



HIKING SUSTAINABILITY VIA WALKABLE CITIES



APAC Research
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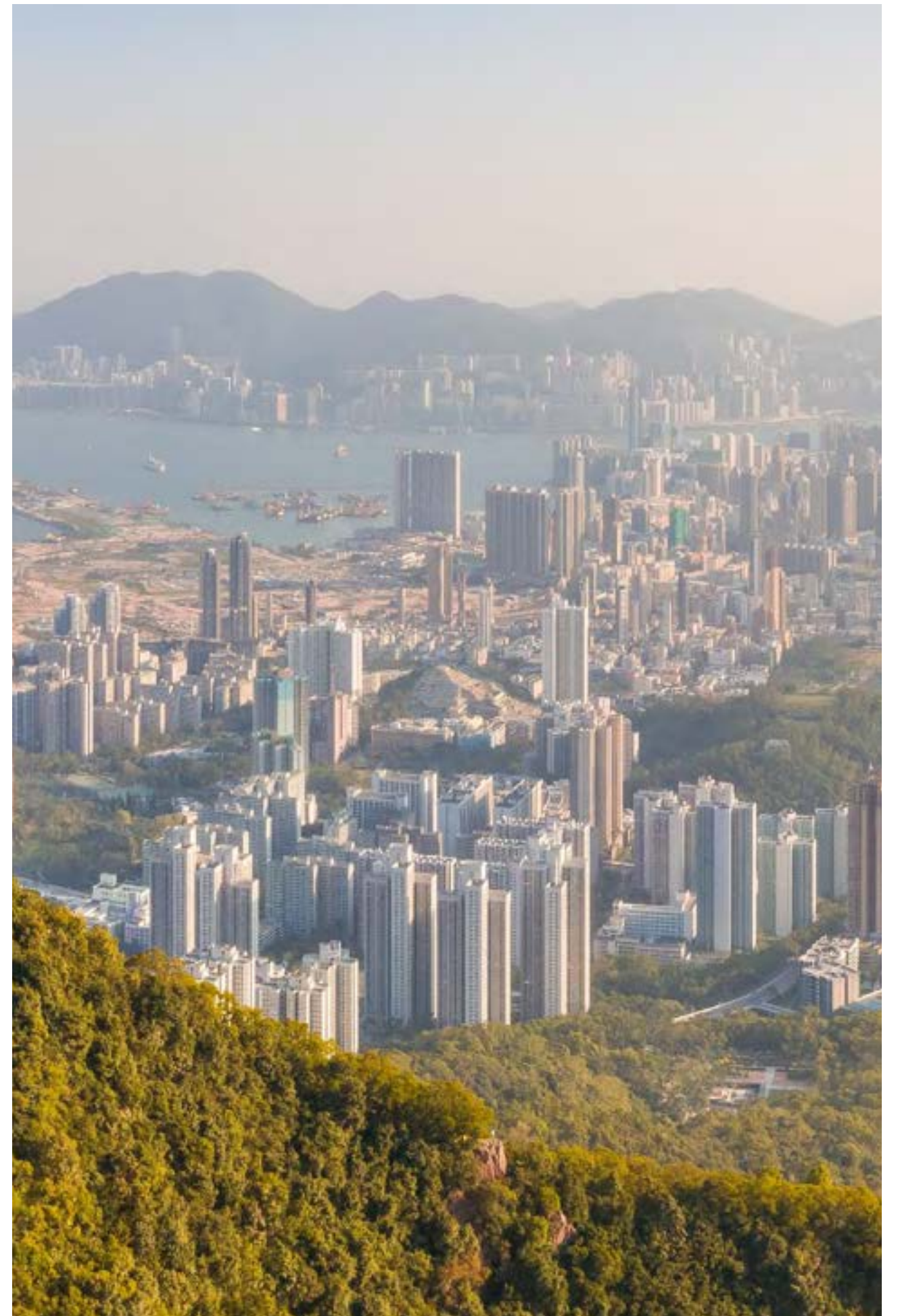
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01



Introduction



The urban area and its associated design, planning, development and operation, plays and will continue to play a big role in bringing transformational change to address the changing way we live as well as our changing climate.

