

# FUTURARC

The Voice of Green Architecture in Asia-Pacific  
4Q 2021 | volume 75

YEAR-END

PREVIEW  
NOW &

CONCEPT VS REALITY CARBON

CHARLES  
CORREA

CATCH-UP WITH  
JASON F. MCLENNAN



# PRESENTING A

## SOUTHEAST ASIA + HONG KONG + INDONESIA EDITION



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**Dear *FuturArc* Readers,**

“Thoughts are the architects of our circumstances.”

I read this some time ago from a spiritual text.

Thoughts do have a way of flowing out into our words and deeds. As such, they have a powerful impact on how we see the world and how we construct our realities.

Thoughts move us forwards or back, impressing upon us visions or memories. This year-end issue is a medium through which we look at past concepts in their current manifestations and future possibilities based on present status quo, now.

Thoughts can become reality: Auroville was envisaged to be a place for all humanity, built on a foundation of an inclusive social consciousness and oneness, founded by a spiritual teacher. But has it fulfilled its own utopic vision? Bhawna Jaimini set off to find out, intrigued by one of the loftiest ideals for a township in her country of birth and upbringing, which has been on her mind as a story she wanted to tell—and finally did.

Thoughts realised can become memorialised: Charles Correa was described by some as being ahead of his time—whose vision of architecture was expressed in work dominated by passive strategies, localised in climate and site. His buildings that still exist today are being investigated by Nipun Prabhakar, who undertook a photographic journey into the question of what aspects of Correa’s work have survived and how they are relevant in today’s context.

Thoughts can start a revolution, but only if everyone shares the same idea: carbon has been on the minds—and agendas—of most industry players and government bodies. However, not everyone agrees on the same meaning. The Advancing Net Zero global course of action, set by the World Green Building Council towards total sector decarbonisation by 2050, has given rise to a myriad of programmes in different countries, initiated by local Green building councils or agencies. Some have passed laws; some have set their own master plans or targets—but if true net zero is to be reached worldwide in less than three decades, we need a one-pointed, well-defined framework where meanings and measurements are clearly understood and applied. This is the focus of our year-end reports, on present-day initiatives of carbon and the paths ahead.

From our chat with Jason F. McLennan, Green architect extraordinaire, whom we brought back for a *FuturArc* Interview ‘redux’, certifications or third-party standards that have “clear definitions, clear requirements and metrics, and then you have to prove that you’ve met them” help avoid carbon washing or confusion. “That’s why I like certifications to get around this issue and to have everyone speaking a similar language, and having accountability and transparency in claims that are made.”

Although, even before that, if we start from the point of ideation to reduce carbon (and embedded carbon) as much as possible—reuse, repurpose, reinterpret; draw power from renewable resources; and be fully responsible for the built form’s use—we could already be halfway there, by first having the right thoughts.

**Candice Lim**

Editor-in-Chief





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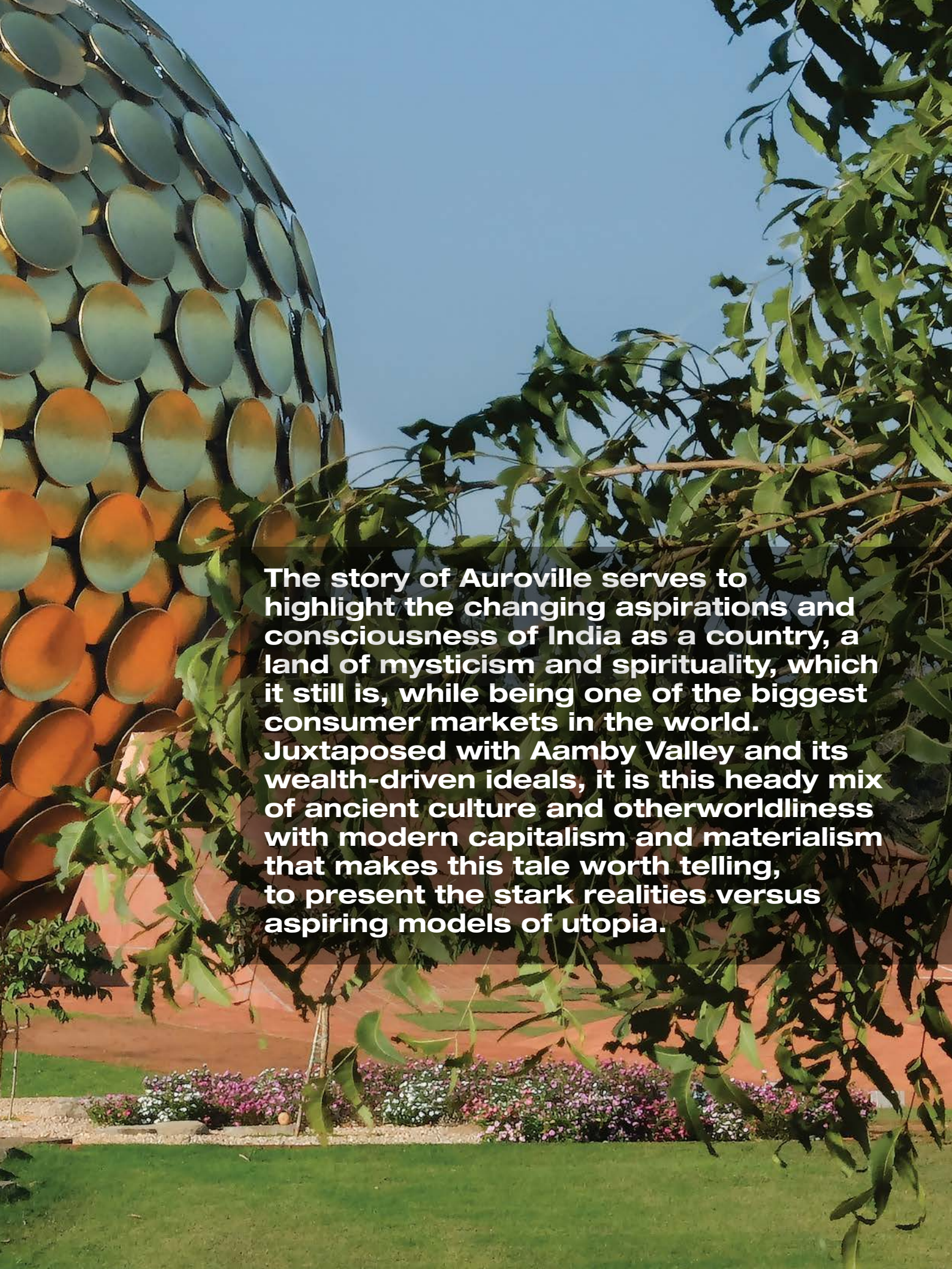




MAIN FEATURE







**The story of Auroville serves to highlight the changing aspirations and consciousness of India as a country, a land of mysticism and spirituality, which it still is, while being one of the biggest consumer markets in the world. Juxtaposed with Aamby Valley and its wealth-driven ideals, it is this heady mix of ancient culture and otherworldliness with modern capitalism and materialism that makes this tale worth telling, to present the stark realities versus aspiring models of utopia.**





# ASPIRATIONS VERSUS REALITIES OF UTOPIA IN INDIA

by **Bhawna Jaimini**

Auroville, an experimental township in South India founded in 1968 for the purpose of realising human unity, led one of the most successful afforestation campaigns that India has ever seen, transforming wasteland into a rich forest. Aamby Valley City, a private city for India's super-rich that started construction in 2016, flouted environmental norms and built a golf course in one of India's four biodiversity hotspots. Almost antithetical to each other, one stands for frugality while the other wants to be the flagbearer of consumerism. The latter here serves as contrast, an example to underscore the realities of creating utopias in a country where its spiritual culture and history are as ancient and deep-rooted as its class and income disparities are apparent and pervasive.

