



An Indian approach to health & wellbeing of building occupants

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SDG 3 of the United Nations' 2030 Agenda for Sustainable Development relates to good health & wellbeing of people. There are specific sustainable development frameworks for the health and wellbeing of building occupants. This paper compares four such frameworks including two frameworks for sustainable architectural design that have some criteria for achieving health and wellbeing. The paper uses 11 features of WELL v2 framework, which is identified as the most elaborate and stringent of the frameworks, to identify whether or not similar criteria exist in the other frameworks. It is seen that there are several commonalities and differences between the four frameworks. These commonalities and differences are in their approach, structure, criteria and measures of thresholds or levels. Also, all frameworks are rooted in science. However, it is seen that two Indian frameworks are also rooted in Indian philosophy, culture and spirituality which are expressed in some of the criteria. The criteria emerging out of this Indian rootedness can have universal applicability and can contribute toward the creation of a globally applicable framework.

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Sustainability in architecture is now an established movement in most countries across the world. *Harvard Business School Online*, in their 'Business Insights' blog talks of the business concept of the triple bottom line, a concept that makes firms responsible for their social and environmental impact rather than just aiming to generate profits-the standard "bottom line"¹. This brings people to the fore in the realm of sustainability in architecture.

Considering that most people spend most of each working day at their workspaces, studying how to design workspaces, therefore, seems to be imperative to enhance health prospects of building occupants.

Additionally, SDG 3 of the *United Nations' 2030 Agenda for Sustainable Development*² relates to Good Health & Wellbeing of people. It is in this context that a number of health and wellbeing frameworks emerged in the last several years. Four among them are *WELL v2 Building Standard* [wellcertified.com³], *Fitwel Building Standard* [Fitwel.org⁴] *Indian Green Building Council's Health & Wellbeing* [IGBC H & W⁵] framework and *Architecture for Wellbeing: 9 Precepts of Bio-Energetic Architecture for Health Happiness Harmony (AWB)* by Raman Vig [Vig, 2021⁶].

This paper aims to compare the four health and wellbeing frameworks mentioned above to derive insights regarding the commonalities and differences. An overview suggests that all frameworks are based on science. However, the two American frameworks, viz. *WELL v2* and *Fitwel*, emerge out of western scientific thought only, whereas the two Indian frameworks, viz., *IGBC H & W* and *AWB*, also emerge out of Indian philosophy, culture and spirituality. Therefore, it is suggested that combining the two worldviews may help create a holistic framework that is universally applicable.

Scope and limitations

Due to time and space constraints this study limits itself to the following scope:

1. This paper will focus only on workspaces under all frameworks.
2. This paper does not consider documentation required for certification.
3. The process, method, point system, cost, schedules, and time required for processing and certification are also not considered.
4. This study limits itself to studying only the qualifying criteria of the four frameworks and not specific details under each criteria.

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Methodology

This paper uses the literary method of research. The paper first attempts to define the terms health and wellbeing using the dictionary, the World Health Organization, and the four health & wellbeing frameworks. Thereafter, the four frameworks 2 American and 2 Indian-of health and wellbeing are studied to understand their commonalities and differences.

All four frameworks are very detailed in their content. Due to space constraints, this paper only provides an overview of whether or not the intent as communicated in each criterion can be located within the other frameworks for comparison and for deriving relevant insights.

Subsequently, observations are made with regard to the origin and rootedness of the four health and wellbeing frameworks. At the end, it is suggested that combing the American and the Indian worldviews can bring about a holistic framework that can be universally applicable.

Defining health & wellbeing

The World Health Organization defines health as “a state of complete physical, mental, and social wellbeing, not just the absence of disease or infirmity” [World Health Organization⁷]. The Merriam-Webster Dictionary defines health as “the condition of being sound in body, mind, or spirit” and “freedom from physical disease or pain” [Merriam-Webster⁸]. Of the four frameworks under study, *IGBC H & W* and *AWB* use the WHO’s definition of health as a point of departure. The other frameworks have not offered their definition of health.

Wellbeing is a broader term and is more challenging to define. It can encompass a broad range of factors that can affect humans. “There is, however, no international consensus on how to define wellbeing. This is not surprising, as many cultural elements impact on it. Nevertheless, there appears to be broad agreement that wellbeing is made of positive emotions and moods (for example, contentment and happiness), the absence of negative emotions (for example, depression and anxiety), satisfaction with life and general fulfilment. Thus, wellbeing is a complex mix of physical, psychological, emotional, social and economic health.” [Development and Globalization: Facts and Figures: UNCTAD, 2024⁹].

