most important international studies and experiences in the green economy that can be leveraged. It concluded with several proposals to exploit strengths and turn weaknesses into areas of growth to advance the economy in Syria while ensuring sustainable development and environmental preservation.

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Key words: Syria, Green Economy, Sustainable Development, Natural Resources, Environment, War in Syria

تقييـــم واقـــع الاقتصـــاد الأخضـــر فـــي ظل الحـــرب فـــي سوريـــة

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الملخص:

انطلاقاً من مساعي جميع الدول والمنظمات العالمية للحفاظ على البيئة وإيجاد نموذج اقتصادي يضمن تحقيق التنمية المستدامة، برز مفهوم الاقتصاد الأخضر الذي عرفته منظمة الأمم المتحدة بأنه الاقتصاد الذي يؤدي إلى تحسين رفاهية الإنسان والعدالة الاجتماعية، مع الحد بشكل كبير من المخاطر البيئية والندرة البيئية، وقد سعت سورية كغيرها من البلدان نحو التحول إلى هذا النموذج الاقتصادي في بداية الألفية الثالثة، إلا أن الحرب في سورية فرضت كثيراً من التحديات اعترضت هذا التحول وسببت خسائر فادحة في مختلف القطاعات وعجز الميزان التجاري، لذلك يتناول هذا البحث تحليلاً لهذه التحديات، وتقييماً لواقع الاقتصاد الأخضر في سورية بجميع القطاعات، فوجد أن معظم قطاعات الاقتصاد الأخضر في سورية تحتاج للتنمية وإعادة التأهيل، وتواجه عدة عقبات أهمها التغيرات المناخية والنقص في الموارد الطبيعية والحرب التي كان لها الدور الأكبر في تضييق الخناق وفرض العقوبات على الاقتصاد في سورية، وباستخدام تحليل SWOT تم وضع أهم نقاط القوة والضعف والفرص والتهديدات التي تواجه الاقتصاد الأخضر في سورية، وتم تناول أهم الدراسات والتجارب الدولية في الاقتصاد الأخضر التي يمكن الاستفادة منها، والخروج ببعض المقترحات لاستغلال نقاط القوة وتحويل نقاط الضعف إلى نقاط نمو في سبيل النهوض بالاقتصاد في سورية مع ضمان تحقيق التنمية المستدامة والحفاظ على البيئة.

الكلمات المفتاحية: الاقتصاد الأخضر، التنمية المستدامة، الموارد الطبيعية، البيئة، الحرب في سورية.

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Introduction :

Green Economy has received significant international attention as it represents one of the best economic models aimed at achieving economic development in a manner that preserves the environment and ensures its sustainability. It seeks to generate low amounts of carbon. Following the failure of the global economic system, which resulted in numerous environmental, economic, and social problems—including the rise of greenhouse gas emissions that led to global warming and climate change, rising water levels, and the depletion of natural resources—Syria was one of the countries that sought to transition to this model at the beginning of the second millennium. However, the war and conflict in Syria, which have lasted for fourteen years using various means, have imposed many challenges in this regard. This research will address the concept of the green economy, its requirements and challenges, as well as an assessment of the current state of the green economy in Syria.

Importance:

Based on the importance of the green economy as a model for rapidly growing economic development and its impact on addressing the effects of climate change and global warming that our planet is experiencing, as well as its role in achieving sustainable development goals and eradicating poverty, this research aims to assess the state of the green economy in Syria and identify the key challenges it faces. This study will also attempt to shed light on the current reality of the green economy in Syria and the significant obstacles to its transition, ultimately yielding research findings that can assist policymakers in finding solutions to the issues at hand and enriching the field of academic research.

Research Problem:

The research problem lies in the weak inclination of most countries around the world towards the green economy, which is attributed to reliance on traditional policies and approaches on one hand, and the increasing challenges and difficulties stemming from effective resource planning on the other. All these factors have hindered the shift towards the green economy.
In Syria, the war has obscured and clouded this concept, imposing numerous challenges and pressures that have led to a decline and shortcomings across all sectors of the green economy.

Research Objectives:

1) To study the challenges facing Syria in the transition towards a green economy.
2) To assess the state of the green economy in the context of the war in Syria.

Research Questions:

1. What is a green economy?
2. What is the current state of the green economy in Syria؟
3. What are the main strengths and weaknesses in the path towards transitioning to a green economy in Syria؟
4. What are the obstacles and challenges facing the transition to a green economy in Syria؟

Research Limitations:

Scientific Limitation of the Research: The research focuses on evaluating the state of the green economy in Syria and analyzing the strengths, weaknesses, opportunities, and challenges it faces in order to propose some applicable suggestions for Syria.
Study Area : The Arab Republic of Syria.
Temporal Limitation of the Research: The research examines the situation from the year 2010 to the year 2024.

Methods and Material:

This research relied on a descriptive approach to depict the state of the green economy in Syria in light of the war, and an analytical approach to analyze the data and the current situation according to SWOT analysis in order to identify the strengths, weaknesses, opportunities, and challenges. This allows us to deduce the most important recommendations and proposals to elevate the green economy to the desired level.

Research Tools: Desk research - Online research.

Terms:

The United Nations Environment Programme defines the green economy as "an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and resource scarcity. The green economy can be seen, in its simplest form, as an economy with lower carbon emissions and increased resource efficiency, which encompasses all social groups" (United Nations Environment Programme, 2011, p.1).
The International Labour Organization defines it as "a low-carbon economy based on low-carbon investments and the generation of green jobs in both the public and private sectors, which reduces the environmental impact of enterprises and achieves sustainability" (International Labour Organization, 2013).
The Economic and Social Commission for Western Asia (ESCWA) views the green economy as a new perspective on the interconnectedness of economic, environmental, and social dimensions, aiming to reduce poverty and achieve well-being. It also facilitates the mobilization of support for sustainable development by adopting a new conceptual framework that does not replace sustainable development but emphasizes the integration of its three dimensions: economic, social, and environmental (ESCWA, 2011, p.4).

