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THE IMPACT OF USING" WELL STANDARD" INDICATORS ON INTERNAL WORKPLACES CARBON EMISSIONS

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ABSTRACT

The escalation of emissions has emerged as a prominent issue in contemporary society, garnering global attention from many countries. The need to use sustainable buildings to mitigate greenhouse gas emissions has been underscored by several sustainability standards, such as LEED and BREAM, in order to promote environmental protection. The WELL standard is a notable standard that places emphasis on the attainment of human health and well-being through the design and construction of the built environment. This followed the emergence of sustainability principles that sought to include social and human considerations in the building's efficiency. The research dilemma emerged due to a limited comprehension of the correlation between WELL standards and their efficacy in mitigating the carbon footprint of both buildings and people. The present study posits that the use of WELL indicators has the potential to reduce greenhouse gas emissions inside the workplace. The study employed a descriptive analytical methodology to ascertain the findings and deductions that certain attributes within the WELL v2 standard have the potential to mitigate carbon emissions. Notably, the Well innovation feature emerged as a significant contributor, as it promotes the inclusion of greenhouse gas management within a comprehensive framework centered on health and well-being.

KEYWORDS: CARBON Emissions, Carbon Footprint, WELL Building Standard, Global Warming.

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1. INTRODUCTION

Much of the literature has tended to develop definitions of sustainable architecture in response to global trends towards sustainability in various fields, as many researchers link sustainable architecture with energy conservation and the exploitation of renewable energy sources. Sustainable architecture is one that conserves energy, uses materials from renewable sources or recyclables, reduces dependence on fossil energy, and is more compatible with the environment and society. Sustainable architecture, by other definitions, is one that minimizes negative impacts on the environment and conserves natural resources. The researcher (Bell Moleson) believes that sustainable architecture aims to promote systems with ecological and economic dimensions that meet the needs of humans and do not cause pollution or destruction of the environment (Salman, 2017).

As buildings contribute to increased carbon emissions and greenhouse gases, they also contribute to indoor environmental pollution, causing diseases, epidemics, and climate change. Human activities within the built environment also impact the environment, as individual behavior and lifestyle choices serve as additional sources of greenhouse gas emissions. It is possible to have a significant impact on climate change if we can mitigate greenhouse gas emissions from buildings. Given the longer lifespan of buildings, an efficiently designed building can save tons of carbon dioxide emissions over a fifty-year period (Poudyal, 2014).

Global efforts to reduce carbon dioxide emissions have led to the widespread use of the term carbon footprint,' which represents the total greenhouse gases emitted by an individual, building, organization, or company. In recent years, there have been numerous studies and research discussions about the amount of carbon footprint left by humans or buildings on the environment. Several countries have focused on developing policies and measures to promote carbon-free buildings, with an emphasis on designing and constructing low-carbon buildings, neutral buildings, and zero-emission buildings (Hui, 2013).

Parallel to the growing international interest in green and sustainable buildings, which aim to conserve energy, preserve resources, reduce environmental impact, and improve the quality of life for people, certain standards have emerged that focus on human health. This was articulated at the 2013 Green Buildings and Human Health Summit by the U.S. Green Building Council. The summit highlighted that health is a fundamental human right and that green buildings can contribute to promoting it. The conference emphasized that there is no inherent contradiction between green buildings and healthy construction. Although there may sometimes be a gap between the health of occupants and energy consumption, generally, the two aspects align in

the same direction (Hu, 2021). Researchers (Lin et al., 2022) have clarified that the green building assessment standard focuses on energy efficiency, while the healthy building standard primarily emphasizes the health of occupants. The concept of healthy buildings is an extension of green buildings, but the difference lies in the fact that green buildings emphasize resource utilization and harmonious coexistence between humans and nature, whereas healthy buildings focus on the physical and mental well-being of occupants (Lin, et al.,2022).

The WELL standard is one of the most recent standards that has evolved to serve users and promote health and well-being within the built environment. The International WELL Building Institute (IWBI) created it in 2014 to prioritize user health and comfort throughout the design, construction, operation, and use stages of a building. The standard's goal is to allow users to live in healthy and productive settings (Yamak and Doğan, 2022). And the main difference between the WELL standard and traditional standards such as LEED and BREEAM is that WELL focuses on the ability of the built environment to support the health and personal needs of users. It delves deeper into social sustainability, with the central theme of the indoor environment being the key point of this standard (Landmark, 2019).