IGBC H & W claims that the built environment plays a role in the health and wellbeing of building occupants. The framework says that humans perceive

the built environment through their five senses, viz. sight, smell, taste, touch and sound. This built environment, according to *IGBC H & W*, is made of the five elements of nature, viz., air, water, earth, fire and ether which affect the physical, emotional, intellectual and social wellbeing of building occupants through the five senses. Therefore, *IGBC H & W* undertakes a “Whole Body Mind” approach to enhance the wellbeing of building occupants.

Author Raman Vig, in his *AWB* framework, explores the idea of wellbeing from a larger perspective. He defines wellbeing thus: “Wellbeing is achieving a state of health, happiness and harmony (within and the world outside) such that an individual can live the ‘best version’ of himself or herself” (Vig, 2021). Vig suggests that the idea of wellbeing goes beyond the self and into the world at large through the symbiotic connect that we share with it. He alludes to the ancient Hindu religious texts when he says that holistic wellbeing connects the individual wellbeing to the collective and universal wellbeing, essentially postulating that everything is interconnected with each other. Therefore, he says, “Wellbeing of the ‘whole’ determines the wellbeing of the ‘part’ (Vig, 2021). Wellbeing of the whole, accordingly to Vig, starts from the self to the family to the neighbours, friends and colleagues into the community and further into the larger human settlement and beyond.

From the above discussion, it emerges that wellbeing has very broad connotations that include physical, emotional, intellectual, social, cultural, psychological and economic domains.

The four frameworks: An overview

WELL v2 building standard [wellcertified.com³]

The *WELL Building Standard* prioritises the health of occupants of buildings and lays out a way for creating and certifying spaces that help keep occupants healthy in body and mind when indoors and within a community or neighbourhood.

Projects have to fulfil laid down criteria across 10 concepts to be eligible for a certification. Each concept consists of features that offer specific health-related benefits or enhancements.

Within the 10 concepts are 24 preconditions which are necessary to be achieved, and 98 possible optimizations. The 10 concepts are:

1. Air
2. Water
3. Nourishment

4. Light
5. Movement
6. Thermal Comfort
7. Sound
8. Materials
9. Mind
10. Community
11. Innovation

Fitwel certification system [Fitwel.org⁴¹]

Fitwel claims to be the world's leading certification system for health and wellbeing of occupants and users of buildings and sites. It is created by the *US Centers for Disease Control (CDC)* and *US General Services Administration*.

The certification encourages design strategies and policies in buildings and sites for lowering stress levels, reducing injury and mitigating risk of disease with the aim of increasing productivity.

Fitwel has a total of 55 strategies under 12 areas of intervention that address specific health behaviours and risks. The 12 areas of intervention are listed below:

1. Location
2. Building access
3. Outdoor spaces
4. Entrances and ground floor
5. Stairs
6. Indoor environments
7. Workspaces and dwellings
8. Shared spaces
9. Water supply
10. Prepared food areas
11. Vending machines and snack bars
12. Emergency preparedness

Indian Green Building Council's Health & Wellbeing Rating for Occupants [IGBC-H & W⁵]

Indian Green Building Council's Health & Wellbeing Rating for Occupants (IGBC-H & W) takes a 'Whole Body Mind' approach toward health and wellbeing of occupants. IGBC-H & W claims that people perceive a built environment through their five senses, viz. smell, taste, sight, touch and sound. It claims that five elements of nature, viz. earth, fire, air, water, and ether, which make up the built environment affect physical, emotional and intellectual, and social wellbeing of building users. It seeks to improve these features to enhance health and wellbeing of occupants.

IGBC H & W lists its criteria under the four main headings below:

1. Physical wellbeing
 - a. Indoor air quality
 - b. Water quality
 - c. Comfort
 - d. Health & sanitation
 - e. Fitness & nutritional choices
2. Emotional and intellectual wellbeing
3. Social wellbeing
4. Innovation and design

Architecture for wellbeing [Vig, 2021⁶]

Raman Vig's *Architecture for Wellbeing: 9 Precepts of Bio-Energetic Architecture for Health, Happiness, Harmony* (Vig, 2021) addresses the issue of how space design and architecture can reinforce and enhance holistic wellbeing. He lists 9 components that he calls "precepts" that, in his view, can reinforce and enhance wellbeing. He calls this approach to design "Bio-energetic Architecture" through which, he claims, energy is exchanged between humans and the environment to achieve holistic wellbeing. According to Vig, Bio-energetic Architecture aims to provide an "all encompassing" approach to space design bridging science, the human body and the mind.

The first six of the nine precepts, according to Vig, deal with the "manifest and measurable" realm, while the remaining three precepts deal with the "subtle and non-measurable" realm. It must be noted that *AWB* is not a certification system and does not award points for meeting any criteria. It is a proposal that has a unique perspective toward wellbeing based upon the author's decades of architectural practice and research.