## AUROVILLE

### Origins

On 28 February 1968, citizens of 124 countries across the world came together on what then was a barren piece of land situated 10 kilometres north of Pondicherry—a former French colony in South India—to lay the foundation of Auroville, an 'experimental universal township'. Founded and conceptualised by Mirra Alfassa, popularly known as The Mother by her followers, Auroville could be seen as one of the material culminations of the counter-cultural resistance of the 1960s, which saw growing anti-establishment sentiment across the Western world. Disenchanted by the post-world war consumeristic boom, imperial wars such as that in Vietnam and increased nuclear armament, a huge number of Westerners rejected accepted social norms in favour of alternative lifestyle choices, along with strong adherence to the civil rights movement that gained widespread support and momentum around the same time. India, which at that time was still a newly independent country and at least three decades away from embracing capitalism, became the de facto destination to find an alternative consciousness and lifestyle. The decades of the 1960s and 1970s saw a number of Westerners flocking to India, from The Beatles coming to learn Transcendental Meditation Technique from Maharishi Mahesh Yogi<sup>1</sup> in Rishikesh—a small town at the foothills of Himalayas—to Pete Townsend of The Who becoming a devotee of Meher Baba<sup>2</sup> and dedicating the famous song Baba O' Riley to him.

Though Alfassa came to India for the first time in 1914 to meet her spiritual collaborator Sri Aurobindo—with whom she later set up the Sri Aurobindo Ashram in 1926 in Pondicherry—it is safe to say that Auroville came to be as a result of spiritual and alternative lifestyle demands of its time. The resolution to set up the town was passed in 1964 and the French architect, painter and sculptor Roger Anger was appointed by Alfassa to be the chief architect of Auroville, which she stated would be “a universal town where men and women of all countries are able to live in peace and progressive harmony, above all creeds, all politics and all nationalities. The purpose of Auroville is to realise human unity.” Anger was an established name in France and had a number of important buildings attributed to his name when he was invited to plan and build Auroville, where he stayed till his death in 2008. Anger collaborated with Alfassa to put together the town’s radial plan, known as the galaxy with Matrimandir and the banyan tree serving as its centre.

Founded in search of a utopia and human unity, Auroville’s initial years were mired in controversy, with infighting and a long-drawn court battle that culminated into the Government of India seizing control of the town by passing the Auroville Emergency Provision Act in 1980. This came by as a result of disagreements and the battle to control the town’s future after Alfassa’s death in 1973, between the then residents of Auroville, who were mainly Westerners leading a liberal or what was then termed as a ‘hippie’ lifestyle, and the Indian followers of Sri Aurobindo Ashram, who were mainly wealthy conservative Hindus. The Indian government, then headed by Indira Gandhi, who was said to be close to Alfassa, sided with the residents of Auroville to oust the latter group who legally controlled and owned all the land and assets of the township. In 1988, the Auroville Foundation Act was passed by the Indian parliament, which led to the formation of a three-tier governance structure that comprises a governing board appointed by the Government of India; a residents’ assembly that includes all the residents (known as Aurovillians) above the age of 18; and an international advisory council, also appointed by the Government of India.

### The Galaxy Master Plan and its interpretation

Located in the Villupuram district of Tamil Nadu—a southern state in India—over a plateaued land 50 metres above sea level, the township of Auroville is spread over an area of 20 square kilometres, which includes the planned city in the centre with a green belt around it. However, not all the land belongs to the township—there are multiple small parcels of land owned by the residents of the surrounding villages called the locals by the Aurovillians. The township is divided into four zones between the peripheral green belt and the Matrimandir: residential zone; cultural zone; international zone; and industrial zone. The zones, as seen today, were conceived by Alfassa, which was then translated into the galaxy-shaped master plan by Anger. Realised as a plan for a truly futuristic city, the plan has buildings emanating from the centre—called lines of forces—which are supposed to be interconnected housing units meant for a population of 50,000 people.



**1** Matrimandir, the central beacon of Auroville  
**2** The Town Hall complex designed by Anupama Kundoo  
**3** Aerial view of Auroville, highlighting the township’s galaxy master plan  
**4** Many versions of the galaxy master plan can be found in the Auroville Archives

Map Data: Google; Maxar Technologies





# Charles Correa Now

by **Nipun Prabhakar**





## INTRODUCTION

I have always been curious about what happens after architects leave. For users, the journey of their relationship with the buildings starts after the architects have left. Just like a living being, the building is born, lives its life, transforms, witnesses many events and eventually dies. They undergo changes that the architect may or may not have thought about while designing them.

The curiosity to understand and visualise stories about how these buildings are transformed led me to photograph the work of one of India's greatest architects, Charles Correa. He was also a recipient of the Aga Khan Award for Architecture in 1998. While he is undoubtedly the most famous architect from the Indian subcontinent, significantly less work has been done on how his buildings have aged and/or transformed over the years.

In South Asia, post-independence architecture was intended to construct a national civic identity. These buildings acted as a template for the society to inhabit and attune them to changing needs, desires and political realities. In India, Correa was among a few architects who laid the foundation for modern Indian architecture just after independence, when the country was trying to shed its colonial past and find its aesthetics.

Correa's work was deeply rooted in the idea of a new India, taking cues from its glorious past and also looking towards a promising future. To quote from his famous essay "Transfers and Transformations", he said, "I believe that an architect can use the past only to the extent that he can reinterpret it; reinvent it. In that sense, architecture should always be simultaneously both old and new, for it comes into being at the intersection of three major forces. The first represents technology and economics; the second, culture and history; and the third, people's aspirations. This third force is perhaps the most important of all."<sup>1</sup>

He rejected the idea of using glass and steel, and his buildings were regarded as being way ahead of their time—conceptually, climatically and materially conscious. In one of his talks in 1980 titled Form Follows Climate<sup>2</sup>, he said that buildings in India respond to climate, as it had never been possible to squander the kind of money and energy necessary to air-condition a building under the tropical sun.

For this story (an abstract of a full project; see author's note), I have developed a series of experiential photo essays on selected Correa buildings and the life around them in contemporary times. Done in a documentary-style visual narrative, I tried to portray them in a raw and honest manner—different from the typical air-brushed architecture photos we see today. Moreover, I tried to photograph what was inside those buildings, rather than just photographing the elevations. I tried to observe, understand and reflect on how his architecture has served people and how those structures have transformed. The process involved visually and qualitatively excavating for traces, objects, motifs, testimonies and anecdotes around the lives of these prominent buildings. I interviewed people who were part of the design team, building owners, occupants, workers, administrators and those who have intimately watched and witnessed Correa's work. I also accessed personal archives and correspondences to understand how the design process evolved.

Most of his buildings have had a lasting impact on the lives of many long-term occupants. In Bhopal Vidhan Bhavan (the state parliament building), many people I talked to, including security guards, parliament marshals and engineers, still remember their interactions with Correa during the construction process. His answers had an enduring impression on them.

**1** A view of the world's costliest house Antilia from one of the apartment windows in Kanchanjunga; Correa talked about these 'urban windows' framing the city in his essay "Blessings of the Sky" **2** Inside the Combined Hall of Vidhan Sabha; it is occasionally rented out to host various cultural events **3** Women from Dindori, Madhya Pradesh, working on the terrace gardens of Bharat Bhavan

**I have always been curious about what happens after architects leave. For users, the journey of their relationship with the buildings starts after the architects have left.**





# The FuturArc Interview

**JASON F. MCLENNAN**  
CEO, McLennan Design

by Candice Lim  
& Dinda Mundakir





Photo by Dan Banko



*Love + Green Building: You and Me and the Beautiful Planet*—the title of **Jason F. McLennan**'s children's book encapsulates well the essence of what his work and passion are all about. Although he is one of the world's most influential and sought-after individuals in architecture and the Green building movement today, the multi-hyphenate recipient of the prestigious Buckminster Fuller Prize (the planet's top prize for socially responsible design) comes across as grounded and sincere in wanting as many people to understand what being Green is truly about. So, he teaches and writes extensively to share this wisdom. McLennan is also the creator of the Living Building Challenge (LBC)—the most stringent and progressive Green building programme in existence, as well as a primary author of the WELL Building Standard. As Founder of the International Living Future Institute and CEO of McLennan Design—his own architectural and planning practice—he is continuously seeking to put into practice what he preaches by designing some of the world's most advanced Green buildings.