Within this context, the research aims to clarify the role of the WELL standard in reducing the carbon footprint of buildings by identifying its key indicators that contribute to carbon emission reduction. Additionally, it emphasizes the primary role of the WELL standard in achieving healthy indoor work environments that help reduce pressures and stressors and enhance productivity. This research is particularly important due to the limited focus on specialized studies regarding the key standards and design criteria that minimize emissions for office buildings, according to the indicators of the WELL standard in its second edition.

2. THE THEORETICAL FRAMEWORK

The theoretical framework will shed light on the WELL standard and carbon footprint based on previous literature to identify the relationship between them, as follows:

2.1. The carbon footprint of buildings

The ecological footprint that William Rees and Mathis Wackernagel developed includes the carbon footprint. The British Petroleum Company popularized the idea of a carbon footprint in 1976. It is more targeted than other environmental footprints because it focuses on the study of gases that cause climate change. (Raheem, 2020). Researcher (Muthu, 2015) believes that the carbon footprint is a measure of the total amount of carbon dioxide emissions that are released directly and indirectly by an activity or during the product's life cycle. According to the

Environmental Protection Agency (2010), the footprint is the total amount of greenhouse gases emitted in a year by an individual, family, building, organization, or company (Muthu, 2015).

The construction sector contributes greatly to carbon and greenhouse gas emissions. The carbon footprint of a building encompasses all emissions from its life cycle, including manufacturing materials, construction, transportation, operation, renovation, and disposal. The majority of emissions come from electricity generation. Thus, reducing energy consumption and transitioning to cleaner fuels are key to reducing the carbon footprint (Hui, 2013).

The main sources of direct and indirect emissions that occur at different stages of the life cycle of construction projects can be classified as shown in Fig. 1.

In general, the carbon footprint of buildings includes three types of emissions:

Operational carbon: This includes the electricity, gas, and other fuels used in the building for heating, cooling, ventilation, lighting, hot water, computers, servers, and other equipment.

Embodied carbon: This includes the energy consumed in the manufacturing, delivery, and installation of the materials used to build, renovate, and equip a building, as well as their disposal at the end of their life cycle.

Transportation carbon: This includes the energy used to transport people to and from the building.

By reducing these three types of emissions, we can make buildings more sustainable and reduce their impact on climate change (clark, 2013).

"Operational carbon" is a term used to describe carbon dioxide emissions during the operational phase of a building. The main sources of operational carbon are heating and cooling buildings, lighting, ventilation, water consumption, pump operation, and the use of devices such as computers (Poudyal, 2014). Embodied carbon is the sum of all greenhouse gas emissions attributable to a material over its life cycle (extraction, processing, manufacturing, construction, use/maintenance, end-of-life/disposal) (Souza, 2019).