Karl Burkhart defines the green economy as "an economy based on six main sectors: renewable energy, green building, clean transportation, water management, waste management (recycling and alternative waste management), and land management." From the above, we can conclude that it is an economy that supports sustainable development and the efficient use of economic resources to preserve the rights of future generations while considering the environmental dimension to achieve sustainable development and social justice.

The Concept of the Green Economy:

The term "green economy" can be defined and understood in various ways and within different contexts. In the Green Economy Initiative, the United Nations Environment Programme (UNEP) defines the term within a broad economic, social, and environmental agenda: the green economy is "an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and scarcity." Other entities, such as the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), define green growth as a policy focus that emphasizes "environmentally sustainable economic progress to promote low-carbon and socially inclusive development."
The inclusive green economy is one that improves human well-being and builds social equity while reducing environmental risks and scarcity. It serves as an alternative to the prevailing economic model today, which exacerbates inequality, encourages waste, leads to resource scarcity, and generates widespread threats to the environment and human health. In 2008, the United Nations Environment Programme launched the Green Economy Initiative, which is a global research and country assistance program aimed at encouraging

policymakers to support environmental investments. In the 2015 United Nations General Assembly, UNEP published "Unlocking the Inclusive Green Economy," which emphasizes concepts such as participation, recycling, cooperation, solidarity, resilience, opportunities, and interdependence.

The United Nations Environment Programme (UNEP) launched the Green Economy Initiative (GEI) in 2008, which consisted of global research and country-level assistance to encourage policymakers to support environmental investments within the context of sustainable development. Thanks to this initiative and the efforts of other agencies, "green economy in the context of sustainable development and poverty eradication" was included on the agenda of the Rio+20 Conference in 2012 and recognized as a tool for achieving sustainable development. UNEP established a practical definition of the green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and scarcity. Over the past decade, the concept of the green economy has emerged as a strategic priority for many governments and international organizations. In total, 65 countries have embarked on the path toward an inclusive green economy and related strategies. By transforming their economies into engines of sustainability, these countries will be prepared to confront the major challenges of the 21st century—from urban expansion and resource scarcity to climate change and economic volatility.

Requirements for the Transition to a Green Economy:

A review and redesign of government policies are necessary to stimulate shifts in production, consumption, and investment patterns, with a focus on rural development aimed at alleviating poverty in rural areas while increasing resources. This includes managing and rationalizing water use, preventing pollution, and promoting sustainable investments in energy as measures to enhance energy efficiency. Additionally, it requires the establishment of low-carbon strategies for industrial development and the adoption of efficient production technologies in new factories. Support for public transport, the implementation of land use and mixed-use development systems, and the incorporation of environmental standards in construction are also essential. Addressing the issue of solid waste and investing in its beneficial and eco-friendly management is crucial (Aida, 2014, p. 65).

The transition to a green economy necessitates a fundamental review and redrawing of public policies within society to create shifts in production, consumption, and investment patterns (Ibrahim Mohammed, 2024). We conclude that the shift to a green economy requires greening all sectors to reduce carbon emissions and achieve sustainable development goals, which entails a transition from unsustainable production and consumption patterns to more sustainable ones.

Some Studies on the Transition to a Green Economy:

By reviewing several previous studies from various countries, we can identify some beneficial points that can be applied to the Syrian context. These studies addressed various areas of the transition towards a green economy. Below are some of them:

Table (1): Studies on the Transition to a Green Economy:

Research name	Researcher name	Benefit Points
The impact of the green economy on the national economy	Ayman Ahmed Ali Abdel Ghaffar	Investment in Reclaimed Desert Lands Recycling Agricultural Waste Investment in Renewable Energy
The green economy and the challenges of sustainable development	Hamdy Mohamed Mohamed Bedein	Investing in renewable energy encourages in invention and clean technology, while improving resource efficiency.
The green economy as a mechanism to attract foreign investment and meet the requirements of sustainable development	Amani Saleh Al-Makhzanji Heba Allah Samir Mohamed	There is a statistically significant relationship between the increase in net foreign direct investment flow and economic development.
Enhancing the applications of the green economy in Egypt as a means to promote competitiveness and sustainable development, with a focus on sustainable financing and green bonds	Ahmed Eid Ibrahim Mohamed	Effective economic and social policies should be established to encourage the transition to a green economy alongside the development of legislation that relies on green natural resources
Towards carbon removal in South Africa	Huda Mahrez Said	It is crucial to enhance climate forecasting mechanisms and adaptation strategies, evaluate policies, and strengthen the measurement of responses to climate change and its importance in carbon removal.
The role of green financing in achieving sustainable development in Saudi banks	Mohamed Ghazi Suleiman Al-Hubayshi	The significance of green financing in sustainable development lies in its benefits for supporting and transforming environmentally-focused projects, reducing the impacts of climate change and carbon emissions.
The green economy and climate change: challenges and prospects	Abdel Kader Azzouz	The green economy creates green jobs that foster growth, sustainable development, environmental protection, pollution prevention, resource depletion, and also focuses on the conservation of biodiversity, ecosystems, and the optimal use of energy and natural resources.