The following are its 9 precepts:

Precept 1: Telluric fields (Earth element)

Precept 2: Vitalized water (Water element)

Precept 3: Luminosity (Fire element)

Precept 4: Indoor climate (Air element)

Precept 5: Field free space (Space or Ether element)

Precept 6: Materials and surfaces

Precept 7: Aayadivastu

Precept 8: Shape science

Precept 9: Ubuntu

Precept 7: Aayadi Vastu refers to personalized space design as per ancient Indian design principles said to enable energy resonance between the user and design of the space. Precept 8: Shape Science refers to sacred geometry, fractals, universal mathematics, golden proportion, pyramid mysteries, bio-energetic

forms and rhythms of natural patterns. Precept 9: Ubuntu refers to the wellbeing of parts and the whole being intertwined.

Comparison of the four frameworks

Below is a comparative study of the four frameworks of human health and wellbeing of building occupants. An overview of *WELL v2* reveals that it is more elaborate and stringent than the other frameworks. Therefore, this paper discusses each feature of *WELL v2* with respect to corresponding strategies in the other frameworks.

Air

WELL v2 considers thresholds for particulate matter, organic gases, inorganic gases, radon and their enhanced thresholds along with measurement of air parameters, prohibition of smoking, ventilation, mitigating construction pollution, increasing outdoor air supply, improving ventilation effectiveness, monitoring air quality and promoting its awareness, designing healthy entryways, managing pollution and exhaust, implementing particle filtration, and improving supply air. *Fitwel* has equivalent or close-to equivalent strategies.

WELL v2 does not have *Fitwel's* criteria of asbestos-safe property, IAQ testing results, green purchasing policy, tobacco- and smoke-free outdoor spaces, tobacco- and smoke-free outdoor signage, and tobacco- and smoke-free environment.

IGBC's H & W addresses these concerns in its *Indoor Air Quality* criterion where a building is required to control tobacco smoke by installing 'No Smoking' signage, having a no smoking policy or isolated smoking zone, mandatorily provide fresh air input in indoor spaces, monitor and display indoor air quality, and reduce indoor emissions.

AWB addresses the air quality in its precept 4: Indoor Climate (Air element) where it specifies quantitative thresholds for pollutants but does not quantify their safe thresholds. Further, *AWB* mentions what it calls "lesser known" aspects of indoor air quality in the form of a balance between gases, between ambient conditions, between fields, between radiation and between ions whose imbalance can affect the quality of human life. These are

- a) Balance of oxygen and carbon dioxide
- b) Balance of carbon monoxide
- c) Balance of negative and positive ions
- d) Balance of humidity and temperature
- e) Balance of electrostatic fields
- f) Balance of electromagnetic radiation

AWB states that all the above aspects are interdependent as they impact each other in complex ways affecting the indoor air quality. Vig lists nine design interventions to ensure good air quality.

Overall, *WELL v2* is more specific, more detailed and more elaborate in some areas. It specifies metrics and thresholds under more criteria than the other frameworks and these thresholds are more stringent than others.

All frameworks address air quality in the interiors with an aim to ensure that the interior environment is healthy for building occupants. There is no mention of air quality outdoors even in the immediate vicinity of the building. No mention is made of materials or the environment outside the building, whether specification of low emissions, or urea-formaldehyde content in outdoor wooded products, reduction of particulate matter or toxins outside the building envelope, nor is there a mention of noise pollution due to vehicular movement or construction entering the building from the outside. This presents a criticism of the frameworks which needs rectification.

Air quality is a universal human issue and has nothing to do with local culture or social realities. *AWB* also specifies thresholds for various pollutant in the air. However, *AWB's* repeated insistence on natural ventilation and air changes may be possible in lower latitudes where temperatures through the year are warmer.

Water

Fitwel and *WELL v2* have criteria of water quality indicators, meeting chemical thresholds, monitoring chemical and biological water quality, implementing legionella management plan, meeting thresholds for drinking water taste, assessing and maintaining drinking water quality, ensuring drinking water access, designing interiors for moisture management, and providing hand washing supplies and signage.

Additional criteria in *WELL v2* are the criteria for meeting thresholds for organics and pesticides, implementing legionella management plan, promoting drinking water transparency, ensuring drinking water access, designing envelope for moisture protection, designing interiors for moisture management, implementing mold and moisture management plan, providing bathroom accommodations, enhancing bathroom accommodations, supporting effective hand washing, implementing safety plan for non-potable water capture and reuse.

WELL v2 does not provide for universally accessible water supply. Also, *WELL* v2 specifies that no coliforms are to be detected in any testing sample, while *Fitwel* allows coliforms up to 5% of the total samples. *WELL* v2 specifies chemical thresholds to be met in water samples for 13 metals and chemicals, whereas *Fitwel* does not require testing for 8 of the 13 metals and chemicals.

With regard to Legionella management plan, *WELL* v2 calls for a plan development and implementation, whereas *Fitwel* only requires that a project test for the presence of Legionella.