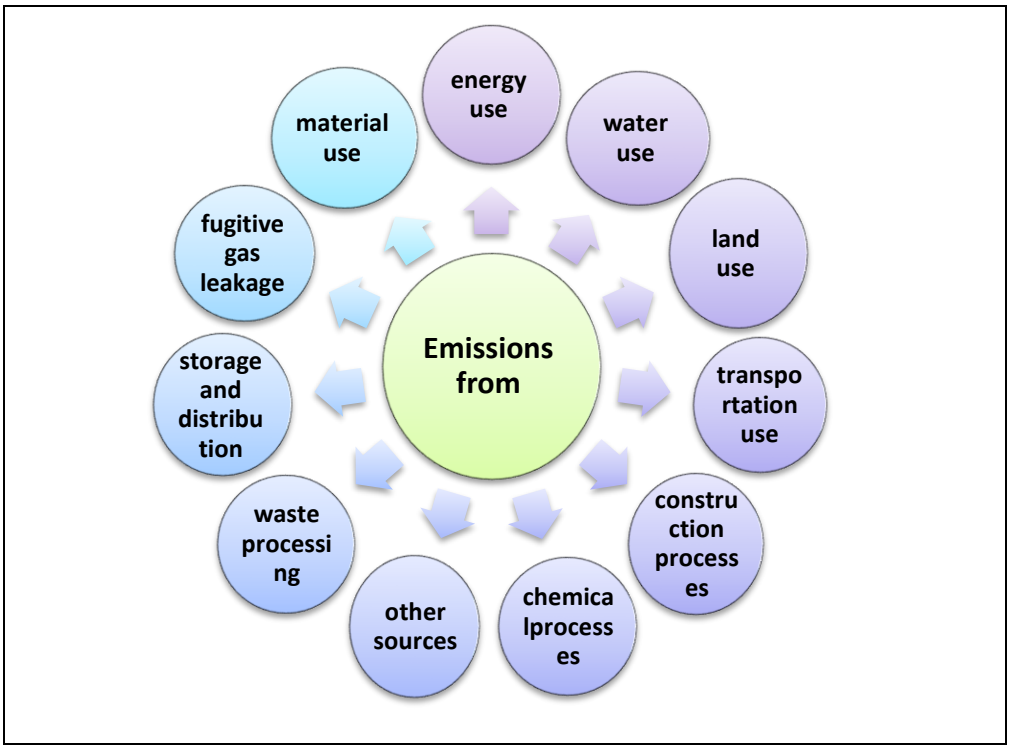

Fig. 1. Sources of greenhouse gas emissions during the life cycle of buildings Source: the researchers based on (Srinivasan and Lakshmanan, 2019).

2.1.1. Indicators of reducing the carbon footprint of buildings

There is no internationally accepted method for measuring greenhouse gas emissions from new and existing buildings. As a result, carbon footprint studies often produce widely varying results. This directly affects the development of carbon density targets, as there is no consensus on the carbon emissions of a typical building. The carbon footprint of buildings can be reduced by taking a closer look at the architectural design process and reassembling the design principles by considering the basics of location, solar orientation, and proximity to public transport. Researchers believe that it is important to develop an internationally accepted method for measuring greenhouse gas emissions from buildings. This will allow for more reliable comparisons between buildings and the development of more effective emission reduction targets. Researchers also believe that it is important to reconsider the architectural design process. Architectural design can have a significant impact on the carbon footprint of a building (Fenner et al., 2018) and (Clark, 2019)**.** Material and equipment choices can contribute to reducing a building's carbon footprint by:

Using low-embodied carbon materials such as heavy timber, cork flooring, and wool insulation in place of steel and concrete.

Choosing recyclable building materials with a lower negative environmental impact.

Selecting materials that are locally sourced and contain a high recycled content.

Using energy-efficient heating, ventilation, and air conditioning (HVAC) systems and lighting that use renewable energy sources.

These options have become more cost-effective and play a significant role in creating sustainable, low-carbon buildings (Poudyal, 2014). The demand for heating in buildings can be reduced by improving insulation and reducing air leakage through all structural elements. Continuous insulation saves energy, reduces carbon footprint, provides layers of heat, air, water, and vapor control in a single system, and simplifies the construction process (Airaksinen and Matilainen, 2011).

The location of a building has a significant impact on its carbon footprint. The energy consumption of a building depends on its location, as buildings in urban areas require more energy for transportation and heating and cooling systems. Placing a building near public transportation can reduce carbon emissions by reducing the need for cars. Additionally, buildings that allow natural sunlight to enter reduce the need for artificial lighting and require less energy (Clark, 2019). Lighting accounts for 40% of the energy used in buildings. Curtain wall systems with solar shades and integrated light interior shelves can reduce the need for artificial lighting, which in turn reduces the carbon footprint.

The amount of energy used to supply, treat, and use water is a major factor contributing to a building's carbon footprint. The use of rainwater harvesting can save up to 50% of a building's water consumption. The building's carbon footprint can also be reduced by generating renewable energy on-site. The use of solar energy to heat air, photovoltaic (PV) systems, or solar water heating can permanently displace a portion of the demand for traditional energy. A photovoltaic system can generate electricity that can be used to offset the building's traditional electricity source.