Many researchers have studied the experiences of some countries in transitioning to a green economy. Notably, Al-Maliki (2017) and Boumrifk and Zlaq (2023) discussed several cases in their studies, most prominently:

Table (2): Global Experiences in Transitioning to a Green Economy:

The Experience	Field of Benefit
Experience of Denmark	Identifying water consumption and treating wastewater
Experience of the United Kingdom	Imposing a congestion tax to reduce greenhouse gas emissions
Experience of South Korea	Establishing a high institute for green growth to conduct research focused on green economy growth projects
Experience of Tunisia	Transitioning from energy production through oil and conventional sources to renewable sources (solar, water, wind)
Experience of Morocco	Adopting the report on wealth creation and job opportunities that pertains to the green economy and funding mechanisms dedicated to its development

Challenges Facing the Transition to a Green Economy:

Numerous challenges continue to hinder the process of transitioning from a gray economy to a green economy, most notably: ongoing climate changes, greenhouse gas emissions, and the rising levels of global warming. These factors have led to an increase in environmental disasters and severe natural phenomena affecting many countries, especially developing ones. Additionally, there is a reduction in funding for the transition to a green economy, both from governments and companies, along with investment challenges in renewable energy.The challenges to the transition to a green economy, as stated by (Azzouz, "Green Economy and Climate Change: Challenges and Prospects," pp. 8-13), include:

1) Climate Change: Climate change resulting from human activities, such as the burning of fossil fuels, deforestation, and unsustainable industrial and agricultural practices that emit greenhouse gases, has increased global average temperatures by three degrees Celsius compared to pre-industrial levels. This change has disproportionately affected poorer and more vulnerable communities around the world, as reflected in: (increased annual average temperatures, rising sea levels, heightened fire risks, increased frequency of extreme weather phenomena such as floods, droughts, and storms, and decreased average rainfall, among others)

2) Multinational Corporate Policies: Multinational companies are purchasing small farms to cultivate crops not grown in their home countries, such as cotton or pineapple, which do not feed the local population but instead generate payments to the government for land use. Large-scale manufacturing farms that produce food for export involve costs that are significantly higher than what local populations can afford, and these operations dominate farmers' lands. Additionally, trees are sometimes removed to allow factories to begin operations, and these factories often rely on pesticides and herbicides, and frequently on genetically modified seeds to remain profitable. Continuous harvesting rapidly depletes the nutrients within the soil, and chemical residues can make it impossible to cultivate local crops if the farm is abandoned when it ceases to be profitable (Lisa, 2006, pp. 233-234)

3) Reduction in Government Funding to Support the Transition to a Green Economy: Over the past decade, greenhouse gas emissions have increased by 1.5 percent annually. Meanwhile, government funding for renewable technologies has decreased, putting pressure on numerous resources in the ranking, while those backed by fossil fuels have thrived in recent years. Despite the United Nations calling for the adoption of a clean economy, it acknowledges the difficulties in implementing it in many developing countries, which are still victims of various issues. According to the Environmental Performance Index, most countries in the Middle East and North Africa rank at medium levels. The transition from a gray economic system to a green economy requires hard work from all stakeholders, and while the positive outcomes of this transition can sometimes be costly, they are beneficial and important in the long run. Governments play a crucial role in developing the economy through laws, policies, and the establishment of national strategies to promote transformable sectors into a favorable environment that encourages work in a thriving, green economy.

4) Challenges of Investing in Renewable Energy: One of the biggest drawbacks of renewable energy is that the sun does not always shine with the same intensity, and the wind does not blow at a constant speed, and the interactions are not always the same. This issue, known as intermittency, places renewable energy sources at a disadvantage compared to fossil fuels, which can provide stable energy.

5) Environmental Impact of Armed Terrorist Conflict: These conflicts have significant environmental repercussions on the affected areas, including water, soil, and air pollution, destruction of forests and green spaces, and a decline in biodiversity. They negatively impact sustainable development in those regions, undermining efforts to achieve sustainable development and affecting human life, food security, energy, water, and health. To address these negative impacts of armed terrorist conflict on the environment and achieve sustainable development, green economy approaches can be employed as effective tools. The green

economy aims to achieve sustainable development by promoting economic growth, creating job opportunities, and improving living standards in ways that preserve the environment and natural resources, thereby contributing to environmental, economic, and social sustainability (Mohamed Baddin, 2023.)

Challenges Facing the Transition to a Green Economy in Syria Amidst War:

Researchers have identified a range of challenges hindering the transition to a green economy in Syria during the war, based on the first national report of the Syrian Arab Republic. These challenges are as follows:

1) The Entire Economic System Entering a State of Crisis Economy and War: The abandonment of economic planning and development programs, along with their executive policies, has led to a shift towards operating under laws responsive to the conditions of war and crisis management. This was accompanied by a decline in GDP, rising unemployment rates, and inflation, resulting in the widening of the trade deficit gap in Syria. Additionally, many economic facilities and infrastructure ceased operations due to destruction by the previous regime or armed terrorist groups, the emigration of their workforce, or changes in their places of residence. The economic market conditions were discouraging, and the Syrian economy was targeted across all sectors (public and private) and social components by unilateral coercive economic measures.

2) Decline in Water Resources: Global warming, decreased rainfall, reduced water basin storage, and diminished water inflows from neighboring riparian countries have adversely affected agriculture, pastures, and human stability in vast areas.

3) Severe Losses Across Various Sectors and Trade Deficit.

4) Degradation of Natural Resources in Certain Areas: This resulted from the failure to consider environmental conditions in service and production activities.

5) Low Contribution of Renewable Energy to Electricity Generation: There is a heavy reliance on processed natural gas and fuel oil or diesel for electricity generation, with the use of solar energy limited to heating domestic water.

6) Climate Change and Drought, particularly in the northeastern regions, which has coincided with a reduction in projects, transforming these areas into population-displacing regions despite their natural resource wealth.

7) Decreased Use of Hydropower in Electricity Generation: This has resulted from the consequences of war, leading to a reduced ability to generate power from dammed water.