To bring about beneficial living and urban environmental sustainability change that results in sustainable urban environs, in this report we will look at the following topics:



A CHANGE FOR THE GOOD



THE 15-MINUTE CITY



URBAN PUBLIC SPACE



TRANSIT-ORIENTED DEVELOPMENT (TOD)



ECOLOGICAL SOLUTIONS



NET-ZERO BUILDINGS

02

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A Change
For The Good



The COVID-19 pandemic has prompted a questioning of our traditional ways of living, with many employees globally now working remotely and spending a greater period of their time living within a few kilometres of their homes.

At the same time, with our climate today transforming and changing at a rapid pace, sustainability is at the top of the agenda in terms of decisions made, how we act and what we do on a daily basis.

According to the **Intergovernmental Panel on Climate Change 6th Assessment Synthesis** report by the UN Framework Convention on Climate Change, global temperatures are expected to increase by 2.7°C by 2050, which is higher than the 1.5°C rise pledged in the Paris Agreement.

Such a temperature rise will have significant implications for urban communities around the world, with infrastructure, property and citizen's livelihoods being affected the most by continuing severe climate events in the future.

The quest for economic stability, liveability, and greenhouse gas (GHG) emissions reduction will be a testing endeavour, but because more than 60% of global greenhouse gases originate from cities, by doing more and bringing more change for the good, urban communities themselves will benefit.

To bring about beneficial urban environmental sustainability change that results in sustainable urban environs, one concept cities in the Asia Pacific region can look to adopt and implement is the '15-minute city' concept. Let's now examine what this concept means.



03

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The 15-Minute City



The walkable 15-minute city is a fresh concept that promotes and hikes both urban environmental sustainability and urban liveability.

In a nutshell, the concept requires cities to be planned in such a way whereby citizens of all ages, backgrounds, and abilities in all parts of the urban area are able to gain access to their daily needs, such as lodging, employment, sustenance, health, education, culture and leisure and all be accessible within the distance of a 15-minute walk or bicycle ride (Figure 1).

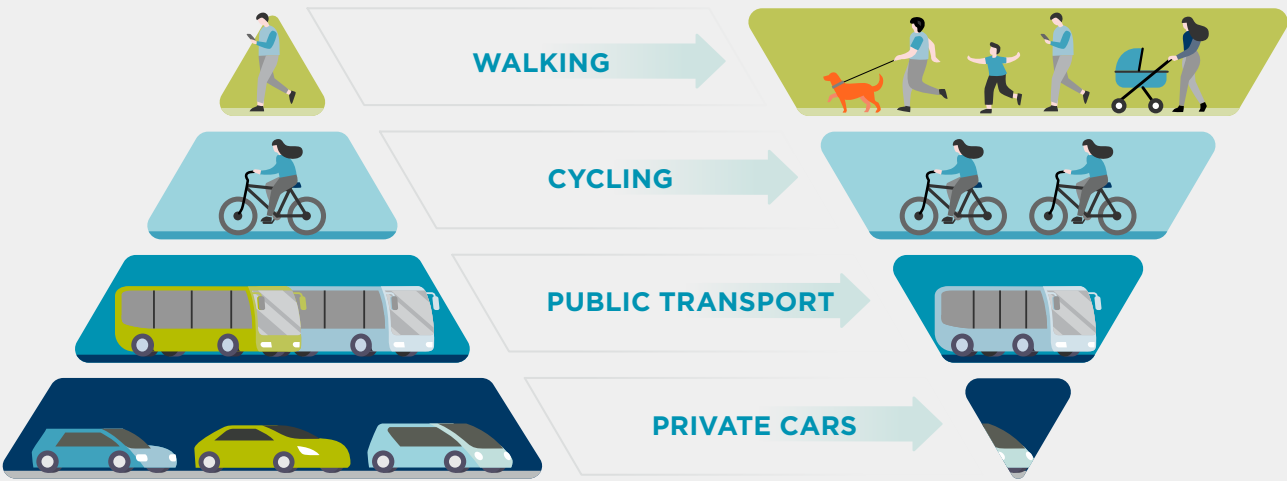
FIGURE 1: URBAN VICINITY ELEMENTS CONSIDERED WITHIN THE 15-MINUTE CITY MODEL



Source: Bee Smart City, Cushman & Wakefield Research

The concept champions a city which has a plethora of walkable self-sustaining liveable neighbourhoods and fewer private automobiles (Figure 2).