We caught up with him after his presentation at the International Building Environment Week (IBEW) 2021 virtual conference.





## CATCHING UP

**We're going to be opening the Climate Pledge Arena, which will be the Greenest sports and entertainment venue in the world... It's a 100 per cent renewably powered arena. And every ounce of carbon for operations has been offset.**

**CL: What are the major milestones for you since our last chat in 2014?**

**JM:** In 2014, I was still CEO of the International Living Future Institute. And as you guys know, I created the Living Building Challenge and a whole host of programmes that the industry still uses in many different places around the world. I'm now on the board of the Institute—I'm kind of the emeritus [CEO]; grey hair and all—helping to still provide some inspiration and guidance, but I'm not involved with the entity on a day-to-day basis.

That year marked a transformation for me professionally, where I went back into practice after having led the not-for-profit, the NGO, for 10 years. And so, I started McLennan Design, which is my own design and planning practice based in the Seattle area. And we now design Living Buildings and net zero energy projects, as you have heard about in the conference. We're really trying to bring to life a lot of the types of thinking and the philosophy that I was pioneering. And that work continues. So, we're involved in all kinds of projects. That was really the big shift since 2014.



1 External perspective of HMTX World Headquarters

Image by McLennan Design



YEAR-END FOCUS: CARBON

# LOW-CARBON BUILDING INNOVATIONS ARE CHANGING FUTURE ARCHITECTURE: A CASE STUDY FROM CHINA

by Professor Stephen Lau

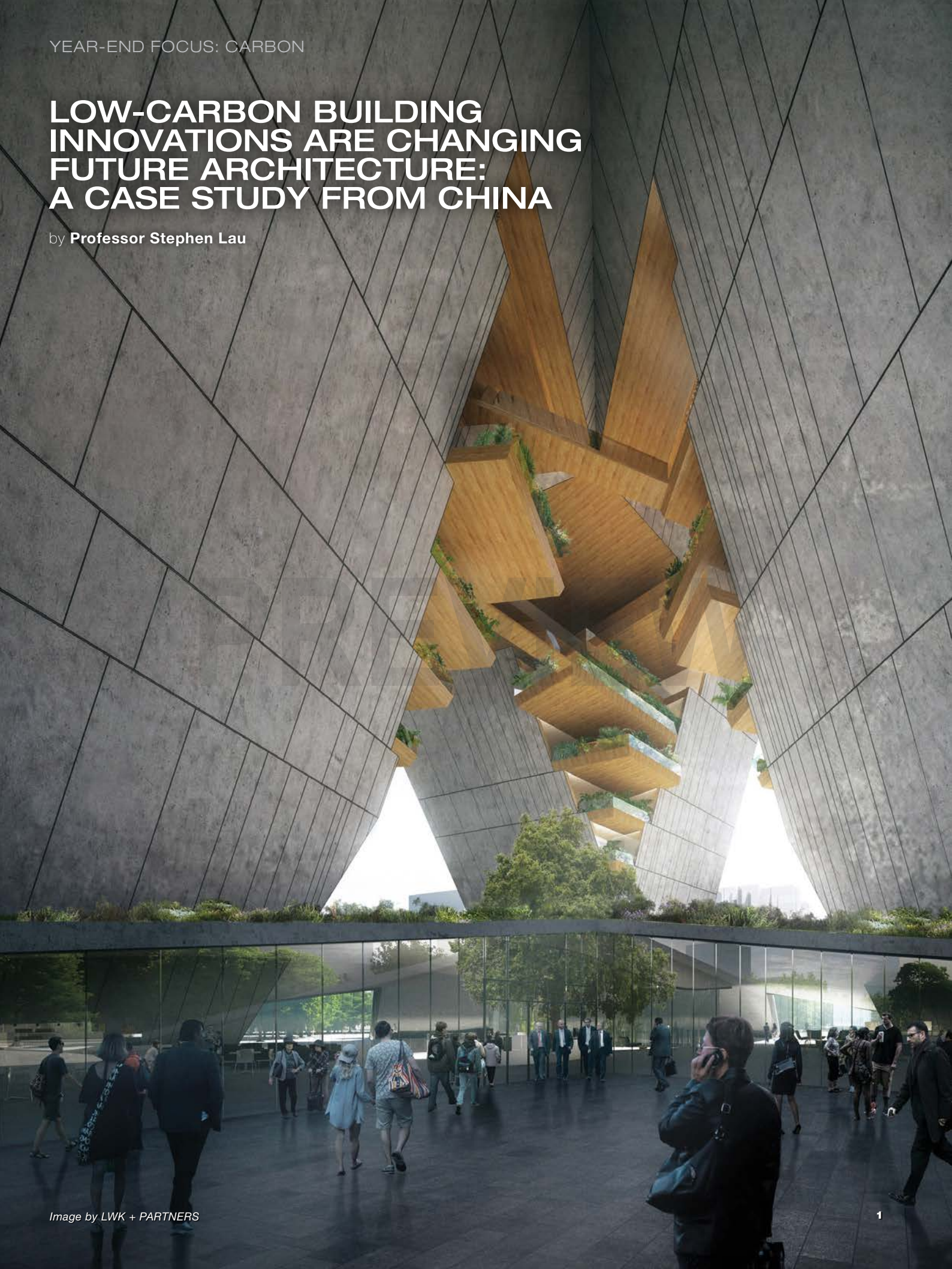


Image by LWK + PARTNERS

# Climate-resilient design as a key tool of passive design needs to reach a higher level to bring down energy demand.

## NEW ARCHITECTURAL DESIGN REQUIREMENTS UNDER CARBON NEUTRALITY GOALS

With rapid urban and economic development, energy consumption is increasingly posing threats to the natural environment while the quantity and intensity of energy use in buildings are growing. As the Paris Agreement is leading a global shift towards a Greener economy and setting out the minimum actions required to protect our planet, it is having a huge impact on worldwide political and economic activities. With China's pledge to peak its carbon dioxide (CO<sub>2</sub>) emissions by 2030 and achieve carbon neutrality by 2060, carbon has now officially become the world's environmental index. According to the *China Building Energy Consumption Report* published by the China Association of Building Energy Efficiency in 2020, the building sector will be contributing 51.3 per cent of the carbon emissions from industry, building and transportation—the three main sectors in need of Green reform. Therefore, the design, operation, management and use of buildings will directly affect the effectiveness of carbon neutrality efforts in cities. An emphasis on architectural design that can save energy, cut emissions and create carbon sinks is also becoming a preferred strategy for tackling climate change and meeting carbon targets.

This article investigates the aspects of designing zero energy buildings with a case study in China. As Deputy Director of the China Green Building (Hong Kong) Council and Design Research Director leading the Design Research Unit at LWK + PARTNERS, my team and I believe that zero energy buildings are a key means of achieving China's carbon goals and therefore a future market trend. They require a technical approach that prioritises principles in the following sequence: apply passive strategies first before active enhancement; maximise renewable energy use; and a human-oriented post-occupancy evaluation. It aims to ensure healthy building interiors; achieve functionality and efficiency; formulate useful design features; create new low-energy building typologies; improve energy efficiency and smart integration; promote passive design and renewable energy use; and foster better energy-saving performance in buildings.

## APPLICATIONS OF LOW-CARBON BUILDING INNOVATIONS

The Carbon-Neutral Building Design project in Guangdong, China is close to transport infrastructure and consists of five large buildings,

taking up a site of 80,000 square metres with a maximum building density of 48,000 square metres. During the early design stage, a strength and weakness analysis was conducted on existing solutions, resulting in the decision to integrate the project with low-carbon design. We work closely with the client to evaluate traditional methods and develop better design frameworks. In response to carbon neutrality objectives, it involves a close review of the site, building envelope and roof to inform a low impact development, and low-energy integrated design based on 'passive first' and 'maximising renewable energy' principles. Below details the low-carbon technologies applied by the team.

