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Iraq's Construction Industry and the Crucial Need for Development Strategies Which are Sustainable

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Abstract

The industries of Iraq have been greatly affected by the prolonged armed conflicts that took place there. These industries including the construction industry have been negatively impacted by the war. Notably through lack of funding, resources and destruction. However, the country is starting to show a positive growth and this in time will enable the construction industry to once again develop and grow with the enormous task ahead of rebuilding the country. One of the many issues that they face is their continuing reliability on the traditional construction methods. These methods are outdated and will not meet the requirements that are needed for the next generation. This research investigates the challenges that lie ahead for the construction industry of Iraq. Whilst also exploring the current challenges that Iraq's construction industry faces and various sustainable construction practices from the existing literature. The evaluation was carried out through identifying the strengths, challenges and recommendations of the process. The research employs semi-structured interviews as a qualitative data collection method, engaging 16 people from construction companies in Iraq. The analysis and discussion focus on their insights regarding various critical topics, including the challenges encountered in the implementation of sustainable construction practices, the advantages of such practices for Iraq, proposed design features for sustainable housing projects, community and stakeholder engagement, impact measurement strategies for sustainable construction initiatives, and the prospective benefits for the community derived from sustainable housing projects. The study has also linked the challenges that the process is facing in post-conflict Iraq to the political, economic, social and cultural factors that play the greatest role in making this process what it is. The study also shows the complexities that the construction industry faces. This is due partially to its geographical positioning, the country faces an extremely hot land, dry climate and with a prevalent water shortage. In this context, adopting sustainable construction practices becomes. When a war-torn society begins to make changes in construction and rebuilding, it can bring about changes in the entire society.

Keywords: Construction industry, Economic, Environment protection, Iraq, Rebuilding, Sustainable development.

1. Introduction

The construction industry in Iraq has faced significant challenges due to the rise of the Islamic State and ongoing sectarian violence. This turmoil has led to extensive damage across the country, but there is now a renewed focus on rebuilding infrastructure and fostering economic development. (1) Currently, the construction sector is at a pivotal point as it seeks to recover and expand after years of conflict and instability. According to a report by Yahoo Finance, the construction industry in Iraq is projected to grow at an annual average rate of approximately 5% from 2024 to 2027. A key aspect of this growth will involve the completion of delayed construction projects, which collectively amount to around $18 billion. (2) The Iraqi government is partnering with international organizations and foreign investors to prioritize the development of essential infrastructure, which includes hospitals, schools, housing, bridges, and roads. (3) Significant projects are currently in progress, such as the rebuilding of Mosul, the rehabilitation of the Old City, and the restoration of vital services across Iraq. (4) In addition, the government initiated the "Reconstruction Fund for Areas Affected by Terrorist Operations" to allocate resources effectively for regions that have been most impacted (5).

Furthermore, international donors have pledged billions in support, and countries like Turkey (6) and China (7) are actively involved in various construction ventures, which include the development of commercial buildings and residential complexes. The revitalization of the construction industry is crucial for Iraq's economic development for several reasons. Primarily, this sector generates substantial job opportunities, which are essential for addressing the country's high unemployment and poverty rates. Given the labour intensive nature of construction, it has the potential to employ a large segment of the available workforce, especially benefiting young residents and contributing to social stability.

Rebuilding infrastructure plays a crucial role in the recovery and enhancement of various sectors, including transportation, healthcare, and education. Each of these areas works in tandem to bolster human capital development. Furthermore, improved infrastructure has the potential to draw in foreign investments, which can provide essential funding for diverse economic activities. The growth of the construction industry also positively influences related sectors such as manufacturing and services. This interconnected growth creates a multiplier effect, fostering greater stability within the country. As a result, the construction sector is poised to remain a fundamental element of long-term national development. However, Iraq is grappling with significant environmental challenges, such as air pollution, desertification, and water scarcity. Notably, data from IQ Air World Air Quality rankings places Iraq sixth in terms of the worst air quality globally, trailing behind countries like Bangladesh, Pakistan, and India. Baghdad, in particular, holds the unfortunate distinction of having the worst air quality among major cities worldwide. (8) The primary sources of air pollution in Iraq include oil drilling, industrial emissions, vehicular exhaust, and the combustion of fossil fuels. The utilization of traditional construction methods is particularly concerning, as they are energy inefficient and contribute significantly to greenhouse gas emissions. Projects that do not employ modern energy-efficient technologies necessitate increased energy for heating, cooling, and lighting. (9) In addition, the country's fertile lands are increasingly becoming arid deserts, which poses a serious threat to food security. (10) Water scarcity is compounded by dwindling water levels in vital rivers such as the Euphrates and Tigris, intensifying the challenges Iraq must confront. (11) Continuing to rely on traditional construction techniques exacerbates these environmental dilemmas. The construction industry demands substantial amounts of resources like sand, water, and gravel, which contribute to ongoing resource depletion. (12) Moreover, the absence of effective waste disposal systems for construction debris leads to inefficient waste management practices that result in pollution of both landfills and open spaces, further diminishing usable land. To tackle these pressing issues, it is imperative to adopt sustainable construction practices. This includes integrating energy-efficient solutions, enhancing waste management strategies, and regulating the extraction of natural resources. By doing so, we can minimize the environmental impact and work toward a sustainable future for both the country and its citizens. Sustainable development represents a comprehensive and forward-thinking approach that aims to satisfy the needs of the present without jeopardizing the welfare of future generations. It advocates for a balanced and fair path to development, blending social inclusion, environmental protection, and economic growth.

