



## AN OVERVIEW OF ECO-FRIENDLY CENTERS IN SAVANNAHS: A CASE OF BAUCHI METROPOLIS FITNESS CENTERS, BAUCHI STATE

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**ABSTRACT:** *Eco-friendly buildings and construction techniques have taken center stage as a trend that is here to stay. From sustainable home buildings to billion-dollar commercial developments, eco-friendly buildings are becoming a norm; they require fewer natural resources and produce fewer greenhouse emissions and waste. The study is aimed at highlighting on different criteria to be adopted in the provision of a well-designed fitness center capable of promoting safe and standard environment for fitness activity. A qualitative research methodology was used for the study to allow for research triangulation and wide range of data collection. The instruments of data collection used for the study include interviews, visual surveys and observation at the respective case studies selected for the study. The research found out that there is no application of features of eco-friendly building in all the selected cases studied, which resulted in non-marketability of the centers. It was also found that there is no any special or dedicated facility which adequately meets the design requirements of the fitness center in any of the selected case studies. Therefore, the study recommended feasible features to be incorporated in the design and construction of sustainable fitness centers.*

**KEYWORDS:** Eco-friendly, Fitness center, Bauchi Metropolis, Sustainability.



## INTRODUCTION

An eco-friendly building is a building that uses fewer natural resources as well as renewable and/or alternative resources that produce fewer greenhouse emissions and waste. Green buildings create a positive impact on the environment around them and contribute to improving the global climate (Nallathiga, R.; Raipure, A.; Ate, P.; & Singh, A., 2022). They are also known as green constructions or sustainable buildings which refer to both structures and the application of processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition (Srivastava, S.; Raniga, U. I.; & Misra, S., 2021). It is designed, constructed, and operated to enhance the well-being of their occupants and support a healthy community and natural environment. According to Papadakis, N. and Katsaprakakis, D. A. (2023). The five principles of green building are

- **Livable Communities:** A livable community is one that is safe and secure. It offers choices on where to live and how to get around, and it equitably serves residents of all ages, ability levels, incomes, races, ethnicities and other backgrounds.
- **Energy Efficiency:** Energy efficiency is the use of less energy to perform the same task or produce the same result.
- **Indoor Air Quality:** Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.
- **Resource Conservation:** Resource conservation means safeguarding precious resources such as minerals, wildlife, trees, water, and other natural resources. Resource conservation also involves judicious use of resources to avoid waste and allowing the environment to rejuvenate.
- **Water Conservation:** Water conservation is the practice of using water efficiently to reduce unnecessary water usage.

## LITERATURE REVIEW

Physical fitness has always been an important part of life. The evolution of fitness can be credited to the need of humans for survival and can be traced to the beginning of mankind where people would remain physically fit in order to hunt and survive (Baloh, 2022). It is theorized that when people left a hunter-gatherer lifestyle and formed fixed communities based around agriculture, physical fitness levels declined. This is not to say that the levels of physical labor decreased but that the type of work undertaken was not necessarily as conducive to a general level of fitness. As such, regimented fitness regimes were either invented or became more common (Baloh, 2022).

Fitness centers began after the fall of the Greco-Roman Empire; gyms along with art and music disappeared as the appreciation and pursuit of a healthy and sculpted body was frowned upon (Murtha, R.; Heffernan, C.; & Hunt, T., 2021). This was especially the case in classical civilizations such as Ancient Greece and Rome. In Greece, physical fitness was however



considered to be an essential component of a healthy life as it was the norm for men to frequent a gymnasium; physical fitness regimes were also considered to be of paramount importance in a nation's ability to train soldiers for effective military force; partly for these reasons, organized fitness regimes have been in existence throughout known history and evidence of them can be found in many countries (Martinovic, D.; Tokic, D.; Martinovic, L.; Kumric, M.; Vilovic, M.; Rusic, D.; & Bozic, J., 2021).

The value of fitness clinics in promoting physical fitness and good health is currently becoming more widely recognized. Therefore, it should not come as a surprise that there has recently been an increase in the opening of fitness centers in our society, even though it can be agreed that this is a step in the right direction towards raising the general public's level of fitness and health. Hence, the increase in the desire by Nigerians to exercise due to an increased awareness of the numerous benefits of exercise led to the proliferation of fitness centers that in all indications lack standard in their design and operation (Adeogun, O. & Adeyeye, A. E., June, 2019).