### Building envelope design

The Carbon-Neutral Building Design project is classified under the 'hot summer and warm winter zone B' in the thermal zoning of Chinese buildings, which emphasises natural ventilation, heat insulation and solar shading. According to China's General Principles of Green Factory Assessment and Assessment Standard for Green Buildings, factories are recommended to save materials, energy, water and land; minimise harm; and use renewable energy through the choice of materials, structures and lightings. The thermal insulation performance of the roofs and external walls should also meet requirements stated in the national standard of GB 50176 Thermal Design Code for Civil Buildings. These are why, in addition to maintaining a standard level of insulation of the structures such as focusing on insulating the western side of the building, using materials with lower heat transfer coefficients and applying light-coloured finishes and insulative paints, we propose five key strategies for designing the building envelope:

- Strategy 1: Orient the building to receive more solar radiation
- Strategy 2: Adopt uneven façades to reduce heat transfer
- Strategy 3: Use ventilated façades to improve energy efficiency
- Strategy 4: Adopt intelligent design to optimise energy use and assist with energy management
- Strategy 5: Apply passive design features to save energy

In line with Strategy 2, the Carbon-Neutral Building Design project is slightly slanted and

**1** Building form as passive design tool: a central negative space promotes a microclimate in this office building competition proposal, allowing natural light and wind through its core



# REACHING CARBON NEUTRALITY IN HONG KONG: A MODEL FOR HIGH-RISE, HIGH-DENSITY SUB-TROPICAL BUILT ENVIRONMENTS

by Ir Dr Cary Chan, JP





Being one of the world's most iconic cities, Hong Kong is famous for its distinctive sub-tropical built environment of high-rise, high-density urban areas juxtaposed with a large expanse of hilly and mountainous terrain. In this dynamic and vibrant city, human activities in the built environment account for about 90 per cent of the total electricity consumption. This translates to some 60 per cent of all greenhouse gas emissions, which is well above the global average of approximately 40 per cent for the building sector.

Faced with the increasing pressures of climate change, it is vital for all communities worldwide to find Greener and more sustainable ways to live. For Hong Kong and other high-density sub-tropical cities, this requires the formulation of innovative solutions that address the specific requirements of their climate and urban needs.

Many countries, including Mainland China, have set targets to achieve carbon neutrality in the years ahead. The Government of the Hong Kong Special Administrative Region (HKSAR) has also made this commitment, announcing its intention to reach carbon neutrality by 2050. With the city's built environment accounting for carbon emissions above the global average, it is clear that the Hong Kong Green Building Council (HKGBC) must join hands with the government and all industry stakeholders to explore new means to achieve this objective.

## MEETING THE CHALLENGES OF DECARBONISATION

There are over 42,000 existing buildings in the private sector in Hong Kong. Decarbonising these existing buildings is essential if Hong Kong is to achieve its long-term goal of carbon neutrality. Yet, transforming existing buildings presents a number of critical challenges. These can best be summed up as technical difficulties, management difficulties and behavioural difficulties.

In technical terms, for instance, how can an existing building be kept fully operational while equipment and systems are being replaced? Moreover, if a building's structure cannot be changed, what steps can be taken to cope with the additional structural loads of new installations? Questions such as these make it clear that the research sector must urgently innovate and produce new plug-in products that are friendly to old buildings and can streamline the upgrade process at later stages of a building's life cycle.

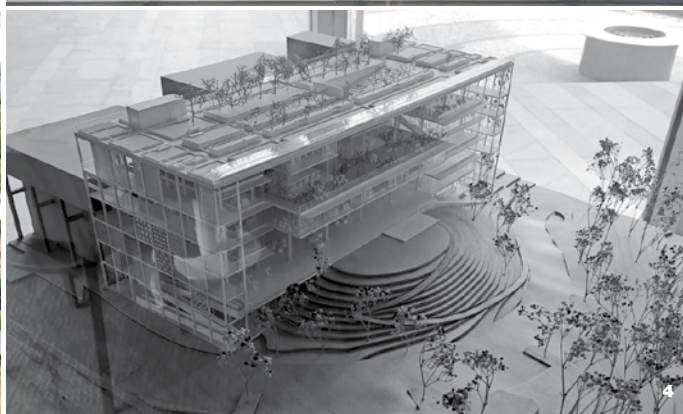
In terms of management difficulties, most units in many residential, industrial and commercial buildings are sold to multiple owners. In these circumstances, there is often a lack of consensus among the owners to make decisions on capital investments that will improve the building's Green performance. In response to these issues, Hong Kong has already launched several subsidy schemes to help building owners replace electrical equipment and retrofit electric vehicle (EV) charging facilities in car parks. Initiatives such as these go some ways to helping resolve the management difficulties of decarbonising existing buildings, but there is obviously still much work to be done.

Lastly, and yet of equal criticality, are the behavioural challenges inherent in existing buildings: namely, how to educate people of all generations and backgrounds to use building energy in a more responsible manner and to generate less municipal waste. This is already being given emphasis in children's school education, but educating adults and the elderly is also vital. To date, it is observed that the provision of suitable building and infrastructural facilities such as Green schools, Green residential buildings and Community Green Stations (CGS) has a powerful impact on citizens' behaviours. The enactment of new laws, such as the mandatory disclosure of buildings' energy use and the launch of municipal waste charging schemes, also has a role to play.



**1** Hong Kong is famous for its high-rise, high-density urban areas juxtaposed with a large expanse of mountainous terrain **2** Aerial view of the Zero Carbon Building in Kowloon Bay, Hong Kong





# There are a handful of buildings that have managed to achieve zero energy, such as the National University of Singapore's School of Design and Environment.

As the environmental agenda progresses, the simple words of Green building are being replaced more by the number or word zero. Zero is now often used as a noun for companies to arrive at their environmental targets.

As most countries embark on the road to zero, there are critics who see this as greenwashing or the next marketing trend sitting close to the well-being trend. Decarbonisation is another closely related word, alongside the phrase climate zero. These esoteric words get used every so often during webinars, forums and Green dialogues, so much so that “blah blah blah” have been used as a verbal phrase to describe or drive these terminologies.

The mere pressure to produce a zero framework that includes Environment Social Governance (ESG) makes the lack of it seem almost unforgivable today. As reported by the World Green Building Council (WGBC), most countries' Green building programmes have embedded or have begun to pilot their own path to zero.

Following through this plan and getting it into action are uphill tasks. However, in countries like Singapore, the path to zero is embedded within its Singapore Green Plan, a strategy to reach the country's committed Nationally Determined Contributions (NDCs).

## A MACRO DRIVER OF SUSTAINABILITY: NATIONALLY DETERMINED CONTRIBUTIONS

On a macro level, one of the biggest drivers would be the need to fulfil NDCs, which are commitment plans submitted by every country under the Paris Agreement 2015 at the United Nations Framework Convention on Climate Change (UNFCCC). These plans include actions, targets (greenhouse gas emissions or GHG reductions), policies and measures that governments aim to implement in response to climate change.

For example, Singapore's NDCs include achieving a 36 per cent reduction in Emissions Intensity (EI) by 2030 from 2005 levels, which means that in terms of absolute emissions, Singapore aims to stabilise emissions at 65Mt CO<sub>2</sub>e (million tonnes of carbon dioxide) by 2030<sup>1</sup>.