In their research paper titled "Green Living: Reducing the Individual's Carbon Footprint", Clinton and Robert argue that individuals can contribute to reducing greenhouse gas emissions by their behavior within built environments. The components of an individual's carbon footprint include their diet, energy consumption, and transportation. The researchers note that:

rising temperatures in the summer lead to excessive use of air conditioners, while heating systems in the winter increase the demand for electricity and, consequently, greenhouse gas emissions. They argue that the use of devices that regulate indoor temperatures and energy-efficient appliances can help to reduce individuals' carbon footprints.

Additionally, consuming local food instead of imported food that must be transported long distances by trucks that consume a lot of fossil fuels can help to reduce individuals' environmental impact.

Finally, using public transportation or cycling instead of driving to and from buildings can help to reduce carbon footprints.

From the above, we can conclude that the most important indicators that contribute to reducing carbon emissions in a building and thus reducing the carbon footprint are shown in the Table 1.

Table 1. Indicators that contribute to reducing carbon emissions for buildings and individuals.

	factors	Implications
Indicators of the carbon footprint of buildings	the site	The location and site of a building can affect its carbon footprint. Placing a building near public transportation can reduce carbon emissions.
	HVAC	The use of energy-efficient heating, ventilation, and air conditioning (HVAC) systems, along with their effective use and routine maintenance, can reduce carbon emissions.
	continuous isolation	Continuous insulation allows for the control of heat and moisture, which can reduce the need for air conditioning and heating. This can contribute to the reduction of a building's carbon footprint and save a lot of energy bills over the lifetime of the building.
	lighting	Lighting accounts for about 40% of the energy used in buildings. The use of natural lighting in buildings can reduce the demand for energy-consuming artificial lighting.
	Recycled materials	Choosing recyclable building materials in construction and furniture can have a less negative impact on the environment, as the extraction, production, and transportation of building materials consume huge amounts of energy and carbon.
	water use	Water reuse and recycling (including rainwater harvesting and wastewater recycling) are among the largest and most cost-effective energy and carbon reduction strategies available.
	Renewable energy	The carbon footprint of a building can be reduced by obtaining energy from clean sources (such as solar or wind power).
Indicators of the carbon footprint of an individual	Transport	The transportation sector is the largest source of greenhouse gas emissions. Walking, biking, and using public transportation can reduce the number of cars on the road and help to mitigate climate change.
	Diet	Food sector emissions can be attributed to land use change, agriculture, processing, transportation, and more. More than 50% of food-related emissions come from animal products
	Energy consumption	Improving energy efficiency in buildings is one of the easiest ways to reduce greenhouse gas emissions from electricity. This can be done by switching to energy-efficient appliances, which produce fewer pollutants than traditional gas appliances. Replacing incandescent light bulbs with LED bulbs, which use 70-90% less energy, is another effective way to reduce energy consumption.

After studying the concept of carbon footprint and extracting the most important indicators that contribute to reducing carbon dioxide emissions in the building's internal spaces, we will discuss in the following paragraphs the concept of the WELL standard and get to know all its

contents and details, and study its contribution to reducing greenhouse gas emissions for buildings

2.2. WELL Standard: The Future of Sustainable Building

A standard is a set of guidelines used to assess the quality of a product. Buildings rely heavily on the standards available to ensure that a healthy and safe indoor environment is available. For example, a number of standards indicate the amount of fresh air that must be available in administrative buildings and the amount of light that workers need to perform their work. They also provide indicators to protect workers from noise and important provisions about construction guidelines to prevent cracks in walls and leaks from ceilings (Salih, 2014). WELL Building Standard is an environmental assessment program to measure, certify, and monitor the attributes of the built environment that impact human wellness and health (Darwish et al., 2022). WELL Building Standard was developed in 2014 by Delos Living LLC, a research organization that studies human wellness in indoor environments. WELL focuses on human sustainability, which is how the built environment can help people live healthier, happier, and more productive lives (Assetta, 2019).

