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Comparative Review of the Living Building Challenge Certification

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Abstract

The Living Building Challenge (LBC) is a rigorous green building certification program developed by the International Living Future Institute, and it encourages the creation of buildings that are not only environmentally sustainable but also socially and economically responsible. The LBC is considered one of the most ambitious and comprehensive green building rating systems in the world. Yet, this has only been reported through individual case studies, and upon reviewing existing literature, there was a gap in comparative articles addressing successful cases on LBC certification using all seven petals of the system. Therefore, this paper aims to perform an exploratory study on reported cases of successful LBC certification. This aim will be achieved by defining LBC, and discussing the mechanisms for achieving the complete implementation of the LBC certificate. The time frame considered for this survey is between 2010 and 2023. The qualitative exploratory nature of this research focuses on reviewing databases such as Science Direct, ProQuest, Google Scholar, Research Gate, and official websites to extract relevant information using an eligibility criterion of title and abstract review, inclusion of key terms, detailed review of chosen articles and exclusion of newspaper articles, tutorials, and blog posts. The results showed five successful cases of LBC certification and discussed the seven petals of the LBC system. This work will serve as a comparative reference to aid in understanding the LBC certification and summarize the mechanisms to successfully implement the system in future work.

Keywords

Living Building Challenge, Construction, Regenerative Design, LBC, Certification.

1. Introduction

The concept of the "The Living Future", as perceived by the International Living Future Institute , is one where human species and the planet are thriving and living in a healthy and inclusive future through balance with each other and with the diverse ecosystems (*About the International Living Future Institute*, 2022). The concept of the Living Building Challenge (LBC), which is adopted by the International Living Future Institute (ILFI), a Non-Governmental Organization (NGO) that envisions a future where the planet and humanity are thriving and the society is "socially just, culturally rich, and ecologically restorative", is a philosophy in its core, an advocacy tool and a certification system. It includes the most advanced measures of sustainability that allow the positive addition to the surrounding environment and not just the reduction of negative impact (*LIVING BUILDING CHALLENGE 4.0 A Visionary Path to a Regenerative Future*, 2019), as its focus is on restoring, regenerating and adding positive impacts to the construction practices (Udawatta et al., 2021). According to the Annual Report of 2018 released by ILFI (*ANNUAL REPORT 2018*, 2018), there are more than 100 certified Living Building Challenge (LBC) Projects out of 387 registered projects , as of October 2018. Accordingly, this paper will focus on defining the Living Building Challenge (LBC) and discuss some of the successful cases of LBC certification that have been reported in literature.

2. Methods

The nature of this research is qualitative and exploratory, relying mainly on literature review. First, a targeted literature search in relevant databases (Science Direct, ProQuest, Google Scholar and Research Gate) was conducted by the authors, to identify articles that satisfy the search criterion. The Eligibility Criterion for the review consisted of an inclusion criterion, where the chosen articles should include proper definitions, explanation and applications of the living building challenge, as well as clear information about the imperatives of the living building philosophy. Resources of literature were mainly peer-reviewed articles and official websites, where needed. All included resource were in English and published between 2010 and 2023. Additionally, the Eligibility Criterion also included an Exclusion Criterion, where sources like newspaper articles, tutorials, and blog posts were from the study. The Source Identification process consisted of targeted literature search in the previously-mentioned relevant databases that was conducted by the authors using the following keywords: the living building, regenerative design and construction. Title and abstract review were the main factors to judge the content of the article. The Study Selection and Data Extraction was performed upon the satisfaction of inclusion criterion, and after reviewing the title and abstract, articles were read in details, and relevant information were extracted and drafted for further review.

3. Results

A living building can be defined as a regenerative building that provides a connection between light, food, air, nature and the occupants, while maintaining its self-sufficiency and resource limitation, and interacting positively with the surrounding natural environment and occupants. The concept of the living building challenge (LBC) was first launched by the Cascadia Green Building Council launched in 2006, followed by the establishment of the Living Building Institute to manage this project and future similar program as a result of the growing interest, which led to the formation of a partnership between Cascadia and what is now known as the International Living Future Institute (ILFI) (Gardner Haley et al., 2020). Additionally, the living building challenge is based on the concept of an efficient flower that symbolizes the ideal built environment, and has seven main performance areas (Table 1) (Living Building Challenge, 2022) with 20 imperatives that are required to achieve the Living Building Certificate (Gardner Haley et al., 2020). Also, LBC the has two main attributes (Living Building Challenge Basics, 2022): reliance on the actual instead of the modelled or anticipated operational building performance, and the holistic approach of addressing all the seven petals and their core 20 imperatives (LIVING BUILDING CHALLENGE 4.0 A Visionary Path to a Regenerative Future, 2019). These imperatives could be useful in different projects types such as construction of new buildings, renovations of existing buildings, landscape, infrastructure and community development [2]. The table below summarizes the successful achievement of The Living Building Certification in different buildings across the world:

Table 1. The seven petals of the Living Building Challenge.