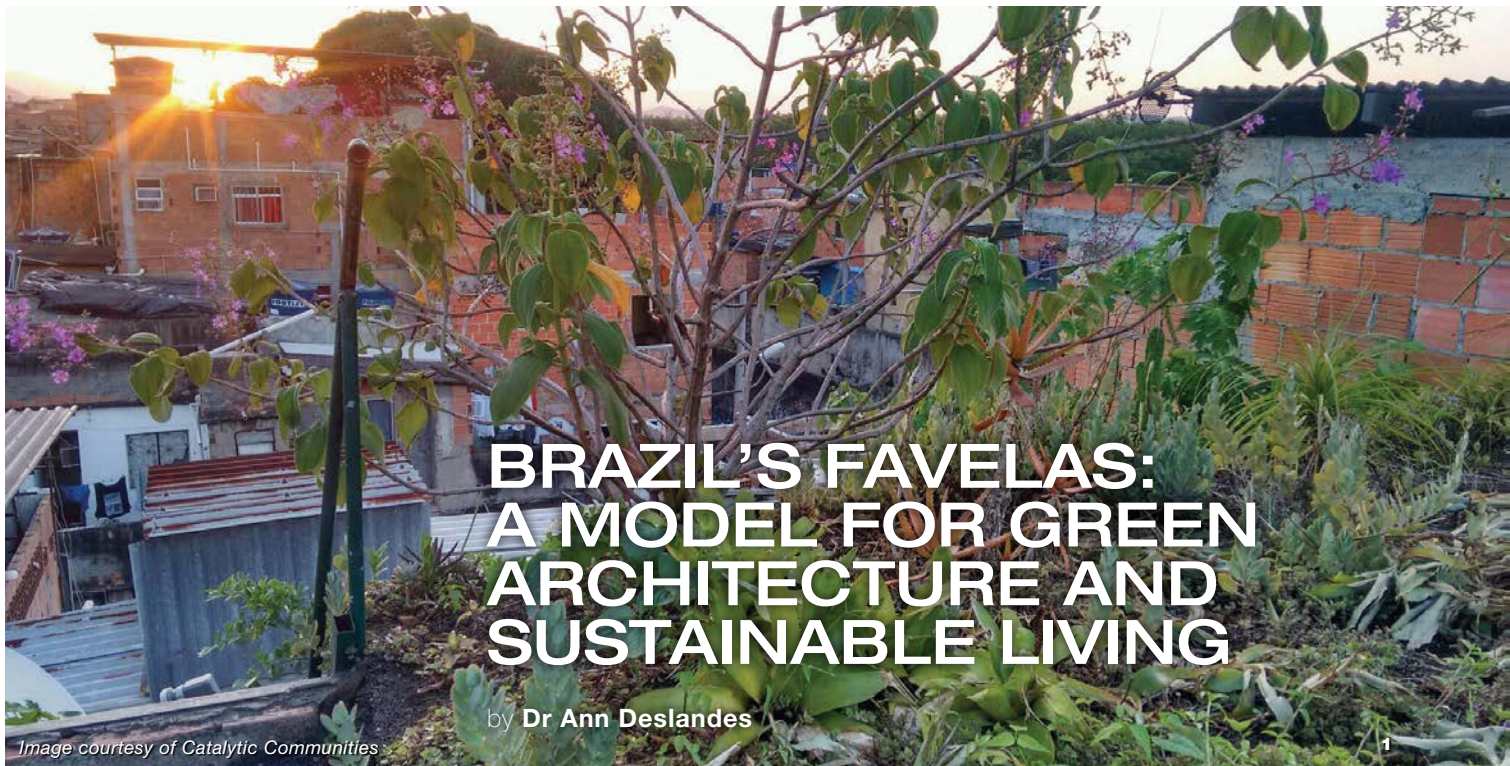
It requires a nationwide effort—from the governmental level and large companies to the small- and medium-sized companies as well as the everyday consumer—and I am encouraged that the whole-of-government is on board the sustainability ship to push for aggressive action to achieve our targets. That is, however, on a macro level.

On a granular level, it is imperative to understand how macro plans would affect the state of the built environment. Following the Singapore example, this is covered under the Fourth Green Building Masterplan, released by the Building and Construction Authority (BCA) earlier this year, of which the key aims are to deliver “80-80-80 in 2030”. One of the aggressive targets is to achieve 80 per cent of new developments to be Super Low Energy Buildings (SLEB) by 2030. SLEB is one of the creations by BCA, representing a leap from the other rating levels under Green Mark for energy efficiency—from 20 or 30 per cent energy savings to a minimum of 40 per cent. This transitory stage allows developments to have a smoother transition to attain the state of zero (energy and/or carbon).

In Asia, the WGBC is assisting the development of zero with a Zero Readiness Framework<sup>2</sup> and hopefully, this will provide a direction for developments to embark on. This framework can be used across all countries, and its inception focuses on the Asia Pacific region, providing a guidance for strategy adoption to the path of zero as it enables the countries to reflect on where they are. Zero energy and zero carbon buildings have existed for many years. One such example is the Zero Carbon Building built in Hong Kong in 2012<sup>3</sup>.

**1 to 4** The National University of Singapore's School of Design and Environment fourth extension building (SD4) has a porous form with more than 50 per cent of the total area naturally ventilated; the architecture is punctuated by an alternation of terraces, landscaped balconies and informal spaces





# BRAZIL'S FAVELAS: A MODEL FOR GREEN ARCHITECTURE AND SUSTAINABLE LIVING

by Dr Ann Deslandes

Image courtesy of Catalytic Communities

Along with samba, beaches and the famous Cristo Redentor statue, the city of Rio de Janeiro in Brazil is home to some 1.5 million people who live in favelas<sup>1</sup>—densely populated settlements whose closest cousins in Southeast Asia might be referred to as shanty towns or slums. Favelas are largely a legacy of the end of slavery in Brazil, which occurred in 1881, as well as widespread rural unemployment. Thousands of Afro-Brazilians, along with farmworkers migrating to the city, created the informal settlements in order to be housed and to be close to job opportunities in the formal city<sup>2</sup>.

Thanks to film and TV productions like *City of God* (2002) and *Elite Squad* (2007), in the international imagination, favelas are commonly linked to poverty and crime, especially drug trafficking. But, as local NGO Catalytic Communities/*Comunidades Catalisadoras* (CatComm) has been demonstrating for over 20 years now, favelas have a dazzling array of other features, not least a uniquely sustainable urban housing model that has become world-famous in urban geography and architecture. In 2016, a LEED evaluation found that Asa Branca, a favela in the western zone of Rio de Janeiro, was more sustainable than the Olympic Village built for the Games being held in the city that year<sup>3</sup>. Favelas, as the evaluation found, have many distinctive features that map onto the goals of Green architecture to reduce carbon emissions and increase sustainable living. For CatComm, these are: low-rise, high-density development; pedestrian orientation; high use of bicycles and public transportation; mixed use (homes above shops); residences close to workplaces; organic

architecture (the architecture evolves according to need); new urbanism; collective action; intricate solidarity networks, and vibrant cultural production<sup>4</sup>.

Through CatComm, favelas have found international recognition through the development and promotion of Community Land Trusts as a model of sustainable housing in any city, as well as dialogue with models and programmes in Mozambique and Malaysia. They are also starting to appear alongside advocacy groups and innovative ideas from 'slum-dweller' communities in the Philippines and Thailand.

However, at the same time, favela residents do indeed bear the brunt of Rio's social inequality—facing historical structural disadvantages associated with race and class that show up in poor health and education outcomes. This has been painfully exposed further in the COVID-19 pandemic, within which Brazil has been one of the hardest hit in the world<sup>5</sup>.

As CatComm executive director Theresa Williamson told *FuturArc*, the consequences of the pandemic have been dire for favelas. "There have been disproportionate deaths in favelas because of the lack of public investment in these communities," she said.

The "policy of neglect" that has characterised government approaches to favelas for more than a century "continued and became even more apparent" with the onset of the pandemic, Williamson explained.



As always, “residents had to act for themselves”, particularly to ensure income and food supply. “People don’t have the option of staying home. They have to work. But even work is scarce. So, people are hungry. Brazil has gone back onto the world hunger map and favelas are an important part of Brazil’s vulnerability or where people live when they’re vulnerable. So, favelas are really the core of that statistic.”<sup>6</sup>

Broadly speaking, “the pandemic has left communities that were already very vulnerable essentially with no protection.” Indeed, the non-state protection that favela communities can usually rely on—gathering in the community; the support of and co-operation with family members and neighbours—also became a source of risk under the pandemic. Still, “most of the needs that people had were met through these solidarity networks,” especially as outsiders were not able to enter.

“[We] literally had favelas doing everything from their own information campaigns around COVID-19”, using community radio, WhatsApp and signage in the street, said Williamson.

Most impressively, many favelas collected their own data on COVID-19 cases. The government was not collecting this data, so it provided crucial information. Eventually, CatComm helped to build the COVID-19 in Favelas Unified Dashboard, through which 24 favela-based collectives and allies collected data on its cases and deaths in 123 favelas<sup>7</sup>.