8) Pollution of Water Sources: This pollution, whether originating from natural or human sources, stems from wastewater discharge, industrial waste, and sewage.

9) Lack of Treatment Plants: There is a scarcity of facilities for treating municipal, agricultural, and industrial wastewater.

10) Weakness in Solid Waste Management: This includes inadequacies in investment and recycling efforts, attributable to the limited number of landfills and sanitary dumps as well as inadequate site selection for some of these facilities.

Assessment of the Reality of the Green Economy in Syria:

The war in Syria is considered one of the most significant obstacles to the transition toward a green economy. Nevertheless, the country has made efforts to shift toward this approach across various sectors. The most important of these sectors, as classified by the United Nations Environment Program in its initiative on the green economy launched in October 2008, titled the New Global Green Project, include:

1) Agriculture Sector
2) Water Sector

3) Green Energy Sector
4) Green Industry Sector
5) Green Transport and Communications Sector
6) Green Cities and Architecture
7) Waste Management and Recycling
8) Green Tourism
9) Forestry
10) Fisheries

(Daoud, Abbas, 2015, p. 81)

1. Agriculture Sector:

The area of the Syrian Arab Republic is approximately 18.5 million hectares, with a pre-crisis distribution of 33% arable land, 20% non-arable land, 3% forests and wooded areas, and 44% meadows and pastures for livestock breeding, which includes around 21.5 million head of livestock. (National Report on Regional Planning 2035, 2022)

The war and armed conflict have had a negative impact on agriculture in the Syrian Arab Republic, resulting in the loss of a significant portion of production due to deteriorating security conditions and difficulties in transporting goods from production areas to markets, with production losses exceeding 30%. Additionally, the closure of export routes, which served as markets for agricultural products, coupled with a lack of interest from farmers in cultivating alternative strategic crops, and weak implementation of integrated pest management and biological control have further aggravated the situation. This has led to a significant slowdown in the adoption of agricultural technological advancements and has resulted in about 40% of farmers halting agricultural investments. Agricultural production declined from over 15 million tons at the beginning of the war to less than 9 million tons by 2018. (Ministry of Agriculture and Agrarian Reform, 2020)

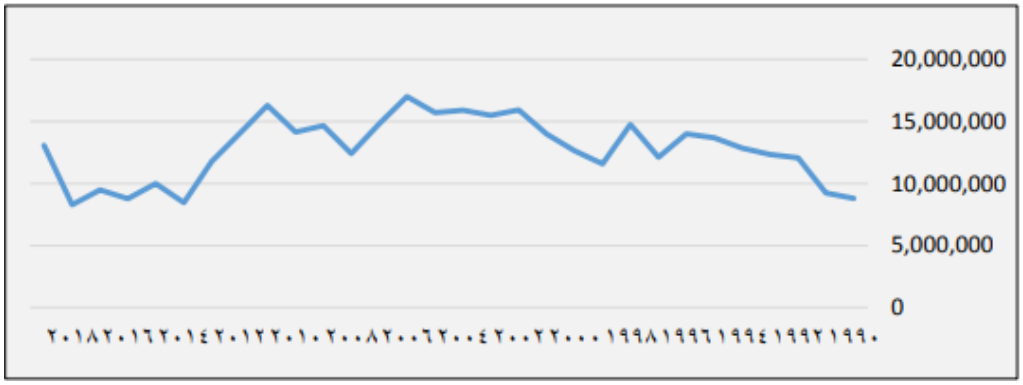
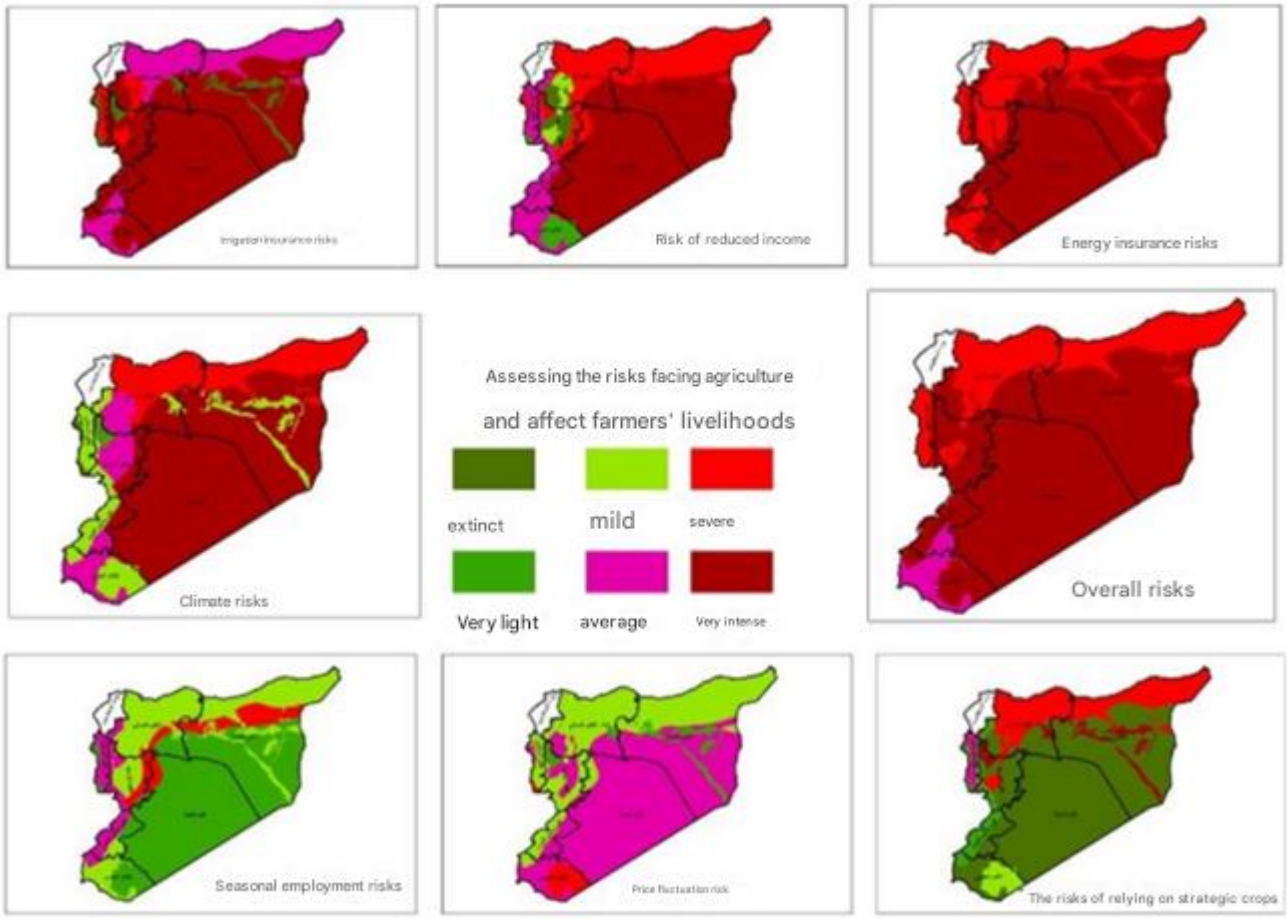