Petal	Description	Imperative
Place	A healthy interrelationship with nature.	Limits to growth place Urban agriculture Habitat exchange Human-powered living
Water	Operating within the water balance of a specific climate and place.	Net positive water
Energy	Dependence on current solar income only.	Net positive energy
Health & Happiness	Optimizing physical, physiological and well-being of occupants.	Civilized environment Healthy interior environment Biophilic environment

Materials	Endorsing safe products for all species.	Red list Embodied carbon footprint Responsible industry Living economy sourcing Net positive waste
Equity	Supporting an equitable and just world.	Human scale & humane places Universal access to nature and place Equitable investment Just organization
Beauty	Adopting designs that elevate human spirits.	Beauty and spirit Inspiration and education

A building must achieve seven performance criteria, commonly referred to as petals, in order to receive the LBC certification and be deemed a "Living Building." Place, Water, Energy, Health, Materials, Equity, and Beauty are the seven petals. A building must satisfy all of the performance standards in each of the seven petals for at least 12 continuous months of operation in order to get Living Building Challenge certification (Challenge et al., 2010; Whitaker et al.). Across the world, more than 35 Living Building Challenge projects have received certification. Of these projects, almost a dozen has received certification in all seven petals, proving that they have complied with all 20 Living Building Challenge requirements (imperatives). The remaining projects that have received certification have done so in one or more of the petals, but not in all seven. Becoming certified in all seven petals is a noteworthy achievement given that the Living Building Challenge is a very demanding and hard certification procedure. The projects that have attained the level of full certification are pushing the limits of environmentally friendly design and building, and they are motivating others to follow suit. These projects, which can be found all over the world, exhibit a variety of sustainable design and construction techniques, such as water conservation, the use of renewable energy sources, sustainable building materials, and community involvement. They demonstrate what is possible when sustainability is prioritized in building design and construction by serving as motivational models (Challenge et al., 2010; I. L. F. Institute; Whitaker et al.). The following table will examine some of the projects that got full living building challenge certification in all the seven petals:

Table 2. Five successful cases of implementing the Living Building Challenge

Petal	Sustainable Building Research Centre (SBRC) in Australia	Te Kura Whare in New Zealand	The Bullitt Center in USA	The Omega Center for Sustainable Living in USA	The Tyson Living Learning Center in USA
Place	Historical place, landscape design to restore indigenous vegetation on Dharawal lands, gardens include indigenous plant species used as food, fiber, tools, or medicine, offsetting ecologically valuable sites in Pullen Pullen Reserve, promotes car-free living	Natural environment with native flora and animals, utilizing local resources, having a green roof with native plants, structure created to blend in with its surroundings, bike storage and close to public transit.	Close proximity to public transit, walkability, and bike-ability, since it is located on a previously built site in an urban setting, with a pedestrian-oriented design.	Constructed on a previously developed site negates the need to destroy undeveloped land.	Blending with existing campus fabric, access to public transit, constructed on existing site, reducing requirement to develop undeveloped land and surrounded by a restored natural environment.
Water	Green roof with a harvesting system is implemented to gather roof rainwater and stores in subterranean tanks, it also has a bioswale to control stormwater. All non-potable demands, including irrigation, toilet flushing, and building cooling, are met	Rainwater harvesting, on-site wastewater treatment, reuse of all sewage, applied low-flow fixtures and appliances. The building's water usage is completely self-sufficient.	Controlled stormwater runoff, building wouldn't have an adverse effect on the area's wildlife, rainwater harvesting system and water-saving amenities including	Stormwater management techniques(rain gardens and bioswales), complex system for collecting and filtering rainwater, to be utilized for	Rainwater management system for use in the building's restrooms and irrigation systems. Also, the structure includes a green roof which lowers