Washington Fajardo, who is Planning Commissioner with the Rio de Janeiro city government, said favelas have responded to the pandemic in a way that governments should learn from. “Governments in the 21<sup>st</sup> century are still representative of an old hierarchical structure,” he noted. “That doesn’t make sense any more, especially in a world with digital communication and network connections.” The collaborative, which often comprises more horizontal forms of leadership and community action in favelas, “could really inspire governments to find better solutions.”

CatComm also supports the Sustainable Favelas Network, a network of hundreds of favela-based sustainability and resilience building projects, leaders and organisers. “It’s based on the idea or understanding that favelas are not inherently a problem; they’re inherently a solution to the lack of housing and shelter,” explained Williamson.

“And so, people develop homes, which is a basic need along with water and air. And they do that when there’s neither public nor private opportunity for housing. So, they’re meeting a real basic need at the bottom of Maslow’s hierarchy of needs.

“And from there, they’re addressing all sorts of other challenges. They’re trying to get access to



1 to 3 Prototypes for a green roof 4 Carlos Augusto Graciano, an architect from the Vidigal favela with the first ‘green roof’ created for a local bus terminal 5 & 6 Asa Branca was found to be more sustainable than the Olympic village built for the Games in Rio de Janeiro in 2016



## SPECIAL FOCUS

### Global

## Reimagining the Future at International Built Environment Week 2021

As we enter the final quarter of 2021, in the current process of overcoming health and other issues caused by the ongoing pandemic, global efforts that accelerate medical and information technology systems have been tremendous. Many industries, including the built environment sector, have now begun to cautiously look ahead to the future by examining best practices for resiliency—leaving behind what no longer serves the greater good, strengthening those that bring maximum impact and testing new innovations.

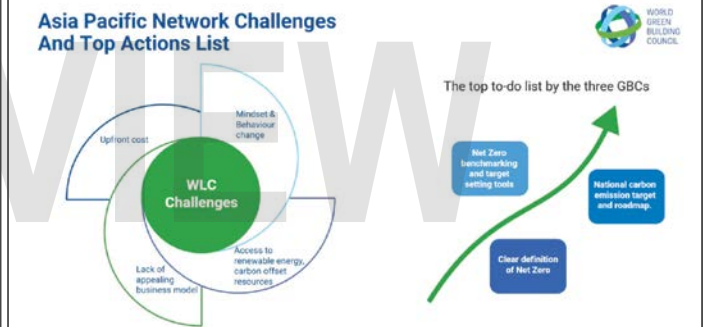
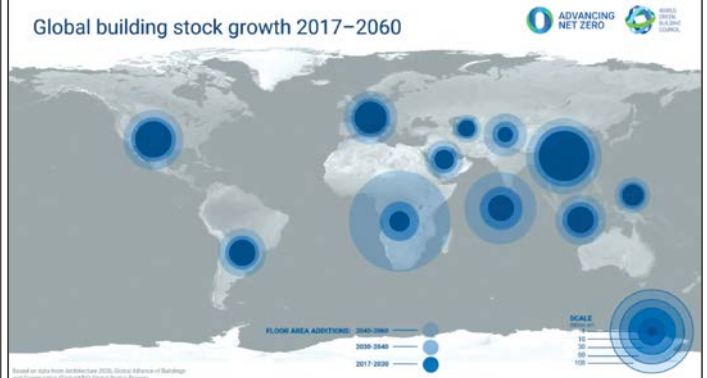
It is in this spirit that the International Built Environment Week (IBEW) 2021 asked us: How can we use imagination to achieve sustainability targets? And what do we need to challenge in our current situation in order to get there? The event that ran from 7–10 September 2021 saw a fully virtual audience from all over the world attend the seminars and trade show (held in partnership with Reed Exhibitions Singapore), which was supported by 12 trade associations and chambers. The speakers at the conference drew our attention to the climate impacts in their respective fields, outlined their sustainability strategies and posited their ideas for the way forward.

### Singapore to raise the bar

As the host country, the event was opened by Desmond Lee, Singapore's Minister for National Development, who announced a relaunched Green Mark standard that seeks to broaden the measurement of sustainability for Singapore's buildings. This will further account for and reduce embodied carbon in a building's whole life cycle; consider a building's maintainability; use smart technologies; and aim for an outcome of climate resilience by encouraging strategies such as food waste processing to generate biofuel. He stated that 80 per cent of new developments in Singapore will aim to be Super Low Energy (SLE) buildings by 2030. In addition, the scheme will incorporate the World Green Building Council (WorldGBC) principles of the Health and Wellbeing Framework that are aligned with United Nations (UN) Sustainable Development Goals (SDGs).

Thus, the Singapore Government is taking the role of creating lead demand for SLE adoption in the private sector, mainstreaming decarbonisation and encouraging a paradigm shift for built environment stakeholders, as Tang Kok Thye, President of Singapore Green Building Council (SGBC), underlined: "We cannot build in the same way."

Meeting these emissions targets in the long term would need a shift in process, as explained by Vinod Kesava, CEO of Climate Resources



Victoria Kate Burrows highlighted how developing countries will experience a higher building growth rate

Exchange. Kesava advocated an integrative design process: a holistic approach that starts at project origination; considers resource efficiency and acquisition of carbon assets; and reduces absolute emissions. He highlighted the importance of political will to achieve interconnectedness across the industry, because: "You cannot design out complexities, but look at systems in a multidisciplinary way and how they affect each other."

### The global acceleration

Placing these goals in a global context, Victoria Kate Burrows, Director of Advancing Net Zero, WorldGBC, summarised the whole carbon vision for the planet: a total decarbonisation of operational and embodied carbon. "Between now and 2060, the 'building stock' will grow in different rates throughout the world, especially in developing countries. So, we need to make sure that we build better." She highlighted especially that in Asia Pacific, the challenges include the high upfront cost; achieving a mindset and behavioural change; a lack of appealing business models; as well as limited access to renewable energy and carbon offset technologies. As such, the top to-do list for the region is to clearly define net zero; benchmark and adopt target-setting tools; and set national carbon emission targets and roadmaps. These are part of WorldGBC's Net Zero Readiness Framework.

From a business perspective, Frederick Teo, Managing Director of Sustainable Solutions at Temasek, talked about the promising acceleration in the will and means to take action against climate change. This is





Frederick Teo

Neil Yong Hsin Yi

because more stakeholders are realising that, “there is an acceleration of the consequences of not doing anything.” The extreme economic impact caused by severe floods, droughts, heat waves and prolonged winters have disproportionately affected poorer countries. Here is where the role of catalytic capital becomes important: to provide investments that accept a higher risk in order to bridge gaps and bring new opportunities. This process can start by identifying and supporting solutions that work in fields such as energy, clean transport and decarbonised materials.

### Love as main driver

As we attempt to imagine a way forward that is better for our planet, we also need to be fully grounded in the day-to-day experiences and recognise its urgencies. “Welcome to the coldest summer of the rest of your life,” said Jason McLennan, founder of International Living Future Institute, highlighting how climate change already affects us. This moment is a point of urgent action to think—and feel—differently about our motivation for building.

We need to foster a sense of optimism and love, “to create a built environment that is truly good instead of merely ‘less bad’”. We can turn everything around; we already have the know-how and the technology. Now building Green is much more affordable, and the economics are really strong.” McLennan shared pilot projects from around the world that have achieved this, such as the Bullitt Center, the Climate Pledge Arena Seattle and the Zero Energy Life Sciences Building.

Every decision that we make, not just in the building sector but also in our daily lives, can either participate in regenerative or degenerative feedback loops. If we are motivated by love for the planet, ecology and people, we can make decisions that empower regeneration. Society needs to simultaneously solve other issues: “We can’t have zero carbon in a toxic world, we need to have a socially just world.” This is the motivation that drives the Living Building Challenge certification: a metaphor for life, which identifies and encourages buildings to harvest its own energy and water, be pollution-free, has an integrated system and is moreover beautiful. For more, read The FuturArc Interview with McLennan in this issue.