FIGURE 2: THE 15-MINUTE CITY: A SHIFT AWAY FROM PRIVATE AUTOMOBILES TO WALKABLE URBAN ENVIRONS



Source: Architonic, Cushman & Wakefield Research

By advocating this concept, concept-implementing cities are able to **lessen their use of fossil fuels, augment the quality of life for citizens and continue to push the city’s vitality, creativity, diversity and inventiveness for the common good.**

THE ADVANTAGES OF THE 15-MINUTE CITY ARE MANY AND INCLUDE:



ENHANCED SUSTAINABILITY

Includes reduced GHG emissions from private automobiles, more green areas, a lessened urban heat-island effect, reduced occurrence of flooding, and greater biodiversity.



AUGMENTED LIVEABILITY AND HEALTH

Includes cleaner air, greater access to green and beautiful areas, strengthened intra-community relationships, less travel time, and more leisure time for physical and mental recreational pursuits.



A MORE EVEN-HANDED AND ALL-ENCOMPASSING CITY

Includes more public spaces, more neighbourhood businesses, more socialising, interaction and decision making at the neighbourhood level and a stronger sense of community.



A SHOT IN THE ARM FOR THE LOCAL ECONOMY

Means more customers for local shops, more local job opportunities, and more productive use of local commercial buildings and space (Figure 3).

FIGURE 3: UPSHOTS FOR A TYPICAL 15-MINUTE CITY

OUTCOMES OF A 20 MINUTE NEIGHBOURHOOD

01

Climate Action

02

Improved Liveability and Quality of Life



03

Improved Local Economy

04

Decreased Health Inequalities

Source: Ramboll UK, Cushman & Wakefield Research

THE 15-MINUTE CITY - IN A LITTLE MORE DETAIL

AS DEFINED BY CARLOS MORENO, THE COLOMBIAN-FRENCH URBANIST, THE 15-MINUTE CITY IS FOUNDED ON:

06

SIX FUNDAMENTAL HUMAN REQUISITES



03

THREE KEY AIMS OR FEATURES



04

FOUR LEADING PRINCIPLES





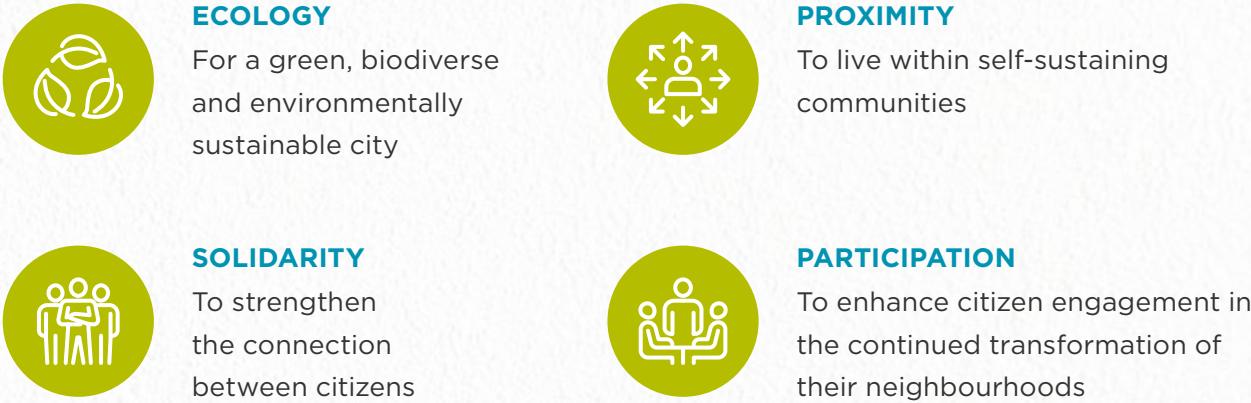
THE SIX REQUISITES ARE:



THE THREE AIMS OR FEATURES ARE:

- 01** The pace and tempo of the city should follow human beings, not automobiles
- 02** Each space should serve a variety of purposes
- 03** Neighbourhoods should be designed for citizens to live in, to work in, and to thrive in

THE FOUR LEADING PRINCIPLES ARE:



When examining cities both globally and in the Asia Pacific region, the development path has been different for each individual city. Some cities, for example, were first developed before the advent of the automobile, while others were developed after the automobile was well and truly established as a major form of transportation.