IGBC's H & W provides for access to drinking water, controls water quantity and quality, and quality of recycled water. *IGBC H & W* specifies limits for physical parameters, general parameters, toxic parameters and a bacteriological parameter in its quality of drinking water criterion.

AWB's precept 2: Vitalized Water addresses the element of water in health and wellbeing of building occupants. According to the author, vitalized water is different from regular water, Vig says vitalized water has a molecular structure that it picks in response to the environment through which it flows. However, the chemical composition remains the same.

AWB recommends 5 ways in which one can integrate vitalized water.

All frameworks address access, quality and quantity of water including drinking water and recycled water, except *AWB* which does not specify quantities of water and its constituents. *AWB*, however, brings forward a new perspective to the quality of water in its precept of vitalized water. Vitalization of water falls in the realm of the "subtle and non-measurable" part of wellbeing.

Nutrition

WELL v2 covers criteria of provision of fruits and vegetables, promotion of fruit and vegetable visibility, provision of nutritional information, labelling of sugar content, limiting of total sugars, promotion of whole grains, optimization of food advertising, provision of nutrition education, implementation of responsible sourcing, provision of gardening space, ensuring local food access, and limiting of red and processed meats. *Fitwel* also covers all these criteria.

Other Criteria of *WELL* v2 are promotion of fruit and vegetable visibility, addressing of food allergens, limiting of artificial ingredients, promotion of healthy portions, support for mindful eating, and ensuring local food access. *Fitwel* does not cover these criteria.

Additional criteria as found in *Fitwel* are water access near vending machines and snack bars, establishment of healthy food and beverage policy, implementation of choice architecture practices in a prepared food area, pricing incentives in a prepared food area, access to free water supplies in a prepared food area, healthy vending machines and snack bars, establishment and implementation of a rigorous healthy food and beverage policy, choice architecture practices for vending machines and snack bars, vending and snack bar pricing.

IGBC H & W addresses nutrition in its criterion of *Fitness and Nutritional Choices* where it encourages consumption of healthy food options by making available such foods and displaying nutritional facts. It aims to eliminate trans fats and educate occupants on nutritional facts. Provision of indoor and outdoor fitness infrastructure and encouragement to use the same also facilitates occupant health.

AWB does not address nutrition.

Light

WELL v2 includes criteria of providing visual acuity, providing indoor light, providing visual acuity, meeting lighting for day-active people, conducting daylight simulation, managing glare from electric lighting, balancing visual lighting, enhancing colour rendering quality, managing flicker, enhancing occupant controllability, and providing supplemental lighting.

Fitwel includes implementation of daylight plan and integration of solar shading. Both frameworks require provision of daylight. While *WELL* v2 requires 170% of all workstations to be within 25 ft of transparent envelope glazing or 270% of all workstations are within 16ft of transparent envelope glazing, *Fitwel* requires provision of 51% of the area to use daylight. Solar shading is required in both frameworks.

IGBC H & W calls for occupant satisfaction surveys to address visual comfort, among other variables. *IGBC H & W* also calls for providing visual comfort in the form of adequate day lighting, illumination levels, brightness relationship, glare index, all per specified minimum measurable levels, and an occupant satisfaction survey to understand levels of satisfaction.

AWB's precept 3: Luminosity addresses light in terms of daylight and circadian rhythms, and daylight as a catalyst to produce vitamin D3. It does not quantify levels of illumination, brightness, colour and

glare. *AWB* focusses on daylight and its relation to our health. Author Vig says that a good architectural design facilitates exposure to direct sunlight. He presents 11 guidelines or reconnecting with daylight. He proposes that balconies and terraces be integrated in a space design. He also proposes that 'Sun Terraces' be integrated within secluded areas to give sun exposure the entire body in private. Vig suggests exposure to north light rather than to south light. With respect to architectural design, Vig suggests suitable fenestration design, lighter wall colours, smoother materials for more reflection, light ceiling and floor for uniform distribution of light, lighting as per nature of activity in a space. He proposes fenestration design as per heat gain required, and glare control through the use of window dressing. Fenestration design to be done as per privacy required. Glazing options available in the market cater to a wide variety of needs. Architects need to educate themselves and use glass to address various needs. Vig also proposes the use of circadian artificial lighting in cases of sub-optimal daylight. He discourages working night shifts due to a disruption in the biorhythm that can affect health of night shift workers. He suggests that all building users modify their lifestyle by enabling exposure to sunlight for about 20 to 45 minutes every day.

Movement

WELL v2 criteria under this feature are designing active buildings and communities, providing support at standing workstations, designing aesthetic staircases, integrating point-of-decision signage, promoting visible stairs, providing cycling infrastructure, providing showers, changing facilities and lockers, selecting sites having pedestrian-friendly streets, selecting sites having access to mass transit, offering opportunities for physical activity, providing active work-stations, providing activity spaces indoors, and providing physical activity spaces outdoors. *Fitwel* also includes these criteria.