### ‘Half Earth’

The cornerstone discussion on the theme of imagination was most thoroughly explored in a session titled Blue Sky ITM (Industry Transformation Map), where Wong Mun Summ, Co-founding Director of WOHA, began by presenting a vision for Singapore in the year 2200 titled 50/50 City. This is a concept that builds from Edward O. Wilson’s book *Half Earth*, where he proposes committing half of the planet’s surface to nature in order to save the immensity of life forms that composes it.

In the video, Singapore is imagined as a liveable, sustainable and resilient city, a place where humans and nature coexist in regenerative, circular systems. Natural constraints are not seen as problems to be removed, but instead would serve as a catalyst for developing innovative solutions. The city is rewilded: “We care for nature by not taming it and giving it room to breathe.”

This vision of future living also imagined typologies to be adaptable and future-proof: activities are no longer conducted in dedicated spaces such as classrooms, offices and residences, but are multifunctional, actively catering and adapting to our lives instead of the other way around. Necessities such as food production are decentralised and integrated with energy resources and waste processing, delivered on demand and not in excess. Services such as transportation are fully public and take place either underground or above ground, while the ground will be an area reserved for biodiversity. This presented a city that is super high-density but sustainable, delightful, efficient and inclusive to future generations.

### A framework to reach the dream

Wong and WOHA felt that to reach the ‘blue sky’ targets, it is necessary to create a positive vision that optimistically sees humans as part of nature. He also proposed to reframe the way we see value: our thinking is too related to finances, and we should move away from wealth creation towards having an outlook to achieve holistic wellness for all life forms. Dr Nirmal Kishnani, Associate Professor at National University of Singapore, appreciated WOHA’s video for debunking the idea that we need to give up something in the name of sustainability, or that building Green is about sacrifice. Instead, sustainability gives us something better in exchange—a win-win future that is generous and compassionate, not just for humans but to all life forms.



The 50/50 City places services and logistics in a subterranean layer, while nature is free to grow on the ground level with functions on the upper floors



Wong Mun Summ

Dr Nirmal Kishnani



## FuturArc Readership Survey 2021

Over the past one year plus, it has been a tremendous trial to keep our content relevant and to be able to get FuturArc out to our readers when almost every aspect of the editorial process has been disrupted one way or another—whether in terms of contact with our contributors or sources; delay at the printing press; and distribution or mailing services being at the mercy of lockdowns. Nonetheless, we are still standing amidst it all, in no small part due to our readers and partners, during which we also had the chance to explore and improve on other means to get FuturArc content out while still producing the print issue four times a year.

A big thank you to all readers who completed our 2021 online survey conducted in October. This has given us an invaluable chance to keep updated with our readers' preferences and suggestions, especially since we have all gone through a challenging health crisis last year—it is timely to get back in touch with our readership. Here we present a snapshot of the survey results.

### 1. Readership Profile

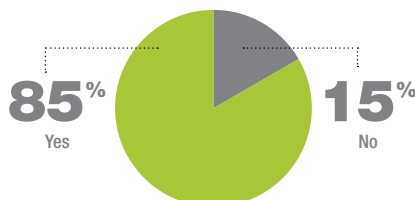
FuturArc's readership profile comprises predominantly of people within the architectural practice, followed by students or those in academia and developers. This reflects the kind of content we provide, which focuses on sustainable and Green practices with an educative approach.

#### What is your line of business?

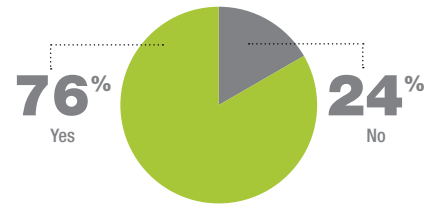


In addition, most FuturArc readers are decision makers of their project specification teams; 85 per cent are in a position to influence product evaluation, selection and specification. Additionally, three out of four readers say that their decision-making is influenced by the advertising and content that they read in the magazine.

#### Do you influence product evaluation, selection and specification for projects?

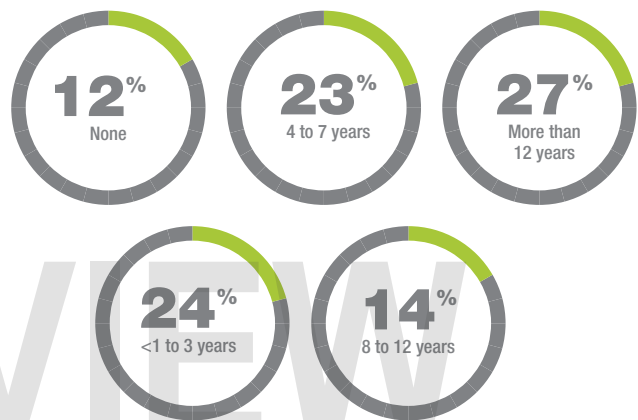


#### Is your product specification or decision-making process influenced by advertising or content you see in FuturArc?



FuturArc is read by people with a range of experiences in the industry, from students to young professionals and those with over a decade of practice—who make up the primary category at 27 per cent.

#### How many years of experience have you had in the construction industry?



Over half of FuturArc readers regularly attend industry events, at least once a month. Our readers' enthusiasm for these presentations and opportunities to network is reflected in the consistent attendance of our regional and country-specific events, such as FuturArc Exchange & Exhibitions (FEX).

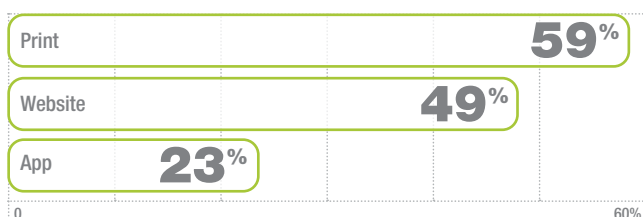
#### How often do you attend architectural/construction events, be it online or offline?



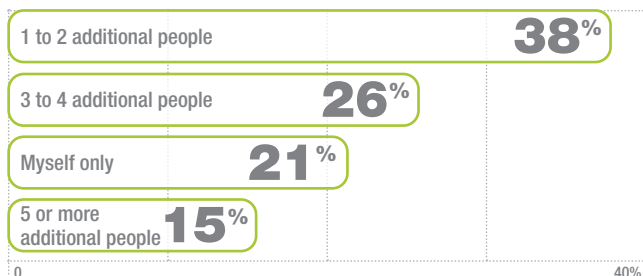
### 2. Readership Behaviour

Most FuturArc readers prefer to access our content through the print magazine (60 per cent), with the website rising in popularity over the years. Four out of five copies of *FuturArc* magazine get read by more than the 'principal reader', which is an advantage of print media's tangibility. Almost half of the readers visit the site on a monthly basis, prompted by email alerts from FuturArc newsletter to not miss out on newest updates.

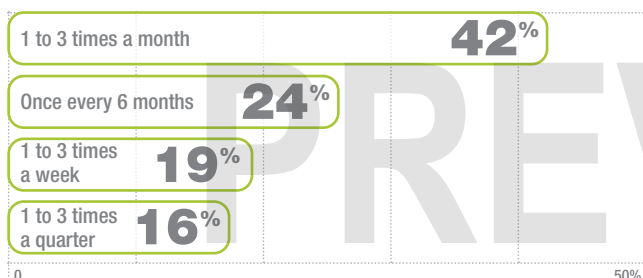
### How do you prefer to read *FuturArc* magazine?