Figure 1: Total Plant Production from 1990 to 2019
Regional Planning Authority – Ministry of Agriculture and Agrarian Reform

Animal production has also declined due to droughts, high feed prices, and difficulties in securing feed supplies. The war has contributed to reduced research efforts aimed at developing livestock resources, leading to decreased productivity and a reduction in herd numbers, with a significant portion being smuggled abroad.

Agriculture in the Syrian Arab Republic continues to face many risks, which have been identified by the Regional Planning Authority and the Ministry of Agriculture and Agrarian Reform (2022) as follows: (climatic risks - seasonal labor - risks of declining income levels - price volatility risks - energy supply risks - irrigation water supply risks). Map (1) illustrates the challenges faced by agriculture in various regions of the Syrian Arab Republic.



Map 1: Assessment of Risks Impacting Farmers' Livelihoods
Regional Planning Authority – Ministry of Agriculture and Agrarian Reform

2. Water Sector:

Water conservation is one of the most crucial activities in sustainable development. Improving water resources and increasing their efficiency of use are among the primary methods of conserving water globally. This is achieved through investment in providing clean drinking water and adequate sanitation services, which represents a significant opportunity to accelerate the transition to a green economy in areas experiencing water scarcity. (United Nations Environment Programme, 2011, Towards a Green Economy, p. 9, p. 11)

A study of the drinking water situation in the Syrian Arab Republic reveals that the drinking water sector is a priority within the water sectors. The probability of having access to clean drinking water suitable for use is estimated at P = (95 – 100)%. However, the current situation of drinking water is inadequate due to poor water pumping and low per capita water availability, forcing residents in some rural areas to purchase water. Table 1 illustrates the water purification stations in Syria.

It was found that only four stations—(Haffa, Bkarama, Buluran) in Latakia Province, and Ain al-Samak Station in Homs Province—are functioning well, while over 57 water purification stations in the country are out of commission and require maintenance.

As for the wastewater networks, they encompass most of the organizational plans for urban assemblies in Syria. According to the Ministry of Water Resources, the percentage of serviced communities has exceeded 75%. However, most of the wastewater line endpoints in Syria do not lead to treatment plants but rather to

rivers, valleys, lakes, and the sea without any treatment. The projects for the construction of wastewater treatment plants, amounting to 94 stations, have not been implemented due to the onset of war in Syria.

Table 3: Water Purification Stations in Syria.

Governorate	Station Name	Number	Water Source	Station Capacity (m^3/h)	Technical Condition
Latakia	Al-Haffah	3	Al-Haffah Dam – Ein Al-Sin, Al-Bakrama River, and Al-Baloran Dam	590	Good/ Operational
Homs	Ain Al-Samak	1	Al-Assi River and Tenoreen Spring	600	Good/ Operational
Hama		7	Al-Assi River	101	Out of Control
Raqqa		70	Euphrates River	14268	10 stations out of control; other stations require maintenance
Deir Ezzor		62	Euphrates River	160	40 stations out of control
Suwayda		6	On dams	1780	Requires maintenance
Idlib	N/A				Not Available
Tartous	N/A				Not Available
Daraa	N/A				Not Available
Quneitra	N/A				Not Available
Damascus	N/A				Not Available
Al-Hasakah		9	Wells and dams		Requires maintenance; drinking water is cut off from the governorate for extended periods due to Turkish occupation

Ministry of Water Resources (2021)

3. Green Energy Sector:

Syria possesses numerous sources of renewable energy, such as hydroelectric, solar, and wind energy, which can contribute to overcoming the challenges faced by the energy sector. Hydroelectric energy has been utilized to generate electricity from dam waters, with a total capacity exceeding 1,500 megawatts in 2009. However, the repercussions of the war have led to a significant decline in energy production, reaching about 53% of its level in 2010 by 2019. (Syrian National Center for Energy Research, 2019)

Despite Syria's rich solar radiation, with the annual average solar energy received on a square meter of horizontal surface being 4.7 kilowatt-hours per day, it is one of the least invested countries in this energy, with a capacity that does not exceed 17 megawatts. The region of the Syrian Badia is considered one of the best areas for solar energy production. Ongoing projects in photovoltaic energy are being developed to meet the needs of the Sheikh Najjar and Homs industrial zones, with a total capacity of 70 megawatts.