The WELL Building Standard is managed by the International WELL Building Institute (IWBI). WELL focuses on the human potential in the built environment. Based on a series of public health studies that examine the relationship between buildings and their impact on the health and well-being of building occupants, WELL aims to achieve an indoor environment that improves nutrition, wellness, mood, and sleep for its occupants. Therefore, WELL is considered a comprehensive approach that reinvents the built environment and transforms the places where people live, work, and learn into systems that promote human health and well-being for “healthier” buildings (Mak, 2017). By combining best practices in design and construction with evidence-based health and wellness interventions, WELL-certified spaces and developments can lead to a built environment that helps to improve nutrition, fitness, mood, sleep, comfort, and performance for its occupants. This is achieved in part through the implementation of strategies, programs, and technologies designed to encourage more active lifestyles and reduce occupants' exposure to harmful chemicals and pollutants (IWBI, 2019).

2.2.1. WELL 2.0: A roadmap for creating healthy and sustainable buildings

WELL Building Standard is an integrated, third-party-verified, and expert-reviewed standard for sustainable buildings. It is based on scientific research, medical literature, and literature related to environmental health and behavioral factors. The certification process is managed by

IWBI in collaboration with GBCI, an organization that also offers LEED certification. WELL undergoes a peer review process that rigorously analyzes all aspects of the project registered for certification (Nordstrand, 2017).

WELL Building Standard v1 is composed of seven core concepts, including: air, water, nourishment, light, fitness, comfort, and mind. The concepts are divided into 100 features that address specific aspects of each of the seven concepts. Additionally, an eighth concept of innovation is encouraged that promotes alternative solutions that contribute to health and well-being. Each feature is divided into either a prerequisite or an optimization (Landmark, 2019). Prerequisites are essential for all levels of certification and it is important to achieve all prerequisites to earn WELL certification. Optimizations, on the other hand, include optional technologies, strategies, protocols, and designs that are not required for Silver level certification, but to create a flexible path towards Gold and Platinum level certification. IWBI recommends that all projects strive to achieve as many optimizations as possible (IWBI.2019).

WELL v2 is the latest version of the WELL Building Standard, which is a framework for creating healthy, sustainable, and environmentally friendly buildings. It is a more comprehensive and rigorous standard than the first edition, and it includes new concepts such as "mind" and "community." WELL v2-certified buildings can earn one of three levels of certification: Silver, Gold, or Platinum. (Parsian, 2018). WELL v2 is founded on the following principles:

Equitable: It aims to benefit a variety of people, including marginalized or vulnerable populations.

Global: It proposes interventions that are feasible, achievable, and relevant across many applications around the world.

Evidence-based: It is based on a variety of rigorous research across different disciplines, which is endorsed by a cooperative body of experts, including IWBI advisors.

Technically robust: It identifies best industry practices and validates strategies through performance verification and a rigorous third-party verification process.

Customer-focused: It cares for the success of WELL users through customized training services, dynamic resources, and an easy-to-use platform to navigate the journey.

Resilient: It keeps up with the progress in research, science, technology, and society, and it constantly improves by incorporating new findings (IWBI, 2020).

2.2.2. WELL 2.0: Ten concepts for creating healthy and sustainable buildings

The WELL v2 standard encompasses ten concepts that aim to create buildings that are healthy, sustainable, and productive.as shown in Table 2.

Table 2. Indicators of the second edition of the (WELL) standard (source: the researcher based on (Flores, 2017)

concepts	number of indicators	contained content
Fresh Air	4 basic indicators/ 10 supporting indicators	The WELL Air concept ensures that buildings have high-quality indoor air. This includes reducing exposure to pollutants, improving ventilation, and providing access to fresh air.
Healthy Water	3basic indicators / 6 supporting indicators	The WELL Water concept ensures that buildings have high-quality drinking water and water for other uses. This includes reducing exposure to contaminants, improving filtration, and conserving water.
Healthy Eating	2basic indicators / 12 supporting indicators	The WELL Nutrition concept provides healthy food choices in buildings. This includes making fruits, vegetables, and whole grains available, and providing clear nutrition information.
Light	2basic indicators / 7 supporting indicators	The WELL Light concept ensures that buildings have adequate natural and artificial light. This includes providing access to daylight, using high-quality lighting fixtures, and avoiding glare.
Physical Activity	2basic indicators / 9 supporting indicators	The WELL Movement concept encourages physical activity in buildings. This includes providing opportunities for exercise, making it easy to get around, and creating a supportive environment for physical activity
Temperature Control	2basic indicators / 9 supporting indicators	The WELL Thermal Comfort concept ensures that buildings have a comfortable temperature and humidity. This includes providing individual control over temperature and humidity, and using natural ventilation whenever possible
Noise Reduction	1basic indicators / 8 supporting indicators	The WELL Sound concept reduces noise pollution in buildings. This includes using sound-absorbing materials, controlling noise from HVAC systems, and creating quiet spaces for work and relaxation.
Healthy Materials	3basic indicators / 9supporting indicators	The WELL Materials concept uses healthy materials in buildings. This includes using materials that are low in volatile organic compounds (VOCs), are non-toxic, and are made from recycled content.
Mental Health	2basic indicators / 9supporting indicators	The WELL Mind concept promotes mental health in buildings. This includes providing access to nature, creating a calming environment, and offering opportunities for stress relief.
Social Interaction	3basic indicators / 13supporting indicators	The WELL Community concept creates a sense of community in buildings. This includes providing opportunities for social interaction, promoting diversity, and creating a welcoming environment for all.