	with this water collected and managed		low-flow toilets and sinks	all non-potable water requirements, structure uses a Living Machine, (on-site natural wastewater treatment system) to handle sewage.	stormwater runoff and enhances water quality.
Energy	The SBRC used a variety of sustainable energy solutions, including solar photovoltaic panels, a geothermal heat pump system, and a solar hot water system. The structure is a net-zero energy building since it produces more energy than it consumes.	Net-zero energy structure. The structure incorporates both active and passive design elements, including solar panels and a ground-source heat pump, as well as natural ventilation and building orientation and energy-saving equipment and lights.	Using solar energy to meet 100% of its energy demands. The building also has energy-efficient design features including daylighting and natural ventilation.	Utilizing a mix of solar panels, geothermal heating and cooling, and a micro-hydro turbine to generate all of the building's energy requirements.	Energy-efficient features (geothermal heating and cooling), a high-performance building envelope, energy-efficient lighting and appliances, structure features a rooftop solar array that supplies some electrical requirements.
Health & Happiness	Using natural light, interior plants, and a fresh air ventilation system. Access to nature is made possible through the building's rooftop garden, outdoor yard, and green wall.	Built with plenty of natural light and ventilation to enhance indoor air quality. The structure is made of non-toxic materials, and all of the furnishings and equipment were carefully chosen to adhere to high standards for health and safety.	Incorporating natural daylighting, fresh air ventilation, and non-toxic building materials	Using organic materials in structure (clay plaster and bamboo flooring), cutting-edge ventilation system with access to fresh air, a policy of exclusively employing non-toxic cleaning supplies.	Utilizing non-toxic building materials and finishes, as well as offering enough of natural light and fresh air ventilation, TLLC complies with the health requirement. Also, the structure features a range of indoor and outdoor spaces
Materials	Using FSC-certified timber, recyclable steel, and low-VOC paints and finishes. A recycled-materials green wall is another aspect of the structure.	Constructed using non-toxic, locally produced, and recycled materials. 4Te Kura Whare has a green roof composed of native plants that helps to enhance air quality and minimize stormwater runoff, as well as a living wall built of recycled materials.	Incorporating environmentally friendly, non-toxic materials including recycled steel and FSC-certified wood. A materials recovery program to recycle and reuse construction materials is also a part of the building.	Using range of ecological materials, including insulation with recycled content and wood from the neighborhood. The structure also has a policy requiring all waste produced on-site to be recycled or composted	Reclaimed wood, carpet with recycled content, low-VOC paints and finishes. Also, the building has a "red list" of materials that forbids the use of specific hazardous or poisonous substances.
Equity	Adopting universal design principles to guarantee the structure is friendly to those with disabilities. The structure also offers a place for community activities and	Accessible parking to all. A community meeting room is also available in the building and is open to use by neighborhood	The structure was created to be open and friendly to everyone, irrespective of their socioeconomic situation or	The OCSL was intended to be a community resource, with classes and meeting rooms available for use by	Public access to the structure's facilities and inclusion of educational and community outreach initiatives that advance sustainability and

	educational programs that supports social equity.	communities and groups.	physical capabilities. The building has community areas and educational facilities open to all.	nearby groups and schools, it also has a rule requiring that all staff get a decent wage.	environmental awareness.
Beauty	Adopting a variety of lovely and inspirational elements, such as a green wall, a rooftop garden, and a central atrium that lets in natural light and ventilation.	Designed and built to be a lovely and inspirational venue that represents the local culture and environment where it's made out of natural materials like wood and stone and combines artwork and design cues that honor the Maori culture.	Designed and built to be visually beautiful and to mix in with the community it is located in.	Constructed using principles of biophilic design in mind, which means that it includes natural features into its design, such as views of the surrounding countryside and natural daylighting. It also has a living wall which is basically a vertical garden that serves to filter the air and provide a soothing environment.	Green roof, rain gardens, and a natural material palette. A number of public areas throughout the structure also promote social interaction and community involvement.
References	(Architecture; I. L. F. Institute; McCarthy & Rasekth, 2013)	(I. L. F. Institute; Partington & Zari, 2020)	(I. F. L. Institute; Mirel, 2014)	(Fulton et al., 2011; I. L. F. Institute)	(I. L. F. Institute; Lee et al., 2013)