Wind energy exploitation in Syria is limited to the existence of two wind turbines in western Homs with a capacity of 2.5 megawatts. The Ministry of Electricity launched a national strategic plan for renewable energies in 2019, aiming to implement photovoltaic projects with a capacity of 1,500 megawatts and wind energy projects with a capacity of 900 megawatts, along with the installation of 1.2 million household solar water heaters. However, the pace of implementation is not progressing as planned. (Ministry of Electricity in Syria, 2020)

4. Green Industry Sector:

In 2010, the contributions of the industrial sector to the Gross Domestic Product (GDP) reached 22.6%, but this figure has declined to approximately 12.9% in recent years (Central Bureau of Statistics, 2020). The industrial sector in Syria faces a multitude of problems and weaknesses; production costs are high while quality is low, indicating weak competitiveness. The war has caused significant destruction and damage to many industrial facilities, with an estimated impact on around 45% of these establishments. Additionally, the industrial sector suffers from a lack of organization, as there are four industrial cities located in Rural Damascus (Adra), Aleppo (Sheikh Najjar), Homs (Hassia), and Deir ez-Zor. However, most of these industries cannot be considered green due to the pollution they generate.

Waste disposal from factories is often directed into the sewage network or open areas, as is the case in many artisanal, industrial regions, workshops, and olive oil mills. This practice leads to serious contamination of surface and groundwater in certain areas, depending on the characteristics and composition of the wastewater (Syrian National Report on Regional Planning 2035, 2022).

5. Green Transport and Communication Sector:

The transport sector in Syria requires comprehensive maintenance and rehabilitation in order to contribute to the development of a green economy. The transport sectors in Syria can be described as follows:

- Road Transportation: According to the Central Bureau of Statistics (2019), the road transport sector contributes 91.4% of the total transport sector's contribution to the GDP. During the war, road transport relied on alternative routes that proved crucial for the movement of goods and passengers; however, these routes need maintenance and rehabilitation. The most significant of these routes include Hama-Athria-Khanaser-Aleppo-Homs-Salmiyah.

- Rail Transportation: Rail transport accounts for 2% of the total transport sector's GDP contribution, according to the Central Bureau of Statistics (2019). Syria possesses one of the densest railway networks relative to its size among the ESCWA member states, with an actual length of 2,529 km. However, this system requires rehabilitation and development.

- Maritime Transport: According to a report by the World Bank, Syria's importance in the regional transport system as a transit hub for goods coming from Europe via Turkey and arriving at Syrian ports for shipment to the Gulf countries and Saudi Arabia has diminished. Maritime traffic has declined since 2011 due to the war and the imposition of unilateral coercive economic measures.

- Air Transportation: The unilateral coercive economic measures have led to a decline and limitations in air travel in Syria. The Israeli aggression has repeatedly targeted Damascus International Airport. Nevertheless, Damascus International Airport is still operating at a current usage rate of 80% (Syrian National Report on Regional Planning 2035, 2022).

6. Green Cities and Architecture:

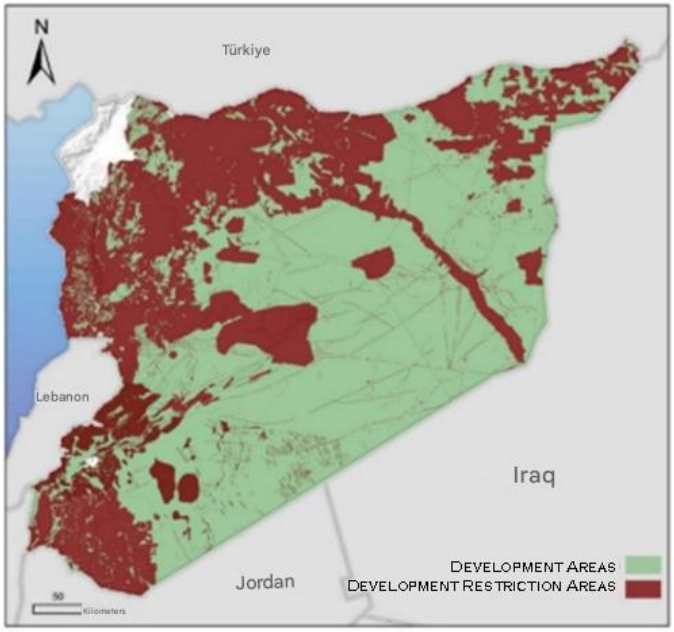
The study of sustainable urban development in Syria reveals that Syrian cities are experiencing rapid urban expansion in recent years, leading to the emergence and spread of informal settlements. This phenomenon has resulted in a decrease in the effectiveness of urban infrastructure and has impacted the revenue from municipal fees essential for local development. However, these neighborhoods feature better construction quality compared to similar slum areas in neighboring countries. The primary reasons for the proliferation of these informal settlements include:

-The slow implementation of regulatory plans and the enforcement of Law 14 of 1974 regarding the development of land parcels.

-The absence of a coordinated policy for social housing.

-The destruction and damage in certain areas due to war and armed conflict.

In 2020, the Regional Planning Authority developed a plan to regulate urban development, which considered three frameworks: natural resources, natural and environmental hazards, and urban and human constraints. This plan aimed to identify preferred areas for urbanization and restrict others to manage the cities' carrying capacity and preserve natural resources.



Map (2) Areas of Permitted and Restricted Development
(Regional Planning Authority)

7. Waste Management and Recycling:

Syria faces an annual waste growth rate of between 2.5% and 3.5%. The estimated quantity of waste in 2009 was approximately 4.5 million tons per year. Most solid waste treatment projects are unable to address this issue due to a lack of funding and the execution of projects for the collection, transport, sorting, and treatment of solid waste. Approximately 40% of the waste is disposed of in sanitary landfills that do not meet required standards, while about 55% ends up in informal dumps. Only 5% of organic waste is converted into organic compost, and waste management plans have not been implemented since 2004. As a result, municipal and hazardous industrial solid waste is being disposed of improperly, leading to pollution of soil, surface and groundwater, as well as air pollution and visual pollution (National Framework for Regional Planning 2035, 2022) .