Additional *WELL v2* criteria under this feature are supporting visual ergonomics, providing height-adjustable work surfaces, providing chair adjustability, providing workstation orientation, providing cycling infrastructure, offering physical activity incentives, providing self-monitoring tools, implementing an ergonomics program, committing to ergonomic improvements, and supporting remote work ergonomics.

Fitwel's unique criteria under this feature are stair safety, walking trail, and provision of outdoor fitness area.

IGBC H & W provides access to indoor and outdoor fitness facilities while creating awareness and giving encouragement to occupants to adopt practices to improve their physical fitness.

WELL v2 and *Fitwel* provide the most opportunities for movement. *LBC* and *IGBC H & W* also provide for some movement. *AWB* does not address this criterion.

Thermal comfort

WELL v2 areas of thermal comfort call for providing thermostat control, managing relative humidity and supporting outdoor nature access. The features of *WELL v2* not covered in *Fitwel* are providing acceptable thermal environment, measuring thermal parameters, surveying for thermal comfort, providing personal heating options, allowing flexible dress code, implementing radiant heating, implementing radiant cooling, monitoring thermal environment, managing relative humidity, providing windows with multiple opening modes, managing outdoor heat, and avoiding excessive wind. *Fitwel* also addresses thermal comfort using similar objectives and methods.

Both frameworks have a requirement for thermostat control. However, *WELL v2* requires such a control for 90% of the spaces while *Fitwel* requires it for the whole building including group and individual control. Also, both frameworks address relative humidity, but *Fitwel* does not have a requirement of modelling. Outdoor access is facilitated by both frameworks.

IGBC H & W, under its broad criterion of physical wellbeing addresses comfort in six parts: visual comfort, thermal comfort, acoustical comfort and olfactory comfort, ergonomics and comfort for differently abled. Under thermal comfort, *IGBC H & W* requires that operating temperature, humidity and air velocity are maintained as specified for at least 75% of operating hours. It also requires an occupant satisfaction survey to be conducted.

AWB does not address thermal comfort. However, it addresses quality of air as mentioned in the text under the criterion of 'Air' above.

Sound

WELL v2 addresses sound by including criteria of labelling acoustic zones, providing acoustic design plan, limiting background noise levels, designing for

sound isolation at walls and doors, achieving sound isolation at walls, providing enhanced speech intelligibility, achieving reverberation time thresholds, implementing sound reducing surfaces, providing minimum background sound, providing enhanced speech reduction, specifying flooring that reduces impact noise, meeting impact noise rating thresholds, prioritizing audio devices and related policies, implementing a program for hearing health conservation.

Except for providing a quiet room, *Fitwel* does not address the concept of Sound.

IGBC H & W aims to reduce noise levels and provide an acoustically comfortable environment. At least 50% of the spaces shall meet the recommended levels of Noise Criterion (NC) and Reverberation Time (RT). Occupant satisfaction surveys have to be conducted to demonstrate that occupants are satisfied with respect to the noise levels in the environment.

AWB does not address noise.

Materials and Methods

Fitwel and *WELL v2* address criteria of restricting asbestos, limiting VOCs from wet-applied products, restricting VOC emissions from furniture, architectural and interior products, managing pests, improving cleaning practices, selecting preferred cleaning products, and addressing surface hand touch.

WELL v2 covers criteria of restricting mercury, restricting lead, managing asbestos hazards, managing lead paint hazards, managing hazards related to polychlorinated biphenyl (PCB), managing hazards related to exterior CCA, manage hazards related to lead, assess and mitigate site hazards, selecting compliant interior furnishings, selecting compliant architectural as well as interior products, selecting products with disclosed ingredients, selecting products with enhanced ingredient disclosure, selecting products with third-party verified ingredients, selecting materials having enhanced chemical restrictions, selecting optimized products, implementing a waste management plan, improving cleaning practices, reducing respiratory particle exposure, and addressing surface hand touch.

Both *Fitwel* and *WELL v2* frameworks restrict asbestos. *Fitwel* has an elaborate Indoor Air Quality Policy Standard that can be adapted by projects to achieve low VOCs from wet-applied products, furniture, Architectural and Interior products. *WELL v2* requires compliance with suggested external

standards and limiting percentage of areas of flooring, furniture, ceiling, wall panels and more.

Fitwel has a rigorous *Fitwel* Integrated Pest Management Standard while *WELL v2* requires the creation and implementation of a management plan for pests. *Fitwel* has an additional *Fitwel* Enhanced Cleaning, Disinfecting, and Maintenance Policy.