However, proliferation is making sure that personnel working in health and fitness industries have the minimum qualification in health and fitness before applying for certification from respective regulatory bodies, organizations or associations. Regulation implies that providers of health and fitness centers apply for registration and get licensed to operate and that they follow the scope practice as recommended by the committee of accreditation (Iwuoha, 2015 cited in Adeogun, O. & Adeyeye, A. E., June, 2019). The decision to pursue certification as an exercise physiologist is an important step in being recognized as a competent professional. The primary purpose of a certification is always to protect the public from harm by assessing if the professional meets established levels of competence in the knowledge, skills, and abilities necessary to perform the job in a safe and effective manner. For professionals, a certification can separate one from others who have not proven themselves to be at the same level of competence (Adeogun et al., 2019).

According to Štatrevičs, V.; Voronova, I.; and Bajare, D. (2021), new technologies are constantly being developed to complement current practices in creating greener structures because the common objective of green buildings is to reduce the overall impact of the built environment on human health and the natural environment, as identified below:

- i Efficiently using energy, water, and other resources
- ii Protecting occupant health and improving employee productivity
- iii Harmonious Design: Buildings designed to make the most of features like natural lighting and ventilation for heating/cooling.
- iv Reducing waste, pollution, and environmental degradation.
- v Energy Efficiency and Conservation: Measures to reduce energy consumption and maximize the efficiency of the energy used through harmonious design that fit in the surrounding natural environment and contribute to the preservation of local ecology.
- vi Renewable Energy: Using renewable energy like solar and wind power to meet the needs of the building in whole or in part.



- vii Sustainable Construction Materials: The building is built with materials that are non-toxic, ethically and sustainably sourced from suppliers with the least environmental impact.
- viii Environmentally Conscious Construction Methods: The use of construction techniques that focus on reducing the impact of construction on the surrounding natural environment by reducing noise and light pollution and protecting local flora and fauna from harm during the construction phase.
- ix Socially Responsible Design: Buildings designed to be beneficial to their human occupants and improve their health and well-being.
- x Circular Life-cycle Design: Buildings designed with their full life-cycle in mind, from conception to operation, and from renovation and adaptation to eventual demolition.

Sustainable construction methods have evolved considerably over the last decade and are constantly being refined and improved; awareness of environmental issues and the impacts of the construction process on the natural environment have also increased, leading to better ‘best practices’ for the industry and tighter legislation controlling how construction is conducted (Fauzan, M. & Sunindijo, R. Y., 2021). Conversely, these vary from location to location and are usually considered during the design and planning stages of development. However, the guiding principles behind these measures remain the same and are closely aligned to the goals of eco-friendly construction (Fauzan et al., 2021). The key areas considered are resource use and waste generation:

- i Use resources and materials that are renewable, sustainable, and ethically sourced
- ii Make use of reclaimed and recycled materials as far as possible
- iii Limit the waste generated by construction, reuse as many materials as possible and dispose of any unusable materials as responsibly as possible
- iv Make use of methods and techniques that produce the least emissions and pollution
- v Use locally sourced materials and labor
- vi Focus on energy and water conservation during and after the build.

According to Lu, W.; Bao, Z.; Lee, W. M.; Chi, B.; and Wang, J. (2021), environmentally conscious builders will often make use of renewable energy, reclaimed or repurposed materials during construction. Such materials include:

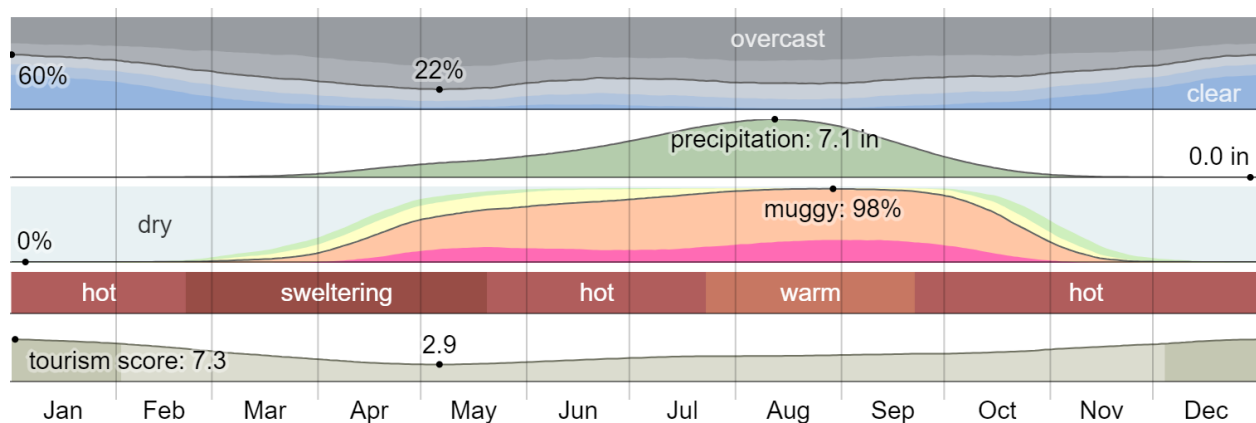
- i Reclaimed Timber
- ii Recycled Steel
- iii Bio Composites
- iv Mycelium – mushroom insulation and particleboard replacement
- v Bark Siding



- vi Tesla Solar Roof Shingles
- vii Adobe and Rammed Earth
- viii Grasscrete Paving
- ix Ferrok
- x Insulated Concrete Forms
- xi Plant-Based Polyurethane Rigid Foam
- xii Straw Bales
- xiii Structural Insulated Panels
- xiv Plastic Composite Lumber
- xv Bamboo and Hemp
- xvi Low-Emissivity Window Glass and Vacuum Insulation Panels.

## **METHODOLOGY**

Bauchi State occupies a total land area of 49,119 km<sup>2</sup> representing about 5.3% of Nigeria's total land mass and is located between latitudes 9° 3' and 12° 3' north of the equator. Longitudinally, the state lies between 8° 50' and 11° east of the Greenwich meridian. The state is bordered by seven states, Kano and Jigawa to the north, Taraba and Plateau to the south, Gombe and Yobe to the east and Kaduna to the west. Bauchi State is one of the states in the northern part of Nigeria that span two distinctive vegetation zones, namely, the Sudan savannah and the Sahel savannah. The Sudan savannah type of vegetation covers the southern part of the state. Here, the vegetation gets richer and richer towards the south, especially along water sources or rivers, but generally the vegetation is less uniform and grasses are shorter than what grows even farther south, that is, in the forest zone of the middle belt. The Sahel type of the savannah, which is also known as the semi-desert vegetation, becomes manifest from the middle of the state as one moves from the state's south to its north. Bauchi State, located in the North Eastern part of Nigeria, is characterized with hot – humid climate conditions which experience variation in climatic elements due to daily weather changes, thereby bring imbalance and discomfort in buildings.



Source: [https://weatherspark.com/y/61868/Average-Weather-in-Bauchi-Nigeria-Year-Round#google\\_vignette](https://weatherspark.com/y/61868/Average-Weather-in-Bauchi-Nigeria-Year-Round#google_vignette).

Bauchi metropolis in Bauchi local government area of Bauchi State made up the primary population for this study. There are 9 fitness centers operating in Bauchi metropolis, according to the coalition of fitness club associations. These are:

1. Sani Abacha Gymnasium, Murtala Muhammed way, Bauchi.
2. 02 Fitness Center, Yakubun Bauchi road Bauchi.
3. Babayo Liman Sports Arena, Gida Dubu housing estate Bauchi.
4. City Gymnasium, Old GRA Bauchi
5. Gym 4 She, Adamu Jumba Road, Bauchi
6. Lys Gymnasium, Bauchi
7. Newlook Beauty Parlour and Gymnasium
8. Chinmuntah City, Bauchi
9. Angale Gymnasium, Bauchi.

In view of this, purposive sampling technique is to be used in sampling studied cases. Due to the small number of fitness centers with similar characteristics operating in Bauchi metropolis as a result of this, only 5 out of the 9 fitness centers have operative buildings; this method of sampling is used to select cases that allow for sufficient and suitable data collection with respect to the theoretical framework.