An analysis of the current waste situation in Syria indicates that there is a limited number of regulated and semi-regulated landfills, along with a restricted number of sanitary landfills. Additionally, there is poor management of solid waste of all types, coupled with insufficient investment in and recycling of this waste.

8. Green Tourism:

The tourism sector is considered one of the most important sectors of the economy in the Syrian Arab Republic, and it was heavily relied upon for economic stability before the war in Syria. At that time, Syria was one of the most important tourist destinations at both the regional and international levels, with the tourism sector recording high growth rates. The direct and indirect contributions of tourism to the GDP

reached 14% in 2010. However, it was one of the sectors most affected by the repercussions of the war in Syria. Many international flight routes were suspended, and tourists refrained from visiting due to the poor security situation and warnings issued by European and American governments to their citizens, not to mention the significant damage inflicted on tourist sites and attacks on the infrastructure supporting the sector. Figure (2) shows the growth rates of arrivals and tourists, indicating that in 2019 and 2020, the growth rate of tourists declined to a negative growth rate of -100% in 2021

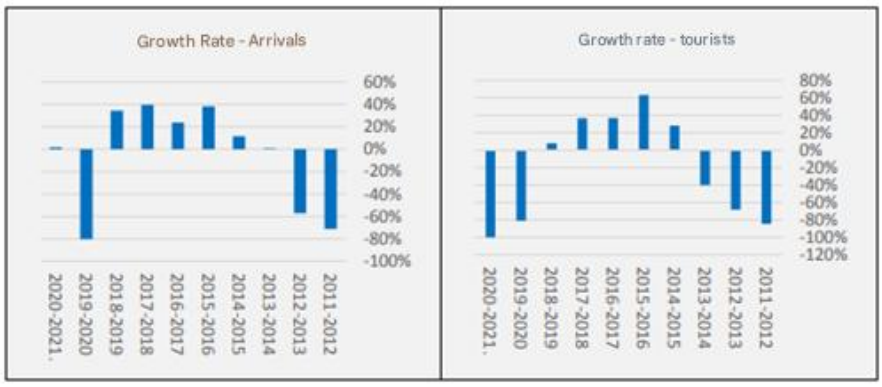


Figure (2): Growth Rates of Arrivals and Tourists
Ministry of Tourism, 2022

9. Forests:

Forests in Syria play a significant role in sequestering organic carbon in the soil, as well as providing environmental and touristic benefits. They do not have any economic aims other than the advantages derived from beekeeping and the acquisition of medicinal and aromatic plants. The Syrian Arab Republic is distinguished by its rich and diverse plant life, a result of its unique geographical location and varied climate, which create a rich environment with natural habitats suitable for the survival of many plant species. (Final Report of the Land Degradation Neutrality Target Setting Programme, 2020)

Table (4): Areas of Forests in Syria:

Type of Forest	Area (Hectares)	Percentage of Total Forests
Natural Forests	232,840	44.5 %
Artificial Forests	290,083	55.5 %

10. Fisheries:

Syria is one of the countries rich in its fish resources; however, this sector has been adversely affected by the war that has engulfed the country. A study conducted by Dr. Kinda Wazzan from 2006 to 2017 and then to 2020 revealed that the annual average production of marine fish decreased by 56% during the war compared to the previous period. The compound annual growth rate was negative for both studied periods, recorded at (-2.3%) and (-2.7%) respectively. The trend equation indicated that production was already on a downward trajectory in both periods, declining by 80.3 tons per year in the pre-war period and by 54.4 tons per year during the war. Additionally, the per capita availability of fish fell by 59% (kg/year), while the index of average fish prices surged due to inflation, reaching 1406.6% (Wazzan, 2021, 2).

After reviewing the state of the green economy in Syria, it was necessary to identify strengths and weaknesses to clarify the vision for developing plans aimed at transitioning towards a greener economy more effectively. The following are the key points:

SWOT Analysis of the Green Economy in Syria:

Strengths of the Green Economy in Syria:

1. A unique geographic location, as Syrian territories serve as a link between continents and overlook the Mediterranean Sea, providing opportunities for investment across various sectors, particularly in transportation and logistics.
2. Diversity in agricultural soils, leading to a variety of vegetation, especially rare and limited species found in the world.
3. A robust agricultural production sector capable of providing high added value.
4. Availability of large quantities of phosphate, rock salt, and quartz sand.
5. Expansive areas of state-owned land suitable for investment.
6. Syria possesses the most densely populated railway network relative to its land area among neighboring countries.
7. A well-established transportation network connecting production areas with border regions and consumption zones.
8. High solar potential, especially in the Badia region, reaching approximately 4.7 kWh/day.
9. Richness of Syrian lands in natural tourist sites and archaeological monuments.

Weaknesses of the Green Economy in Syria:

1. The reduction of forested areas and woodlands, along with the prevalence of deforestation, in addition to fire incidents and drought caused by climate change and aridity.
2. Weak water supply networks and disruptions in some areas, leading to inadequate drinking water availability and contamination.
3. Lack of accurate studies and measurements for spring flows and groundwater reserves, resulting in significant depletion.
4. High population density in areas attracting displaced persons.
5. Increasing pollution rates and deterioration of the ecological system.
6. Expansion of informal housing areas due to rising land and housing prices, as well as construction materials.
7. Declining contribution of productive sectors due to the challenges posed by the war in Syria.
8. Reduced contribution of the foreign trade sector to GDP.
9. Low utilization of the Syrian railway network despite its density.
10. Deterioration and damage to the electrical network.
11. Emigration of a significant number of qualified and trained skilled laborers.
12. Weak management of solid waste in all its forms, along with limited investment and recycling efforts, which is attributed to a limited number of landfills and poorly chosen locations for some of them.