4. Discussion

The Sustainable Buildings Research Centre (SBRC) at the University of Wollongong achieved Living Building Challenge (LBC) certifications across all the 7 petals. The site petal requirements were met by restoring indigenous vegetation, creating urban agriculture areas, offsetting ecological damage, and providing alternative transportation options (car free). The water petal requirements were met by achieving the net zero water imperative through minimizing water use and using captured rainwater which is treated through filtration and ultraviolet sterilization and by achieving the ecological water flow imperative through treating all water discharged from building occupant activities and storm water through natural processes, where this water is treated in a three-stage process and used to irrigate the surrounding landscape via subsurface irrigation, the building also employs stormwater harvesting, bio-retention, and a constructed wetland. The energy petal certification was achieved through a strong focus on passive design, low energy heating and air conditioning, and sophisticated lighting control. Once energy targets were met, a rooftop solar array consisting of nearly 600 panels was installed with on-site battery storage. A shared energy system was also established with neighboring university buildings, with excess power exported to the grid. The SBRC also pioneered the use of a unique Photovoltaic Thermal (PVT) system and collaborated with the electrical utility to enable PV arrays of intermediate scale to be accommodated. The health and happiness petal requirements were met by maximizing the natural ventilation for fresh air exchange, with narrow floor plates and large, openable windows for excellent cross ventilation, meeting the Civilized Environment Imperative and by designing the building to be naturally ventilated for 95% of the habitable areas and having a ventilation rate designed in accordance with AS 1668.2, which has more stringent requirements than ASHRAE 62. Biophilic design is also incorporated, with each of the six established Biophilic Design Elements represented into the building in at least two ways, including natural shapes and forms, natural patterns and processes, light and space, and place-based relationships. The materials petal certification was achieved by using a dematerialization strategy and selected locally sourced and reused materials to mitigate embodied carbon. All timber used was either FSC certified or obtained from salvaged sources, and a Material Conservation Management Plan was implemented to eliminate waste during the building's life cycle. Also the performance criteria for materials had to be carefully balanced, leading to the use of a spray-applied paper pulp product

for insulation with lead, PVC, and formaldehyde exemptions. The equity petal certification was achieved by prioritizing sustainable solutions for retrofitting existing buildings, encouraging active and human-powered transportation, removing barriers between the university and wider community, providing publicly accessible spaces and complying with accessibility standards. Additionally, the SBRC did not block access to sunlight or natural waterways and did not emit harmful chemicals. The beauty certification was achieved through its design to connect with visitors, showcasing research through exhibition spaces and windows, and creating an outdoor space for relaxation and connection with the environment. It has also become an educational and inspirational facility, featuring interpretive signage, visible building services, and being used as a national test-case for LBC auditors. The SBRC hosts various groups and individuals, including politicians, influential people, and school groups, and has showcased its research through annual public open days.

Te Kura Whare in New Zealand achieved Living Building Challenge (LBC) certifications across all the 7 petals. The site petal requirements were met by transforming a rural farmland into a cultural civic zone, integrating a range of agriculture opportunities and selecting endangered and native plant species for planting, recognizing the role and responsibility to regenerate life within the building community and promoting walking and biking for local residents, purchasing hybrid vehicles for staff, and acknowledging the challenges of car-free travel for visitors. The water petal requirements were met by collecting rainwater and storing it in two 25,000-liter tanks, providing all the building's water needs. Potable water is filtered and UV-treated, with estimated monthly use of 40,000 liters. Black water is treated by a botanical wastewater treatment system and discharged on site, while stormwater is stored in a pond capable of retaining 3000 m^3 and disperses into the water table via built soak pits. The energy petal certification was achieved by implementing a variety of sustainable strategies. The building features passive solar design with north-facing glazing, shading, and thermally broken double glazing to minimize heat loss/gain. The facility also uses photovoltaic panels for energy production, a battery bank for storage, and energy-efficient split system heat pumps for heating. Additionally, the building employs solar hot water systems and energy-efficient equipment to minimize electricity consumption. Lighting is controlled by a fully automated system with energy-efficient fixtures, and the security system includes access control and CCTV cameras. The health and happiness petal requirements included using operable windows in all spaces, requiring reduced floor plates and internal access routes and by using natural materials that reflecting the connection to the land and environment, with natural logs used as posts, beams, and trusses to emulate the forest canopy. The building has different programs and uses, with various penetration points for natural lighting and warming, stimulating positive emotional senses for better user experiences. The materials petal certification was achieved by producing a practically Red List-free specification, using innovative solutions in structural engineering, and raising awareness amongst suppliers through advocacy letters. Also, the design of this building focused on managing the carbon footprint by sourcing materials locally, calculating the embodied carbon footprint, and investing in local sustainable projects. The equity petal certification was achieved by offering hospitality, serving modern classic cuisines with culture, providing facilities for small and conference-sized meetings and events. The absence of front boundary fencing and ample parking space allows for an inviting impression, and the open-plan approach continues within the building. The external community space provides a place for people to congregate, relax, and enjoy Maori traditions. Mature trees and boundary embankments provide shaded areas and shield the sound of traffic. The beauty certification was achieved by incorporating Tūhoe tikanga in the building process, creating a legacy for Tūhoe, and pushing boundaries to create hope and inspiration. Overall, the building provides learning opportunities for community members to implement home-scale projects and leaves a legacy of contribution.