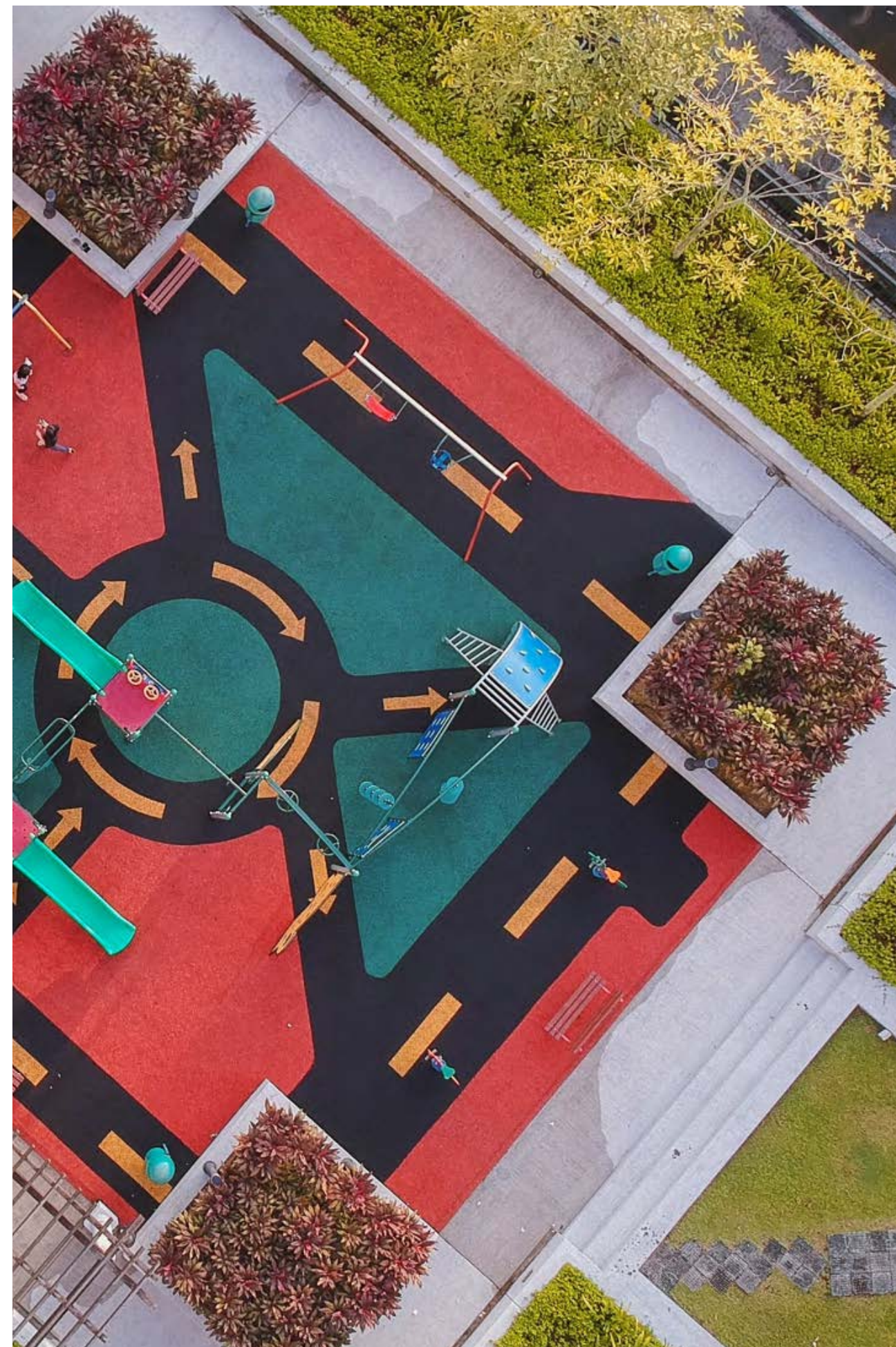
When considering those cities first developed before the invention of the automobile, many of these particular cities today have an underlying 15-minute city configuration already built in. Many cities in Europe are such examples. In a survey run by Arup in 2019, where respondents were asked how long it took them to walk or bicycle to fundamental amenities, such as parks and shops, it was found that it took Milan and Madrid citizens on average 13.1 minutes; Paris citizens on average 15.5 minutes; Berlin citizens on average 16 minutes, and London citizens, a slightly longer average journey of 23.5 minutes.