Sustainable development is an all-encompassing approach that prioritizes the future while addressing the needs of the present. It aims to create a balanced and fair method of development that considers various factors. This concept brings together social inclusion, environmental conservation, and economic progress in order to achieve its goals. As the world becomes more aware of climate change and its potential consequences, sustainable development has become increasingly important in tackling issues such as climate change, depletion of natural resources, and social inequalities (13). Currently, various international agreements promote sustainable construction practices. The United Nations' 2030 Agenda for Sustainable Development includes Sustainable Development Goal (SDG 11) which aims to create resilient communities and resource-efficient buildings. (14) The Paris Agreement encourages nations to adopt green building practices to reduce carbon emissions and enhance energy efficiency (15). The LEED (Leadership in Energy and Environmental Design) certification, created by the US Green Building Council, is a globally recognized standard for sustainable construction that promotes resource efficiency. (16) Additionally, the World Green Building Council's Advancing Net Zero Initiative aims for all buildings to achieve net zero carbon by 2050 (17). These initiatives highlight the significance of sustainable construction for long-term development and reduced environmental impact.

The previous sections have made it clear that the construction industry cannot persist with traditional methods. It is imperative to transition to sustainable development practices to ensure that future generations have sufficient resources for their survival. Although this transition is not without its challenges, as previously demonstrated, numerous opportunities will encourage construction firms to embrace this change.

2. Methodology

A qualitative research methodology has been employed to explore the reasons why the construction sector in Iraq must adopt sustainable development practices and to identify the barriers that hinder this adoption. In contrast to quantitative research methodology, which is solely based on numerical data and statistical analysis to validate or invalidate a hypothesis, qualitative research aims to uncover the fundamental reasons behind a problem, issue, behaviour, practice, thought process, or reality. Rather than depending on numerical data, qualitative research utilizes descriptive or non-numerical information. This research methodology enables a researcher to acquire a comprehensive understanding of the subject matter being investigated. (18).

This research involved conducting semi-structured interviews with the participants. While structured interviews have limitations and unstructured interviews possess a very high risk of the interviewee deviating from the main topic, semi-structured interviews were considered viable [19]. In semi-structured interviews, the interviewer prepares an initial list of questions from the research participants, i.e., interviewees. However, if needed, the discussion can go beyond these questions if the interviewer believes their discussion may contribute to their research findings. The initial list of questions prepared for the interviews is as follows:

1. What are the key challenges in implementing sustainability practices in construction projects in Iraq?
2. How can sustainable construction practices benefit housing projects in Iraq?
3. What specific sustainable design features would you prioritise in a housing project in Iraq?
4. How do you plan to engage and educate local communities and stakeholders about the benefits of sustainability in construction projects?
5. How do you intend to measure the success and impact of sustainability initiatives in housing projects in Iraq?
6. In what ways do you think sustainable construction practices can benefit the community and environment in Iraq?

The answers to the questions were as follows:

Question 1 Upon reviewing the participants' responses reveals that key challenges include economic viability, lack of awareness, knowledge and expertise, availability of sustainability materials, regulatory gaps, extensive focus on short-term gains, and availability of qualified human resources.

For instance, it was pointed out that sustainable projects require a higher upfront cost than traditional construction practices, which is an obstacle for them when adapting to sustainable practices. They also underlined the absence of any initiative that provides them financial incentives for adopting sustainable practices; this makes it difficult for them to justify the requirement of higher funds than usual at the beginning of a project. Lack of awareness, knowledge, and expertise are common concerns explicitly mentioned that any existing and potential employees have limited understanding of and exposure to green building concepts and resource-efficiency processes. They also stated that there is a dire need for comprehensive education and training programmes for the construction industry to bridge this knowledge gap and move towards a sustainable future.