The Bullitt Center in USA achieved Living Building Challenge (LBC) certifications across all the 7 petals. The site petal requirements were met by a site that had a one-story building and a parking lot, but instead of demolishing them, the team secured approval for deconstruction and material reuse. They also equipped the building with a bike garage and showers to promote human-powered transportation. The water petal requirements were met by using rainwater collected from the roof, which was diverted into a cistern, and harvested greywater. These sustainable systems met the demands of a growing population with innovation. The energy petal certification was achieved by using solar energy to meet 100% of the energy demands, the building also has energy-efficient design features including daylighting and natural ventilation. The health and happiness petal requirements were met by prioritizing occupant health through design elements such as the 'irresistible' stair that encourages exercise and offers stunning views. Natural daylight and views are available to every workstation, and low and zero VOC finishes contribute to healthy air quality. The Bullitt Center achieved LBC certification in the Materials petal by implementing a successful collaboration between the developer, contractor, and sub-contractors for the materials vetting process. Red List substitutions were made and the embodied carbon footprint was reduced by 3,000 metric tons. Wood sources were FSC certified and salvaged, and living economy sourcing was prioritized with notable regional products. The equity

petal certification was achieved by prioritizing ongoing community outreach, education, and public tours to advance the green building industry. It has also worked with all levels of government to identify and lower barriers to entry for future high-performance structures. The beauty certification was achieved by the building being designed and built to be visually beautiful and to mix in with the community it is located in.

The Omega Center for Sustainable Living (OCSL) in USA achieved Living Building Challenge (LBC) certifications across all the 7 petals. The site petal requirements were met by selecting a previously developed site that negates the need to destroy undeveloped land. The water petal requirements were met by adopting stormwater management techniques like rain gardens and bioswales. OCSL has a complex system for collecting and filtering rainwater, to be utilized for all non-potable water requirements. The structure also uses a living machine, a type of on-site natural wastewater treatment system, to handle all of its own sewage. The energy petal certification was achieved by utilizing a mix of solar panels, geothermal heating and cooling, and a micro-hydro turbine to generate all of the building's energy requirements. The health and happiness petal requirements were met by using organic materials all around the structure such as clay plaster and bamboo flooring and by adopting a cutting-edge ventilation system that gives all residents access to fresh air. Also, the facility has a policy of exclusively employing non-toxic cleaning supplies. The materials petal certification was achieved by using a range of ecological materials, including insulation with recycled content and wood from the neighborhood. The structure also has a policy requiring all waste produced on-site to be recycled or composted. The equity petal certification was achieved as The OCSL was intended to be a community resource, with classes and meeting rooms available for use by nearby groups and schools, it also has a rule requiring that all staff get a decent wage. The beauty certification was achieved by using principles of biophilic design which means that it includes natural features into its design, such as views of the surrounding countryside and natural daylighting. It also has a living wall which is basically a vertical garden that serves to filter the air and provide a soothing environment.

The Tyson Living Learning Center in USA achieved Living Building Challenge (LBC) certifications across all the 7 petals. The site petal requirements were met by selecting a previously developed parking lot and transforming it into a sustainable building designed with wildlife in mind. The site's habitat was improved significantly by introducing a rain garden and landscaped area that replaced impervious surfaces and runoff into an ephemeral stream. The water petal requirements were met by meeting the net positive water imperative. The building uses harvested rainfall from a 3,000-gallon cistern and a sloped standing seam metal roof. The domestic water distribution is fed from the rainwater system, and grey water from sinks and irrigation is also fed into the system. The requirements of the energy petal certification were met by achieving net zero energy through a whole building approach, maximizing efficiency and on-site energy production. Traditional and non-traditional methods were used, including high-efficiency glass, shading, natural ventilation, lighting controls, and energy appliances. The health and happiness petal requirements were met by considering indoor/outdoor connection with natural daylighting and views to the outdoors. Zero VOC paints and low/zero VOC wood finishes were used to minimize toxins, while permanent walk-off mats captured particulates at entry points. The janitor's closet was separately ventilated, and a green cleaning program was established. The building sourced non-chemically treated rainwater for drinking, and the restrooms had views, operable windows, and a solar tubular skylight for natural lighting. The materials petal certification was achieved by using sustainable materials available at the Tyson Living Learning Center, where it is located. The wood harvested from the property was chosen from storm-downed or dead trees near roads to minimize disturbance to the ecosystem, and invasive species were used for exterior siding, trim, flooring, and casework. The building also had to meet the LBC red list imperative, which required finding products free of hazardous materials such as lead and formaldehyde. The embodied carbon footprint imperative was achieved through the Tanaka Wind Farm project, while responsible industry imperative was met through sourcing FSC-certified wood and products. The beauty certification was achieved by having green roof, rain gardens, and a natural material palette. A number of public areas throughout the structure also promote social interaction and community involvement.