For citizens of cities in Asia Pacific, living in cities/parts of a city which were first developed before the advent of the automobile and those cities/parts of a city which were developed after the advent of the automobile, there would also be varying average journey-time answers if the same question were posed to them. In the next section, let's look at urban Asia Pacific and examine the topic of urban environmental sustainability for sustainable urban environs not only from a 15-minute city perspective but also from other perspectives when considering other factors and approaches adopted to reach the same goals.



01

Urban Public Space

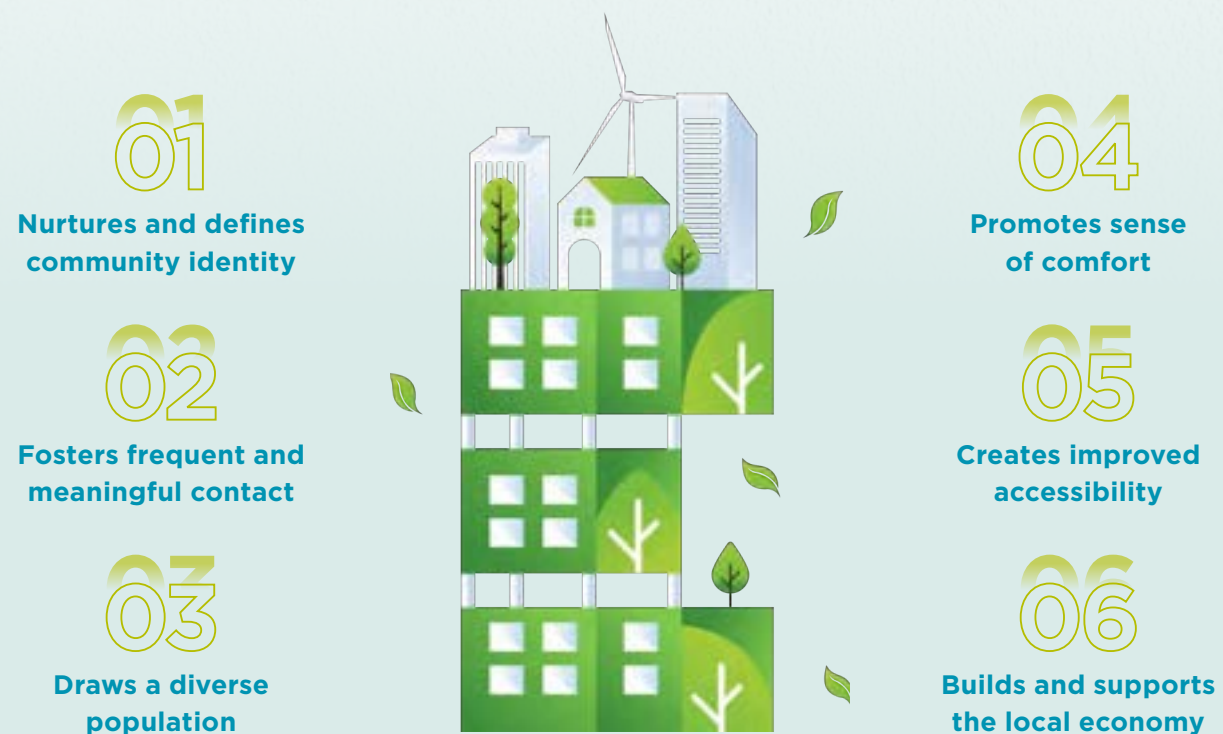




When specifically considering urban public space in the Asia Pacific region in relation to sustainable 15-minute city urban environs, the aim for local governments is to generate all-inclusive citizen-friendly settings that are also economically workable.