IGBC H & W requires the use of eco-friendly chemicals for housekeeping. Additionally, it requires a project to reduce indoor emissions by using low emitting materials, and by minimizing indoor pollutant contamination and minimizing exposure of occupants to hazardous indoor and outdoor pollutants.

Materials and surfaces is an important precept of *AWB*. While most frameworks address VOC and other chemical content in materials, cleaning practices, reducing respiratory particle exposure, and addressing surface hand touch, *AWB* addresses radioactivity in materials, toxic wood and surface treatments, humidity balancing by materials (hygroscopicity), electromagnetic properties of materials to reduce exposure to electromagnetic fields, and promoting natural paints and finishes. *AWB* takes the path of reducing ill effects of modern materials and surface treatments by proposing alternatives.

Mind

Fitwel and *WELL v2* cover areas of promotion of mental health and wellbeing, provision of connection to nature, provision of nap policy and space, provision of restorative space, provision of restorative programming, provision of nature access indoors, provision of nature access outdoors, and provision of tobacco cessation resources.

WELL v2 also covers areas of provision of connection to place, offering mental health screening, offering mental health services, offering workplace support, supporting mental health recovery, offering mental health education, offering mental health education for managers, developing stress management plan, supporting healthy working hours, provision of restorative space, offering substance use education, provision of tobacco cessation resources, provision of substance use and addiction services.

Fitwel requires implementation of a regular health program that is free and that addresses mental and social health, fitness programs, nutrition programs and health care programs. *WELL v2* offers education or awareness, training or courses, mindfulness or restorative programming in mental health and wellbeing.

IGBC H & W addresses emotional and intellectual wellbeing by requiring a project to have a specified proportion of the site area to have green cover. It also requires a view to the outdoor environment, access to exterior landscape, the use of color psychology in the interior environment. Further, it includes spiritual wellbeing as one of its criteria wherein occupants are encouraged to embrace spiritual activity.

AWB does not address this criterion.

Community

Under this feature, *WELL v2* covers areas of facilitation of stakeholder charrette, promotion of health-oriented mission, development of emergency preparedness plan, selection of project survey, administration of survey and report results, support for community immunity, promotion of culture of health, design of lactation room, and promotion of emergency resources.

WELL v2 also covers areas of provision of *WELL* feature guide, facilitation of stakeholder charrette, utilization of enhanced survey, utilization of pre-occupancy and post-occupancy survey, implementation of action plan, facilitation of focus groups, interviews, and/or observation, promotion of health benefits, offer of sick leave, promotion of culture of health, establishment of health promotion leader, offer leave for new parent, offer support for workplace breastfeeding, offer childcare support, offer of family leave, offer of bereavement support, promotion of community engagement, provision of community space, promotion of diversity and inclusion, integration of universal design, provision of opioid response kit and training, promotion of business continuity, support of emergency resilience, offering of on-demand health services, facilitation of healthy re-entry, establishment of health entry requirements, allocation of affordable units, disclosure of labour practices, implementation of responsible labour practices, and support for victims of domestic violence.

Both *WELL v2* and *Fitwel* frameworks engage with stakeholders for improvement of facilities and environment for health and wellbeing. Both have a perspective for health promotion, but *WELL v2* requires the creation of a formal mission document that outlines objectives, connects supporting and improving health to organisational objectives, incorporates relevant project goals and incorporates the ten *WELL v2* concepts.

IGBC H & W has a separate criterion called *Social Wellbeing* under which an organization has to have a

women's safety committee, transit facilities for women, and bring out other women's safety policies. Safety measures for other employees are also addressed under this criterion. Further, this criterion offers a credit for service to society under which it is recommended that the project adopt one of United Nations Development Program's Sustainable Development Goals.

AWB addresses this criterion of community through its precept of 'Ubuntu'. Vig defines 'Ubuntu' as the wellbeing of the part being intertwined with the wellbeing of the whole. It is said to be an ideology that is rooted in African cultures, especially the Zulu and Xhosa languages of South Africa. It is said to imply that individual consciousness is part of the universal or collective consciousness. This collective or universal consciousness includes plants and the animal kingdom. Vig points toward a similar concept in Indian culture called '*vasudhaivakutubakam*' which means that the entire world is one family.

Vig offers four suggestions to design for 'Ubuntu.' Living and Building Sustainably—Without Leaving Footprints; Afforestation; Compassion at the Construction Site; and A Sense of Belonging. The first two suggestions aim toward green design and net zero emissions, whereas Compassion at the Construction Site aims to create a warm and mutually respectful environment to create what Vig calls "positive vibes" at the construction site. This is also to honour the contribution of all involved in the building process regardless of their social, economic and educational stature. The final suggestion, creating 'A Sense of Belonging,' aims to reduce the instances of arguments and passing the blame which, Vig says, are common at most sites. This creates an environment where those involved in the construction are not happy. Vig suggests that clients or architects can help create a sense of belonging by introducing measures at the site that aim to create a sense of belonging in all involved.