1. Sani Abacha Gymnasium, Murtala Muhammed way, Bauchi
2. 02 Fitness Center, Yakubun Bauchi road Bauchi
3. Babayo Liman Sports Arena, Gida Dubu housing estate Bauchi.

The above 3 fitness centers formed the population of the study and fit the selection criteria of the case studies.

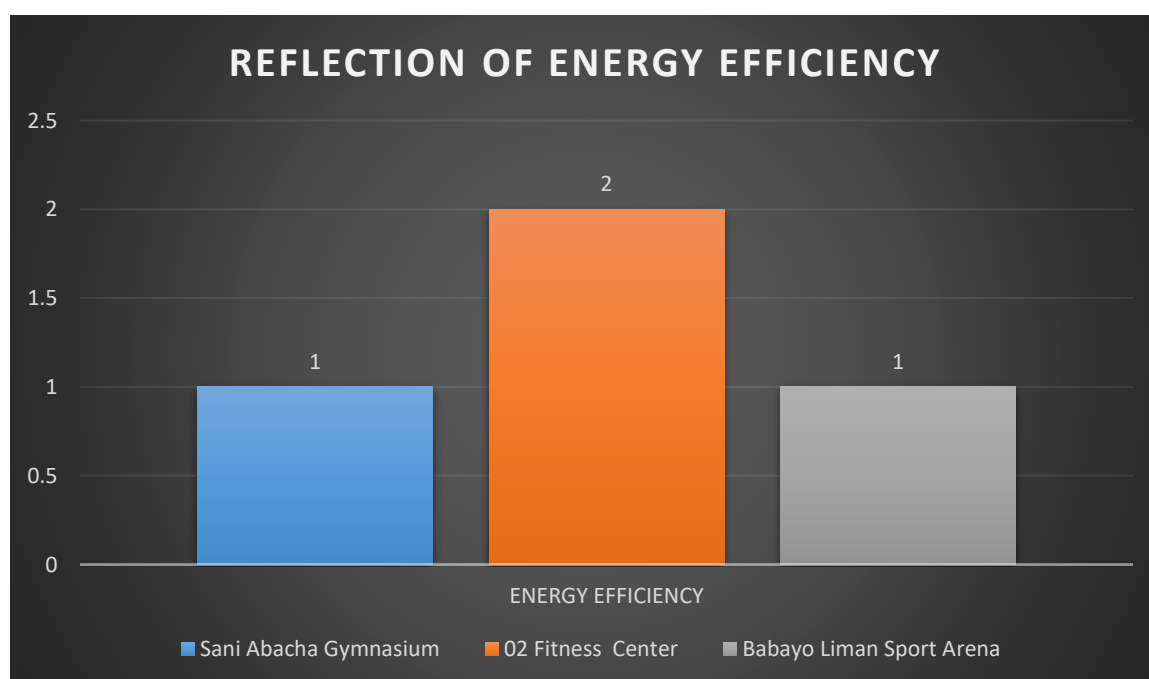
As qualitative research, case studies, visual surveys and interviews are adopted in the cause of the research to ease data collection during the field work. Collected data are then be subjected through content analysis using the theoretical frame work of inclusion of the eco-friendly features and standards required of fitness centers.

The unit of analysis used in the current study is drawn from the population of fitness centers operating in Bauchi metropolis, which include: efficient energy use, energy efficiency and conservation through harmonious design, and circular life-cycle design.

## RESULTS AND FINDINGS

Findings revealed that the fitness center buildings are not efficiently using energy, water, and other resources. The main source is the national grid which is characterized by an outage of energy and they do not exploit renewable energy and energy conservation systems to reduce the energy consumption and maximize the efficiency of the energy used, thus bringing about not using the energy effectively. Among the three studied cases, Sani Abacha Gymnasium and Babayo Liman Sport Arena are rated least in terms of the degree of the reflection of energy efficiency, though O2 fitness center has an electric generator as an alternative source of power. As shown in Figure I below:

**Key:** 1 = Poor, 2 = Not Adequate, 3 = Fairly Adequate, 4 = Adequate, 5 = Very Adequate.



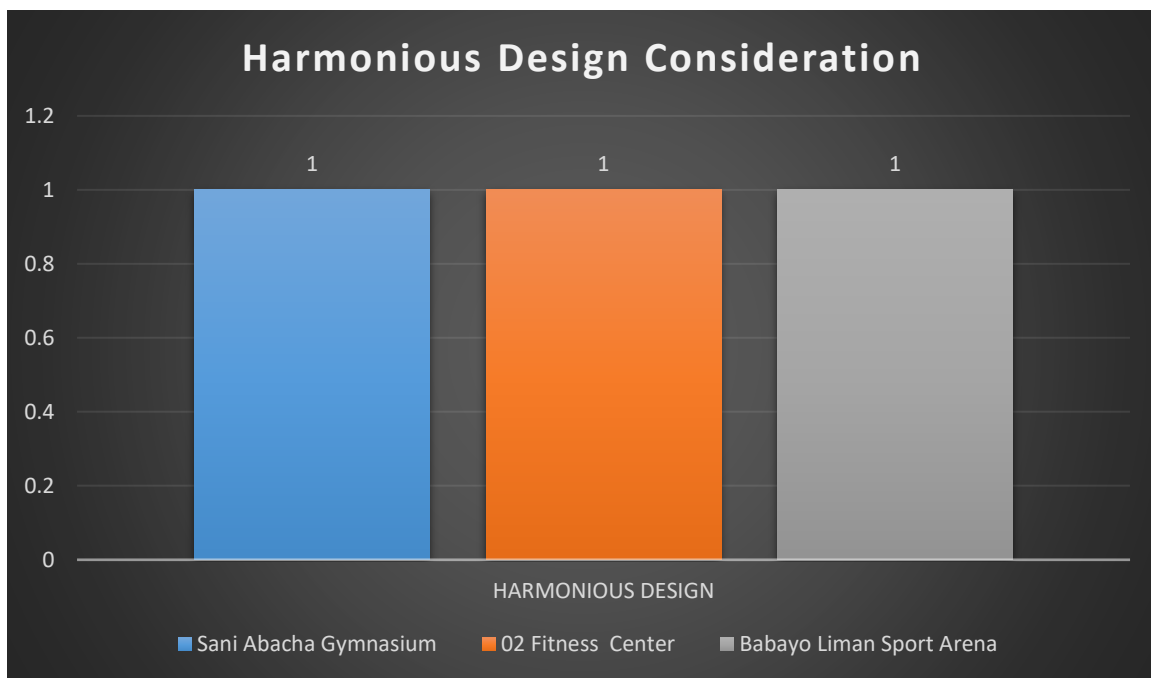
**Figure I: Summary of case study assessment based on the reflection of energy efficiency in the buildings.**

*Source: Authors' field work (2023)*



Secondly, to energy efficiency and on to consideration through harmonious design. It found that both fitness centers were not designed in harmony with the side to make the most use of such elements like natural lighting, ventilation, and do not harmoniously fit into the surrounding natural environment, and as such, do not contribute to the preservation of local ecology as shown in the chart Figure II below.