After extracting the carbon footprint indicators that reduce greenhouse gas emissions for buildings and individuals, in addition to getting to know the WELL standard and its ten core concepts, we will take a practical approach to study these concepts in more detail and get to know their components to extract the most important WELL indicators that contribute to reducing the carbon footprint of buildings through a review of the most important studies and

research, and a review of some buildings that have obtained WELL certification to achieve the goal of the research

3. THE PRACTICAL SIDE: THE RELATIONSHIP BETWEEN CARBON FOOTPRINT INDICATORS AND THE (WELLV2) STANDARD

A number of studies have pointed to the role of the WELL Building Standard (WELL) in achieving social sustainability by focusing on putting people at the heart of design decisions. For example, a study published in the Journal of Building and Environment (2022) found the influence of WELL certification on occupant satisfaction with the workplace as well as occupant perceived health, well-being, and productivity. Results revealed that the transition from non-WELL certified offices to WELL certified offices had a beneficial effect on both occupant satisfactions with the workplace and their perceived health, well-being, and productivity levels. According to the survey results, the WELL certification showed a statistically significant series of benefits for users, including:

An almost 30% improvement in overall workplace satisfaction, which jumped from 42% to 70%.

A total increase of 26% in self-reported well-being scores.

A 10% increase in mental health and a 2% increase in physical health.

A 10-point jump in the average productivity score.

The research team analyzed the impact of the WELL certification using more than 1,300 pre- and post-occupancy survey responses from six companies in North America, with analyses conducted at the company and aggregate levels (Ildiri et al., 2022). The study Dusan et al., (2021) also compares occupant satisfaction with indoor environmental quality, sick building syndrome symptoms, and self-reported productivity before and after relocation into WELL-certified office buildings. The study found a statistically significant increase in building and workspace satisfaction for two out of three building pairs after relocation to WELL buildings, but the satisfaction scores did not alter during the first year of working in WELL buildings. This study explores the connection between wellness programs and the built environment based on the WELL Building Standard, aiming to identify affordable building strategies that can support wellness program implementation. The paper suggests incorporating the WELL Building Standard into wellness programs by changing the paradigm of the built environment from an environmental context to an active contributor to a wellness program. The study (Jinoh, et al, 2018) explores the connection between wellness programs and the built environment

based on the WELL Building Standard, aiming to identify affordable building strategies that can support wellness program implementation. The paper suggests incorporating the WELL Building Standard into wellness programs by changing the paradigm of the built environment from an environmental context to an active contributor to a wellness program.

On the other hand, WELL standard plays a role in reducing carbon emissions by promoting sustainable construction practices and encouraging organizations to take direct climate action. The impact of the WELL Building Standard v2 on the energy performance of office buildings in varying climates was analyzed by (Luo et al. 2021) utilizing both qualitative and quantitative methodologies. The study concludes that although the majority of the features of the standard have minimal effect on energy consumption, specific aspects associated with air, water, light, and thermal comfort possess the capability to significantly influence a building's energy utilization (Luo, et al., 2021).