Innovation

WELL v2 offers up to 10 credits for innovative interventions not covered in its building standard. Further, *WELL v2* has features of achieving *WELL AP*, offering *WELL* Educational Tours, completing health and wellbeing programs, achieving green building certification, carbon inventory, carbon reduction goal, carbon reduction and carbon neutrality. *Fitwel* has none of these criteria.

IGBC H & W has innovation points and offers credits for inclusion of their accredited professionals

to be engaged within the project team. *AWB* is not a point-based certification system and so, does not offer points for innovation.

Results and Discussion

The scientific approach

In the above comparison, it is seen that *WELL V2* is the most elaborate and detailed framework focusing on regulating scientific determinants of health and wellbeing. It offers stringent thresholds and levels to be achieved for a *WELL v2* certification. *Fitwel*, too, is elaborate and detailed but is aimed, primarily, at designing spaces. It specifies how certain spaces like the building entrance and work spaces, for example, are to be designed to achieve health and wellbeing of building occupants.

IGBC H & W appears to be modelled on *WELL v2* and specifies thresholds and levels to be achieved along the lines of *WELL v2* with some modifications based on local Indian standards and laws. *AWB* offers an entirely new perspective that goes beyond the conventional criteria. It offers a new approach at the fundamental level where the focus is on energy and exchange of energy with the environment. However, due to their focus on the subtle energies, some precepts are difficult to measure with existing instruments.

It is seen that there is a difference between the American and Indian health and wellbeing frameworks. While all the frameworks are scientific in nature, the approach varies. *WELL v2* uses natural elements of air, water, light, sound and so on. These are determinants of human health and wellbeing as seen from a scientific viewpoint. *Fitwel* also approaches health and wellbeing from a scientific perspective. However, it is structured based on architectural spaces and elements like, building access, stairs, indoor environment, workspaces & dwellings, and so on. *IGBC H & W* identifies three primary determinants of health and wellbeing in its physical wellbeing, emotional and intellectual wellbeing, and social wellbeing. Under these areas of wellbeing, *IGBC H & W* offers numerous criteria with measurable goals. *AWB* also claims to be based on science, but at a more fundamental level. It offers an entirely new perspective to health and wellbeing.

The Indian approach

Architecture of the senses

While the Indian frameworks are also based on the scientific approach, *IGBC H & W* claims to be rooted

in Indian philosophical traditions, culture, and spirituality of which India has a rich heritage. Accordingly, *IGBC H & W* relates the natural elements of earth, water, fire, air and ether to olfactory, gustatory, visual, tactile and auditory consciousness. Further, it relates this consciousness to their respective body organs of nostrils, tongue, eyes, skin and ears which give us the five senses of smell, taste, form, touch and sound. In this way, the five senses are expressed as being related to the five natural elements. In other words, health and wellbeing is related to how we interact with our environment which is composed of the five elements using our body organs through our consciousness and senses.

Further, *IGBC H & W* offers credits for spiritual wellbeing in a building. The organization can get points for encouraging spiritual activities by providing the environment, space and facilities to enhance spiritual wellbeing, or by organizing awareness session or workshops on spirituality.

Additionally, *IGBC H & W* offers credits for cultural activities by encouraging organizations to celebrate cultural or national festivals. India has a number of cultural festivals including, Diwali, Holi, Dassara, Sankranti, Ganesh Chaturthi and so on. Such festivals bring the community together where tradition blends with leisure and food creating a sense of wellbeing due to culture.

Under its *Emotional & Intellectual Wellbeing* section, *IGBC H & W* offers credits for creating policies for women. Traditionally, India has been a patriarchal society where men have had more opportunity compared to women. This criterion addresses this social issue. It may be noted that patriarchy is a widely occurring social phenomenon across large parts of the world and so, this criterion can be included in other frameworks also.

IGBC H & W, therefore, can be considered to be rooted in ancient Indian traditions with some uniquely Indian criteria. However, these criteria can have universal applications and, therefore, can be included in other frameworks too, adding additional value to them.

AWB, too, roots itself in ancient philosophy and sciences. Author Vig makes frequent references to concepts from ancient Indian philosophical concepts like *vasudaivakutumbakam* and from ancient Indian spiritual traditions. He also makes references to scientific principles discovered in the past from around the world. Based on these concepts and principles he makes several statements relating to how everything in

the world is interconnected and how wellbeing of the whole determines wellbeing of the part. He bases his framework on the idea that everything in this universe is energy including matter which he calls 'solidified energy.' Our sensory organs detect this energy from the environment. He is a proponent of the idea that subtle energies are responsible for the rise of gross energies which are manifest energies. The subtle energies are invisible and the gross energies are visible manifestations. Vig claims that these ideas emerge out of the ancient Indian *Vedas* or books of knowledge, and on certain principles of modern science.