Question 2. Responses stated that in the context of housing projects, it is crucial to have energy-efficient appliances and proper insulation to reduce the residents' energy costs. A similar submission was made whilst discussing proper air ventilation and natural light arrangements in the buildings. While discussing the costs, it was emphasised that using sustainable materials and construction techniques will require a higher initial investment, but they will have lower maintenance costs in the long term. Another suggested that increasing awareness among the public about sustainable housing will increase the value of such housing projects.

Another prominent theme in the participants' responses was potential environmental benefits. It was said that rainwater harvesting will help in water conservation, which would be crucial for the country's future.

Question 3. A commonly expressed concern was regarding the climatic conditions of the country, which are hot and dry. Another suggestion was that housing projects must be designed to utilise passive cooling strategies while ensuring proper building orientation and shades and utilising natural ventilation as much as possible. Also offering a similar suggestion but suggested that housing projects with good insulation rely less on air conditioning. This will also help reduce carbon emissions and decrease the overall electricity consumption. Other participants, suggested using solar panels and other renewable energy sources to decrease the housing project's electricity dependence. Another challenge unique to Iraq is water scarcity.it was very strongly stressed design features to address these challenges, such as water-efficient appliances and fixtures. At the same time, they suggested using water harvesting, which is a feature was also emphasised: To use greywater recycling systems in housing projects to complement the existing freshwater supplies.

Question 4.In the answers they have offered multiple suggestions to involve local communities and stakeholders. Proposing organising workshops and seminars to explain the benefits of sustainable housing projects in plain and simple language so that there is a direct community outreach. Other suggestions was similar, and they explained the importance of clear communication, which is understandable by the public and free from technical jargon.

Question 5. Another key theme of suggestions revolved around measuring the efficiency of resources being used and the total amount of waste generated. For example, there was a suggestion about monitoring the volume of water and the number of electricity units used during a project. Also mentioned that the construction and demolition waste generated during a project can also be measured while documenting the percentage of waste recycled or reused. Participants also recommended using financial metrics to measure the success and impact of sustainable housing projects. For instance, another suggested an analysis of cost savings with the help of reduced water and electricity consumption in sustainable housing projects.

Question 6. Multiple participants highlighted the benefits of resource efficiency and waste reduction. While the country is already facing a water crisis, it was stated that adopting sustainable practices will help minimise the water used during a building's construction lifecycle. Similarly, talked about the benefits of reusing and recycling building materials to reduce the construction and demolition waste generated in any construction project.

As for community-centric benefits, it was mentioned improvements in public health as a prominent benefit. With proper air ventilation and utilisation of natural light, residents will have access to better indoor air quality. Meanwhile, some participants also discussed economic and development benefits for the community. Another point raised was the employment generation in the sustainable construction sector as the construction industry adopts sustainable practices. Also mentioning long-term cost benefits as a prominent benefit for the community. This could help in creating sustainable buildings which can be aesthetically pleasing and contribute to a liveable future

3. Conclusion

War, in any form and in any nation, has a devastating effect on the country, its general populace, its economy, and various sectors. As indicated by existing research and available statistics, this is also true for Iraq's construction sector. Nevertheless, recent developments demonstrate a positive trend in this industry's role in revitalizing the Iraqi economy. This research aims to emphasize the critical necessity for implementing sustainable construction practices within the country. Iraq already faces a distinct array of challenges, including a hot and arid climate and water scarcity, among others; interviews conducted with senior managers and CEOs of construction firms reveal a solid understanding of the environmental issues confronting Iraq. The interviews further suggest an increasing interest in sustainable construction practices; however, despite recognizing these benefits, a research gap persists that needs to be addressed. Identified significant challenges include a lack of awareness, economic feasibility, limited access to sustainable materials, qualified personnel, and regulatory deficiencies. While there is a vision for Iraq and its anticipated state in 2030, there is a scarcity of data regarding Iraq's construction industry. As various participants have pointed out, sustainable housing initiatives will benefit the country despite these obstacles. The researcher believes that this is an opportune moment for the government and stakeholders to unite in adopting sustainable construction practices for a future in Iraq that is liveable for generations to come. In summary, this research has made a modest effort to highlight the urgency of adopting sustainable construction practices in Iraq. Participants have indicated that embracing sustainable construction methods will aid in fostering an environmentally conscious future for the country. By implementing sustainable practices, the construction industry can significantly contribute to this vision.

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