Opportunities for the Green Economy in Syria:

1) Significant potential for solar and wind energy production, which can help reduce dependence on fossil fuels.

2) Adoption of modern agricultural practices such as drip irrigation and organic farming to minimize environmental impact and enhance agricultural productivity.

3) Syria has a substantial opportunity to develop an efficient waste management system focused on recycling and composting.

4) Potential for the development of eco-tourism that provides sustainable revenue while protecting the environment, given Syria's rich cultural and natural heritage, including archaeological sites and nature reserves.

5) Possibility of developing in financing tools, such as green bonds and green loans, to promote investment in sustainable projects.

Threats Facing the Green Economy in Syria:

1) 1.Ongoing war and armed conflict have led to the entire economic system entering a phase of crisis and wartime economy.
2) Climate changes resulting from unsustainable human activities leading to greenhouse gas emissions.
3) Changes in international transport routes that bypass Syrian geography due to the ongoing conflict.
4) Scarcity of water resources and the control of neighboring countries over transboundary water.
5) Pollution affecting water sources, whether natural or human-caused, including sewage, industrial waste, and wastewater.
6) Unilateral economic sanctions and coercive measures imposed on Syria.

Table (5): SWOT Matrix for Analyzing the Status of the Green Economy in Syria:

	Weaknesses	Strengths
Internal Factors	Reduction of forest areas - Weakness of the water infrastructure - Lack of accurate studies on groundwater - High population density - Increasing pollution - Expansion of informal settlements - Decline in the contribution of productive sectors - Limited use of railway lines - Deterioration of the electrical network −Emigration of skilled labor	- Distinctive geographical location - Diversity of soils and plant species - Agricultural quality - Availability of phosphates, quartz sand, and rock salt - Extensive land areas - Well-developed transportation network - High solar potential −Abundance of tourist sites
	Threats	Opportunities
External Factors	- War and terrorist conflict - Climate change - Changes in international transportation routes - Degradation of natural resources - Pollution of water sources −Sanctions and economic measures	- The potential for solar and wind energy production - Modern agricultural practices - Development of an effective waste management system - Development of eco-tourism −Development of inventive financing tools

Results:

Through the study of the current state of the green economy in Syria and its assessment using **SWOT** analysis to identify strengths, weaknesses, opportunities, and threats faced by the green economy, several conclusions were reached, the most notable of which are:

1. Syria has faced numerous challenges in transitioning to a green economy, among the most significant being climate change, scarcity of natural resources, and war, which has played a major role in constricting the economy in Syria. This has negatively impacted all sectors of the green economy to varying degrees and led to significant destruction of infrastructure networks in many areas of the republic.
2. The coercive sanctions imposed on Syria have caused a significant decline in the economy, restricting land, sea, and air transport, as well as reducing foreign trade and investments in the country.

3. Most sectors of the green economy in Syria require development and rehabilitation. The Regional Planning Authority has outlined strategies in the National Framework for Regional Planning 2035 to enhance the situation in all sectors. However, most of these strategies require funding, security stability, and the cessation of the imposed economic sanctions.
4. Syria possesses several strengths that can be leveraged to enhance its green economy, including a strategically important geographical location, high solar and wind potential, as well as the quality of its agricultural production and its rich history, which represents vital components of tourism.
5. Most countries have sought to transition to a green economy, and there are many successful international experiences that can be drawn upon, most notably Denmark's experience in wastewater treatment, the United Kingdom's congestion charge, and South Korea's waste recycling and the establishment of a high institute for green growth to conduct relevant scientific research. Additionally, Syria can benefit from the experiences of Tunisia and Morocco in transitioning to renewable energies.

Suggestions:

1. Support agricultural projects by adopting modern farming methods and focusing on strategic crops. Assist farmers in obtaining feed and seeds easily and affordably, and enhance food industries within the framework of the green economy through effective planning and intensifying research and studies aimed at improving agricultural productivity, increasing livestock numbers, and conducting accurate statistics.
2. Support the transportation sector due to its benefits and contributions to the local economy, which in turn helps secure necessary funding for green projects aimed at transitioning to a sustainable reality, as well as establishing frameworks and plans that promote the use of clean energy in the transportation sector.
3. Invest in high solar and wind potential for projects that provide clean energy supporting all sectors, particularly industry, to reduce production costs and increase quality. This, in turn, facilitates funding for these and other green projects, as well as effective waste management and disposal, which promotes recycling initiatives that reduce pollution and support the economy.
4. Encourage invention and green technology, strengthen partnerships between the public and private sectors, and enhance international cooperation.

Recommendations:

1- Leverage strengths in the transition to a green economy through strategies and studies aimed at enhancing the green economy while re-evaluating weaknesses in an effort to transform them into points of growth and strength.
2- Involve local communities and the private sector in all development plans aimed at promoting the green economy.
3- Utilize technological advancements to support green economy projects and ensure continuous monitoring and evaluation of these plans' implementation.

Conclusion:

With the rapid development occurring in our era across various fields, particularly in the industrial and transportation sectors, it is essential for us to maintain a high level of awareness to conserve our natural resources and reduce greenhouse gas emissions to mitigate ongoing environmental degradation. This requires a serious transition to a more sustainable economic model. Therefore, we emphasize the importance of transitioning to a green economy, addressing the challenges faced by Syria, and learning from the experiences of other countries, as outlined in this research

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