It's not just a matter of simply planning, designing and incorporating a public space which is accessible by a short walk; ideally it must be a placemaking approach that produces community ownership of public spaces from space planning to space operation and management. Ultimately, the approach adopted should produce a public space which a 15-minute walkable community and visitors alike wish to be active in and wish to spend time in again and again (Figure 4).

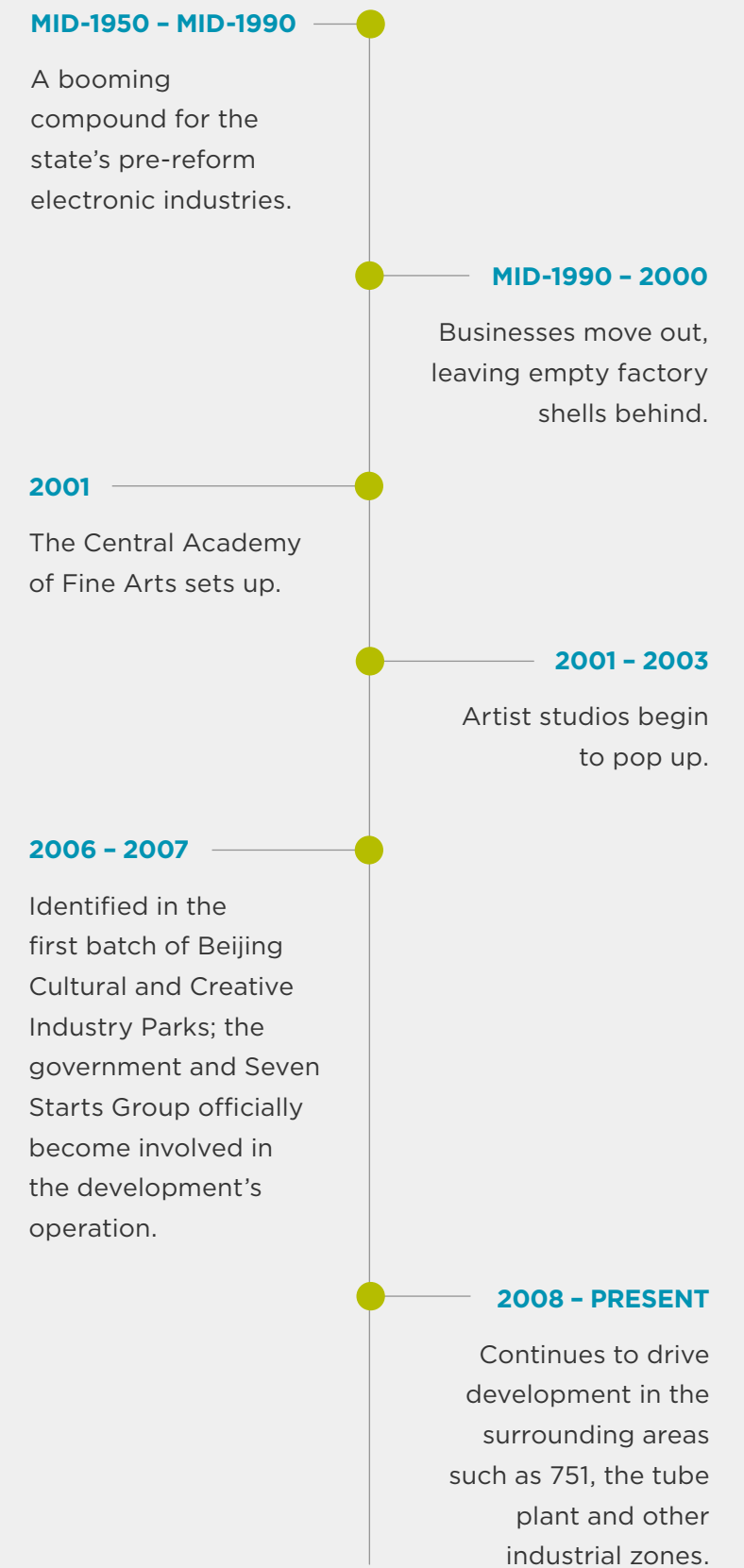
FIGURE 4: THE BENEFITS OF GOOD PLACEMAKING



Source: Project for Public Spaces, Cushman & Wakefield Research

Ahead, a 'place-led' method will inspire a sense of purpose in urban areas in the Asia Pacific region, and the planning and management of urban public spaces will be executed by an all-encompassing assemblage of people that fosters social capital, shared values, a sense of ownership and a more enriched experience of the place and the city as a whole by urban citizens within their walkable and sustainable urban environs. A good example of a location that is very much place-led is the 798 Art Zone in Beijing (Figure 5 and Case study 1 in the Appendix).