WELL-certified buildings can help reduce carbon emissions and contribute to a more sustainable future. The WELL building standard includes specific features and requirements that encourage organizations to address greenhouse gas emissions and reduce carbon footprint. These features include:

Carbon Feature (I06): The International WELL Building Institute (IWBI) added a new innovation feature to the WELL Building Standard that rewards climate leadership with the goal of accelerating emissions reductions in the face of the ongoing growing impacts of climate change on public health. The WELL Innovation Feature encourages organizations to address greenhouse gas emissions as part of the broader focus on health and well-being. The benefits of the Carbon Feature include:

Improved indoor air quality by reducing carbon dioxide levels.

Reduced energy consumption, leading to lower costs.

Reduced environmental impact.

Enhanced health and well-being of users. (IWBI, 2021)

Energy Efficiency: The standard requires buildings to meet certain energy efficiency requirements. This can be done by using more efficient appliances and lighting, as in the (L02 Visual Lighting Design) feature. Additionally, the building's insulation can be improved in all the structural elements of the building's interior spaces to reduce the transmission of dust particles and dirt that pollute indoor air from nearby construction sites, as in the (A04

Construction Pollution Management) feature. This can help reduce the amount of energy that the building consumes, which in turn reduces the amount of greenhouse gases emitted (IWBI, 2020).

The standard encourages the use of renewable energy: This can include solar panels, wind turbines, or geothermal heating and cooling systems. Renewable energy sources do not produce greenhouse gases, so they can help reduce a building's carbon footprint. King 25, an office building in Australia and the first project in Queensland to achieve WELL Platinum certification, achieved a 46% reduction in energy and a 29% reduction in drinking water consumption Fig. 2.

Fig.2 Explains the solar cells used in the building

The standard addresses the use of sustainable materials: This can include the use of recycled materials, low-embodied carbon materials, and materials that are sourced from local suppliers. The (X06 VOC Restrictions) feature focuses on reducing the impact of volatile organic compounds (VOCs) emitted from products on indoor air quality and helps to reduce the environmental impact of the building, including its carbon footprint. As in Fig. 3, which shows the covering of the walls with local oak wood in the Minarco office Tower in the Philippines, which is one of the buildings that obtained the WLL certificate.

Fig. 3 Wall covering with local oak at Minarco Tower in the Philippines.

The standard requires buildings to have a waste management plan. This can help to reduce the amount of waste that a building produces, which in turn reduces the amount of greenhouse gases emitted from the disposal of that waste.

Overall, the WELL Building Standard can help to reduce a building's carbon footprint by incorporating a number of measures that can help to reduce energy consumption, increase the use of renewable energy, and reduce the environmental impact of the building.

3. RESULTS

After reviewing the most important previous studies and in-depth study of the indicators of the WELL V2 standard, the Table 3. shows the most important main indicators of the standard related to the carbon footprint and extracting its most important secondary indicators and their possible values that represent the most important requirements that help architectural designers in designing healthy and low-carbon indoor workplaces.

Table 3. WELL standard indicators that contribute to reducing your carbon footprint (source: the researchers based on the above studies).

Main indicators WELLV2	Carbon footprint indicators	secondary indicators And its content	Type	possible values
air	HAVC	Smoke free environment : Avoid smoking and reduce the exposure of users to polluted smoke.	p	Provide special smoking areas away from employee workplaces
		Ventilation design :Reduce indoor air quality problems by providing adequate ventilation.	p	Provide natural ventilation to the building through operable openings Provide adequate and tested artificial ventilation
		Building pollutant management :Reduce the introduction of building-related pollutants into the indoor air	p	Provide continuous insulation in all structural elements of the building's internal spaces