**Key:** 1 = Poor, 2 = Not Adequate, 3 = Fairly Adequate, 4 = Adequate, 5 = Very Adequate.



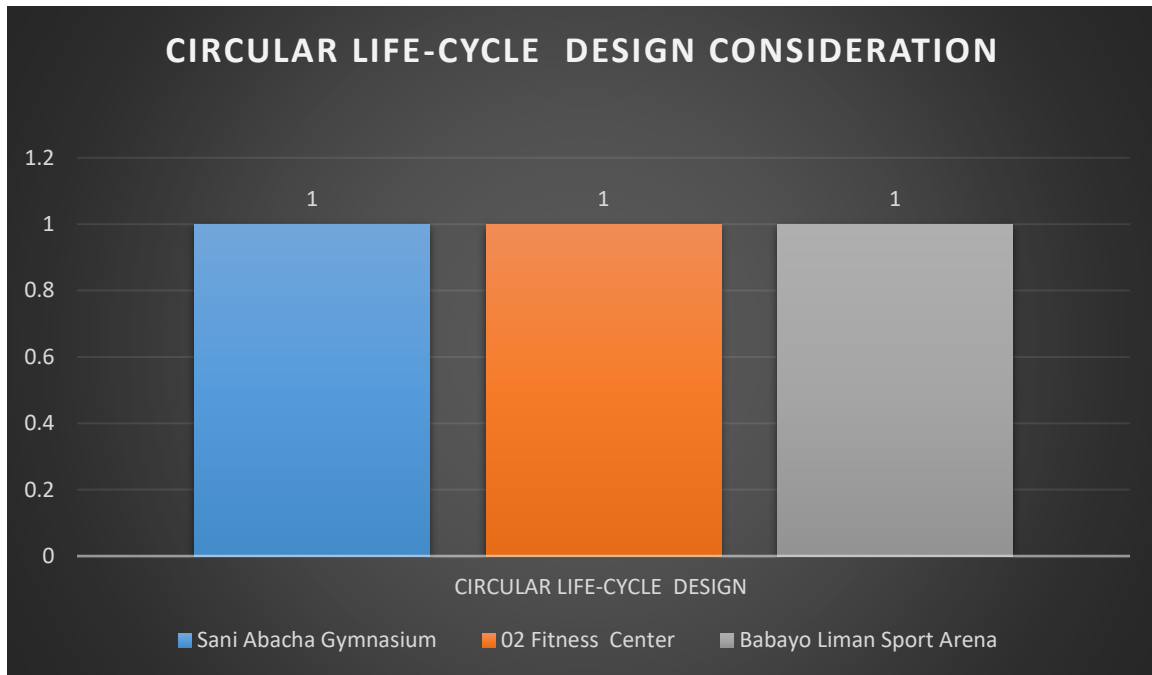
**Figure II: Summary of case study assessment based on Harmonious design considerations in the buildings.**

*Source: Authors' field work (2023)*

Worst of all, the centers studied considered life cycle principles and do not meet up with any of the components of the circular life-cycle as observed from the chart in Figure III below.



**Key:** 1 = Poor, 2 = Not Adequate, 3 = Fairly Adequate, 4 = Adequate, 5 = Very Adequate



**Figure III: Summary of case study assessment based on circular life-cycle design considerations in the buildings.**

*Source: Authors field work (2023)*

Plates 1, 2 and 3 below show the various fitness exercise centers from the studied cases.



**Plate 1: Sani Abacha Gymnasium in Bauchi is poorly lighted and ventilated.**

*Source: Authors field work (2023)*



**Plate 2: 02 fitness and physiotherapy center Bauchi is poorly lighted and ventilated.**

**Source:** *Authors' field work (2023)*



**Plate 3: Babayo Liman Sport Arena; Bauchi is poorly lighted and ventilated**

**Source:** *Authors' field work (2023).*



## **DISCUSSION**

The study found that there was no adequate provision for the standard requirements of fitness centers; this made it difficult for both players and spectators to utilize the available facilities and equipment. It also revealed lack of proper consideration of the eco-friendliness in the design approaches of the studied cases. It hence resulted in social exclusion for both the abled and disabled persons from participating in fitness activities. Should the air quality, water and natural resources are safeguarded, the initiatives would have helped to protect the environment for future generations and enhance comfort and well-being. As it was realized, circular life cycle, green construction practices are beneficial in minimizing the need for maintenance, repair and lower utility costs. The studied cases have not exhibited the least consideration of the parameters.

## **CONCLUSION**

The fitness centers studied are different and do not meet the standard of befitting fitness center buildings for comfort and wellbeing. The management of such facilities besides being far from effective are also not sustainable and have to be adequately regulated to ensure safety, health and wellbeing of the users. The buildings are inadequately protecting occupant health and do not improve employee productivity and hence are not designed to make the most use of features like natural lighting, ventilation and also not designed to fit harmoniously into the surrounding natural environment and contribute to the preservation of local ecology.

## **RECOMMENDATIONS**

It is recommended that:

- i. Fitness centers should use green features much more, such as lighting and ventilation.
- ii. Fitness centers should also be incorporated with elements that consider both abled and disabled personalities as well as provide equality for both sexes.
- iii. Contemporary practices require public spaces such as fitness centers and social gathering spaces to go along with the surrounding environment as well as maintain at least a near stable ecosystem that meets the circular life-cycle principle in practice.



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