Vig says that trauma, stress, abuse, deficiencies can cause an imbalance and blockages in our individual energy fields. Vig further says that since recent times, our environment has energy from manmade electronic radiations like cell phones, computers and other electronic devices. These radiations can also cause imbalances and blockages in our individual energy fields. He calls this individual energy field our bio-field which, he says, is like electrical circuits within us. The idea is to reduce these imbalances and blockages within our bio-field which, says Vig, will achieve wellbeing aided by the body's self-healing ability.

Vig proposes to enhance one's bio-field to achieve holistic wellbeing. Design of the built environment and space design is one of the ways in which this bio-field can be enhanced. Based on this idea he has proposed his nine precepts of bio-energetic architecture for health, happiness and harmony which he calls 'Architecture for Wellbeing.'

Architecture of natural elements

Like with *IGBC H & W*, the first five of these nine precepts are based on the five natural elements of earth (Telluric field), water (Vitalized water), fire (Luminosity), air (indoor climate), and space or ether (Field free space). These five precepts are about the gross or visible energies and are measurable. They aim to take humans back to the way we lived up to a hundred or so years ago when technology was not so pervasive in our lives. Technology has brought in pollution within four of the five natural elements with fire being the only exception. Technology has also disconnected humans from the natural elements. Through the nine precepts, Vig aims to re-establish this human connect with the natural elements. Materials and surfaces is the sixth precept that helps build this environment. Hence, the choice of materials and surface finishes becomes critical for a designer.

Aayadi Vastu, shape science and Ubuntu

The remaining three precepts are precepts of Aayadi Vastu, Shape Science and Ubuntu, which, Vig says, are about how subtle energies determine gross manifestations. These energies cannot be measured as of now. According to Vig, more research needs to be done to decipher the mechanism of how they impact humans and to quantify their effects.

Aayadi Vastu refers to the ancient Indian method of architectural design. 'Aayadi' means the personal energy pattern or energy signature of a person, while Vastu means the method of architectural design. The aim here is to align the subtle energies of the individual with the gross energies of space designed around him/her to create harmony between the energies. This harmony is said to aid in the wellbeing of the individual. Vig gives ten considerations for designing as per Aayadi Vastu which include site selection, cardinal orientation, plot entry and house entry, placement of rooms and so on.

Shape Science, according to Vig, refers to sacred geometry, fractals, golden proportion, and other similar forms that emerge out of nature and natural patterns. These forms are said to be gross manifestations of the rhythms of subtle energy in nature. Throughout the history of humanity, shape science has been used in the built environment and in the daily lives of people. The Egyptian pyramids is one prominent example. At the end of the chapter on shape science, Vig give nine ways to integrate shape science in the built environment. These include architectural forms and facades, layouts and master plans, build elements like canopies, atriums, skylights, landscape patterns, interior design patterns, and so on.

The precept of Ubuntu is rooted in African culture and has been explained earlier in this paper under the criterion of 'Community'. Vig also identifies its ancient Indian equivalent in the idea of '*vasudhaivakutubakam*' which means that the entire world is one family. Ubuntu aims toward the wellbeing of all and recognises that one cannot be happy if others are not. Vig explains the idea by relating a tale of an anthropologist who asked a group of African children to race to a tree where sweets were kept. The first to reach would get the sweets. The children held each other's hands and ran together to reach the tree at the same time. Then they divided the sweets among themselves equally. Vig gives four suggestions to achieve Ubuntu in design as mentioned earlier.

Conclusion

All frameworks are based upon science with *WELL v2* and *Fitwel* being most elaborate and stringent. *IGBC H & W* also is fairly elaborate and achieves its objective within the Indian context. However, as is seen, *IGBC H & W* and *AWB* are rooted in ancient Indian philosophy, culture and spirituality. *IGBC H & W* is easier to implement due to its measurable criteria compared to *AWB* which has some precepts that cannot be measured using existing methods, according to its author. It can, therefore, be difficult to know for sure whether some of the precepts have achieved their goal. Also, *AWB* does not address several criteria like sound, nutrition, movement and so on. It is structured on the principles of energy at the subtle and gross levels which can be fundamental in nature, and so, does not specify levels or thresholds in measurable terms for several precepts. Despite this difference, *AWB* offers a new perspective and provides some meaningful ideas to the discourse on health and wellbeing.

Both *IGBC H & W* and *AWB*, although rooted in Indian philosophy, culture and spirituality, offer meaningful contributions as elaborated. These contributions can have universal applicability and, hence, can be incorporated in other health and wellbeing frameworks around the world making them holistic. Such an effort can, potentially, help in creating a uniform framework for global applicability.

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