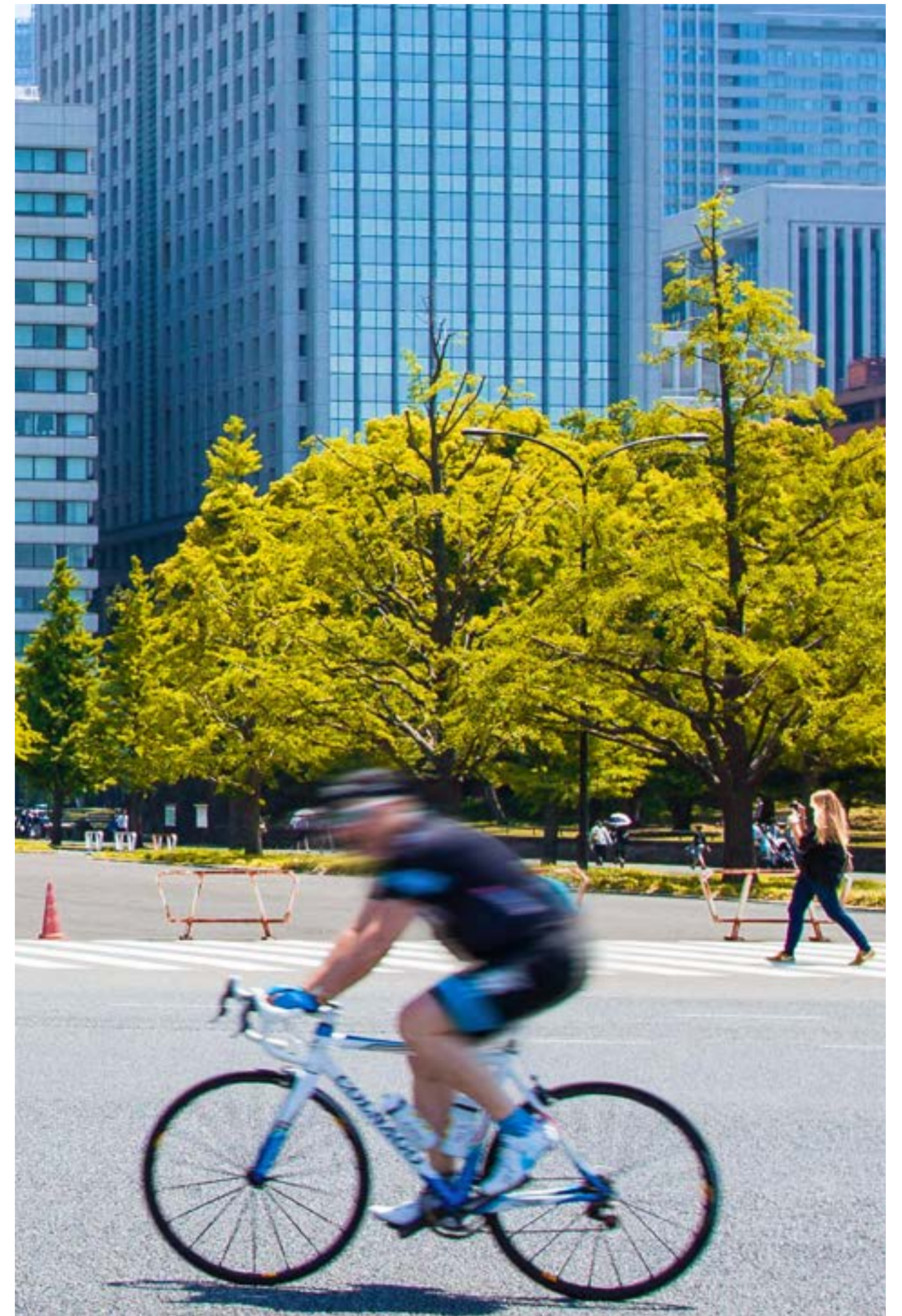
FIGURE 5: 798 ART ZONE, BEIJING TIMELINE