Main indicators WELLV2	Carbon footprint indicators	secondary indicators And its content	Type	possible values
		and treat indoor air pollution related to construction.		
Comfort heat		Air quality monitoring :Monitor indoor air problems, in addition to informing individuals and educating them about the quality of the indoor environment.	O	Install sensors that measure carbon dioxide and monitor indoor air quality.
		Reduce combustion :Reduce human exposure to air pollution associated with combustion from heating and transportation sources.	O	Use energy-efficient internal mechanical systems.
		Air purification :Reduce airborne pollutants inside and outside through air purification.	O	Use and install air filters in heating and cooling devices to reduce exposure to air pollutants.
		Radiant thermal comfort :Reduce the transmission of dust and improve ventilation control and increase thermal comfort by integrating radiant heating and cooling systems into building design.	O	Integrate radiant heating and cooling systems into building design.
Materials	Recycled materials	Material limitations: Reduce or eliminate human exposure to hazardous construction materials.	p	Exclude hazardous building materials such as asbestos, mercury, and lead used in floors and ceilings
		Limitations of Enhanced Materials : Reduce exposure to some chemicals by reducing their presence in interior furniture.	O	Choose products that are free of or contain low levels of chemicals related to health
		Waste management :Mitigate environmental pollution and exposure associated with risks in waste.	O	Increase the awareness of workers to separate waste and choose products that are easy to recycle and have less impact on human health.
		VOC restrictions :Reduce emissions of volatile organic compounds from interior furniture and architectural products.	O	Reduce volatile organic compounds from paints, coatings, adhesives, sealants, and final flooring used inside the building envelope
sound	continuous isolation	sound barriers :Increase the level of sound insulation and speech privacy between enclosed spaces by using sound insulation materials in walls and doors.	O	Use sound-absorbing and reflective materials in ceilings and walls to reduce noise.
lighting	lighting	exposure to light :Provide exposure to indoor light through natural daylight and energy-saving electric lighting strategies.	P	Provide sufficient window areas for exposure to natural daylight
		Daylight design strategies :Provide exposure to daylight inside through daylight-saving design strategies that enhance natural lighting.	O	Design artificial lighting in the building and determine light levels to suit the needs of users and the function of each space by using energy-efficient lighting.
water	Water reuse	Moisture management :Reduce the likelihood of the growth of bacteria and mold inside buildings from water leaks and internal leaks.	O	Choose moisture-resistant materials in internal surfaces

Main indicators WELLV2	Carbon footprint indicators	secondary indicators And its content	Type	possible values
		Water reuse :Water conservation through non-potable water systems without compromising the health of building occupants.	O	Collect rainwater and reuse it on-site without compromising the health of building occupants.
nutrition	Diet	fruits and vegetables :Encourage the consumption of fruits and vegetables by increasing the availability of local fruits and vegetables and accessibility to them.	P	Provide a dedicated dining space with tables and chairs
		food production :Provide opportunities for on-site food production by providing gardening space.	O	Planting fruits and vegetables on the roofs contributes to encouraging workers to use local food
		local food environment :Increase access to local fruits and vegetables by reducing environmental barriers.	O	Encourage workers to use local vegetables to reduce their carbon footprint.
movement	the site	Red and processed meat: Increase the availability of plant-based food options and reduce red meat.	O	Choose building sites near public transportation to avoid using vehicles that increase carbon dioxide emissions

4. CONCLUSIONS

- WELL Building Standard works in harmony with global green building rating systems, as it focuses on achieving the concept of human sustainability in architectural design by integrating and achieving healthy indoor spaces in buildings.
- WELL Standard emphasizes the need to achieve health and well-being for individuals within built environments, but it is considered the main axis that emphasizes its achievement, in addition to that the standard contributes through some of its indicators in reducing the carbon footprint of occupants and buildings.
- The WELL Building Standard aims to promote sustainable practices and reduce carbon emissions by encouraging organizations to prioritize the health and well-being of passengers while considering the environmental impact of their buildings.
- It is possible that the application of the WELL Building Standard indicators will lead to the production of healthy internal work designs that achieve comfort and well-being and reduce carbon emissions.
- The study recommends that interior designers take into account the use of WELL Building Standards and study all of its basic and subsidiary concepts to produce healthy and comfortable architectural designs for humans.
- The study recommends the need to hold awareness conferences on the potential of the WELL Building Standard in achieving sustainable health architecture.

- The study recommends taking the results of the study and its method and benefiting from them in the process of evaluating local buildings.
- WELL standard indicators can be implemented in local urban environments through the following:

1 - Choose building locations close to public transportation.

2 - Use low-VOC paints and coatings.

3 - Choose local building materials with a low carbon footprint.

4 - Use energy-efficient cooling and heating devices.

5 - Rooftop cultivation of local fruits and vegetables

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