### Including yourself, how many people typically read or look through your print copy of *FuturArc*?



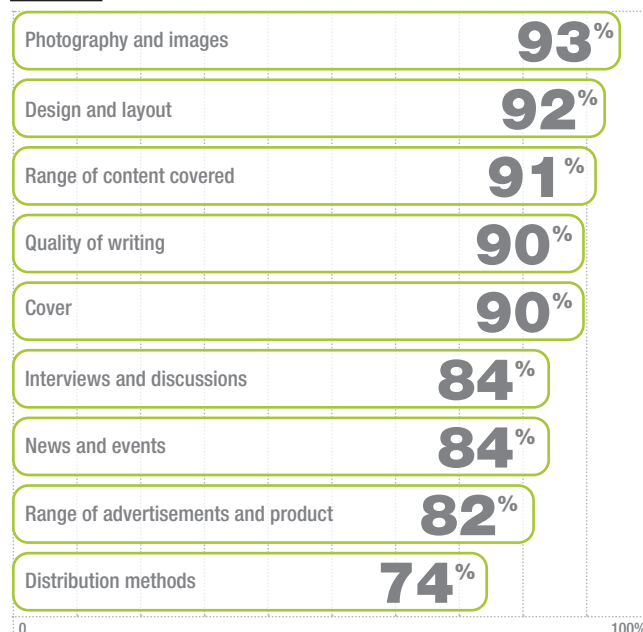
### How frequently do you visit FuturArc website?



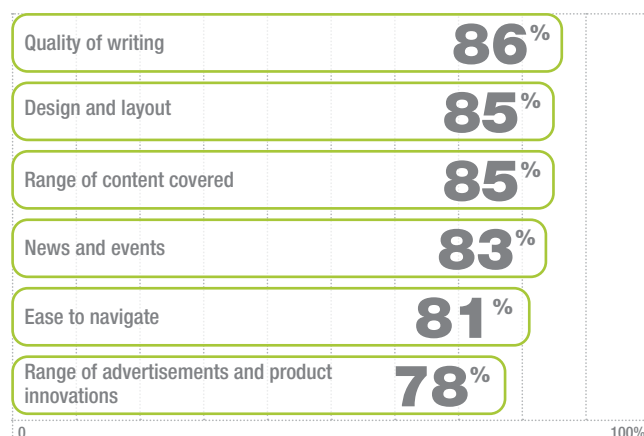
### 3. Readership Satisfaction

We asked readers to rate how satisfied they have been with various aspects of our content, on a scale of 1 to 5 stars. Here are the total percentages for ratings of 4 stars and above:

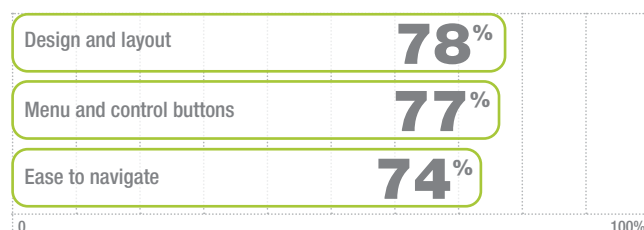
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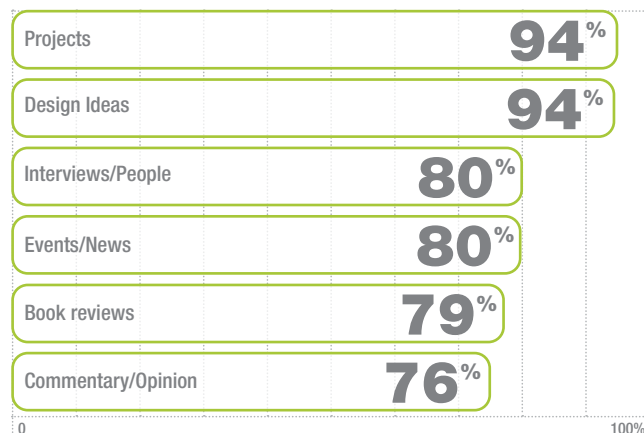


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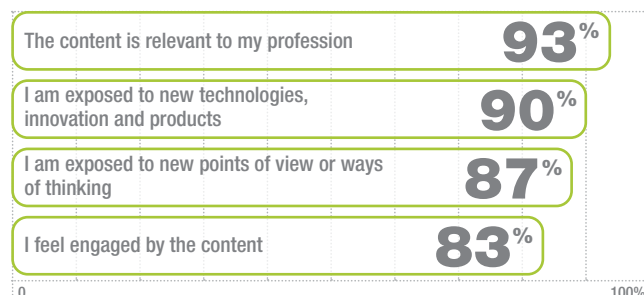


### 4. Content Engagement

FuturArc content reflects accurately its readers' interests. As it is all about the future of Green architecture, hence, design ideas and projects play a dominant role in the editorial table of content. Commensurately, the magazine's content that covers 'Design Ideas', 'Projects' (both at 94 per cent) and 'Interviews/People' alongside 'Events/News' (both at 80 per cent) are read the most.



Nine in 10 readers say the content is relevant to their profession, and that they are exposed to new technologies, innovation and products.





## Circular design to cool every corner



Samsung 360 Cassette offers a brand new way of staying comfortably cool in every corner of the room. Its innovative circular design not only means it fits well everywhere and adds a sophisticated look to different sites, but also provides omni-directional wind that allows a consistent, even temperature in the entire room. In addition, the technology behind the bladeless design helps to reduce the loss of discharged air, thus quicker in cooling the environment. Together with its PM1.0 Filter, users can enjoy both comfortable cooling and clean air at the same time.

### Bladeless design with the Booster Fan

Samsung 360 Cassette has a distinctive bladeless design featuring the Booster Fan technology. It creates a low-pressure area around the circular outlet, allowing cool air to be expelled at much lower angles, which spreads further before descending gently like a natural wind. This technology keeps users comfortably cool without feeling the direct cold draft on their skin. In

addition, more air can be expelled thanks to the bladeless design, allowing for quicker cooling.

### Omni-directional wind

With a circular, bladeless air outlet, Samsung 360 Cassette blows cool air into every corner of the room, maintaining an even and comfortable temperature in the spaces.

### Boost your hygiene with PM1.0

Samsung 360 Cassette offers an optional Purifying Panel<sup>1</sup> that keeps indoor air fresh and clean. Consisting of two types of filter—a Pre-Filter and a PM1.0 Filter—the former blocks large particles while the latter effectively captures ultra-fine dust and sterilises up to 99 per cent of bacteria<sup>2</sup>. The effectiveness of PM1.0 filter in sterilising bacteria has also been verified by Intertek<sup>3</sup>, and it comes with an Air Purity Level Display that indicates the pollution level.

### Convenience at your fingertips with SmartThings

Users can remotely control the 360 Cassette anytime and anywhere using the Smart Wi-Fi function on their smartphones<sup>4</sup>. They can perform various actions like turning on or off the air-conditioner, selecting the operating modes, adjusting the temperature and scheduling the operation of the air-conditioner, among others.

<sup>1</sup> This function is optional. PM1.0 filter, the number, and the shape of filters may vary by model and by country.

<sup>2</sup> Intertek report shows the PM1.0 filter sterilizes tested microorganisms - Escherichia coli: above 99 per cent, Staphylococcus aureus: above 99 per cent.

<sup>3</sup> Tested on the AM\*\*\*KN4D\*\*\* model under specific testing conditions and may vary depending on specific factors and use. Based on Intertek test report (No.: RT20E-S0010-R).

<sup>4</sup> Available on Android and iOS devices. An optional Wi-Fi Kit (MIM-H03N or higher) with a Wi-Fi connection and a Samsung account are required.

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## 1Q FUTURARC 2022 Housing Asia

In the next issue we will examine housing—which is a basic right for all—from the various dimensions of sustainability: environmental, economic and sociocultural. From single houses and high-rise developments to public and private residences, we are looking for projects that demonstrate a whole life cycle understanding of their impact, alongside a sensitivity for the human aspect of dwelling.

Send us your projects with a brief profile and photos to [dmundakir@futurarc.com](mailto:dmundakir@futurarc.com) by January 2022.

Please note that the selection of projects is subject to editorial discretion.

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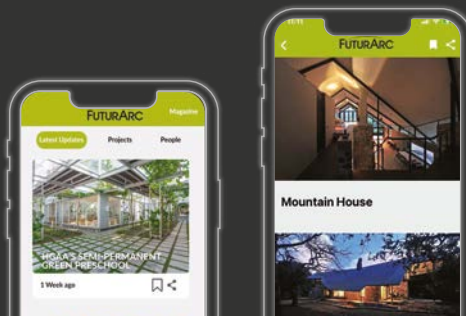
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