The new way of rethinking design in light of the emergence of the living building concept has given rise to certain topologies to be considered when choosing to apply the concept to any project, which include: Renovation (work that does not entail complete reconstruction of an existing building) Landscape or infrastructure (non-physical structures such as open park-like areas, bridges, roads, plazas or amphitheaters) and buildings (construction of a new or existing roofed and walled structure for permanent usage) (LIVING BUILDING CHALLENGE 4.0 A Visionary Path to a Regenerative Future, 2019). As such, projects that fall into one of the previous categories and successfully implement the relative imperatives of the Living Building Challenge can be considered the “greenest” projects. However, there is another aspect that needs to be addressed, which is the possible impediments for investing or implementing the

living building concept, and that includes the high cost of making a living building or achieving net zero energy, as well as the challenge in finding the suitable sustainable materials to achieve the intended imperatives (Hegazy et al., 2017). Therefore, there is still a gap in both literature and the industry on the comprehensive understanding of the implementation of the Living Building Challenge, especially in the MENA region and the Arabian Gulf countries, like the United Arab Emirates. This is mainly due to the hot arid climate of this geographical area and the harsh environmental conditions, not to mention the unique geographical elements like the desserts, natural mountains, rocky shores and long summer seasons, in addition to the demanding urban lifestyle in the major cities like the high consumption of water and electricity and the high carbon emissions due to using fuel-operated vehicles. Accordingly, the topic of the Living Building Challenge requires much-needed research in the MENA region, by exploring how the concept of biomimicry (imitating nature) can be integrated into the design and build process of new buildings that can achieve the LBC certification.

5. Conclusions

The Living Building Challenge (LBC) is a demanding certification scheme that sets the bar high for environmentally friendly construction methods. The LBC establishes high performance standards for buildings to fulfil or surpass in terms of energy, water, health, and other sustainability indicators. The Living Building Challenge is significant because it pushes buildings to actively contribute to a world that is healthier and more resilient, while simultaneously reducing the environmental footprint. Additionally, the LBC encourages sustainable and regenerative design; The LBC strives to design and build buildings that have a net-positive impact on the environment by generating more energy than they consume, collecting and reusing water, and using non-toxic and sustainable materials. This approach to building design can assist to lessen the environmental effect of the built environment, and progress towards a more regenerative and sustainable future. The LBC focuses on elements including interior air quality, access to daylight and fresh air, and the use of non-toxic materials in order to take into account the health and wellness of building occupants. Those who live or work in living buildings may benefit in terms of productivity, comfort, and general wellness as a result. It promotes justice and community. This involves making inclusive, inviting venues that are accessible for individuals of all ages, abilities, and backgrounds. LBC-certified buildings are further urged to support the neighborhood by offering public areas and services, therefore establishing a high bar for architectural design; The LBC also raises the bar for building design, pressing designers to go above and beyond the requirements of conventional building standards and regulations. Designers and builders may push the envelope of sustainable building techniques and produce structures that are really new and ground-breaking by aiming to achieve the LBC's performance standards. The Living Building Challenge is significant because it upholds a high standard for building design, prioritizes health and wellbeing, creates community, and promotes fairness. The LBC may contribute to the development of a brighter future for everyone by supporting the creation of structures that are both ecologically responsible and socially useful. Nevertheless, further research regarding the applicability of LBC certification in the MENA region is highly encouraged to enrich the body of knowledge and further the understanding of such a philosophy among the relevant stakeholders in Architecture, Engineering and Construction (AEC) fields and the building occupants, wither being residential or commercial buildings.

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