Source: Cushman & Wakefield Research

05

Transit-Oriented
Development (TOD)





To interconnect sustainable individual 15-minute urban environs within a city, it is essential for cities in general, including those in Asia Pacific, to have a well-planned and efficient overall public transport system that is easily accessible, is convenient and cuts both journey times and air pollution levels for all their citizens.

One resolution that a number of cities in Asia Pacific have implemented or are looking to implement is transit-oriented development (TOD).

TOD essentially maximises the amount of residential, business and leisure space within walking distance of public transport. It also encourages an interdependent bond between compact urban development and public transportation. Moreover, TOD aspires to increase public transport usage by lessening the use of automobiles, which in turn augments environmental sustainability within the urban area (Figure 6).

FIGURE 6: THE ADVANTAGES OF TRANSIT-ORIENTED DEVELOPMENT (TOD)



MOBILITY BENEFITS

- Increased access to jobs and amenities city wide
- Improved access to a low cost transport solution (public transit/walkable urban space/bicycle infrastructure)
- Reduced automobile dependency



SOCIAL BENEFITS

- Revitalised neighborhoods
- Promotes social equity through creation of mixed-income housing near transit
- Increased accessibility for the less mobile
- Improved health and increased physical activity through the creation of walkable neighbourhoods



ENVIRONMENTAL BENEFITS

- Lowered air pollution and GHG emissions by reducing automobile-dependency and urban sprawl
- Reduced energy consumption
- Conservation of green and natural spaces



ECONOMIC BENEFITS

- Increased agglomeration and access to employees
- Encourages economic resilience through diversity
- Energizes local economy
- Increases property values along corridors to help fund needed infrastructure
- Reduces infrastructure costs
- Reduces transport cost

Source: WRI, Cushman & Wakefield Research

06



Ecological Solutions



As already noted, one of the 15-minute city concept's 'six requisites' is focused on 'supplying'; in other words a need and a drive for self-sustaining sustenance or food production in the form of urban agriculture.

One urban planning model which can certainly assist in this, and which is being adopted and implemented in Asia Pacific is ecological-oriented development (EOD). Following on from this, according to MIT and its 10 directional principles for EOD, one important principle is the maximisation of on-site food production, and the Asia Pacific region is also seriously looking to this when it comes to 15-minute city planning and urban agriculture (Figure 7).



FIGURE 7: 10 DIRECTIONAL PRINCIPLES FOR EOD



Source: Massachusetts Institute of Technology (MIT), Sekisui House, Cushman & Wakefield Research



For example, China's Research Centre for Protected Agriculture & Environmental Engineering (CPAE), part of the Chinese Academy of Agricultural Sciences, in Beijing is one such organisation that recognises the importance of farming in the urban area. Today, the Centre has no fewer than 40 research institutes which are studying all aspects of indoor and vertical urban farming, greenhouse engineering, plant factories, hydroponics and energy efficiency.

The Centre recognises that given the climate changeability in China, vertical farms in the region need to be proficient in producing food during the winter when temperatures can get as low as -55 degrees centigrade in the northernmost provinces.

Subsequently, with developed technology, such as hydroponics, LED lighting, heat pumps and active heat storage, compared to traditional farming, a developed urban farm with natural solar light can improve productivity per unit area by between two and ten times. With artificial light this increases to 40 times and by including vertical farming techniques this can reach a productivity improvement of more than 1,000 times that of a conventional farm.

When properly integrated into a 15-minute city plan, urban agriculture can generate many advantages, including social and cultural benefits, health and wellbeing improvement, a better environment and more enhanced local economic and community development (Figure 7).

FIGURE 7: ADVANTAGES OF URBAN AGRICULTURE



SOCIAL & CULTURAL

- Creates community cohesion
- Provides green space for community member to gather
- Can strengthen social connections and intergenerational relationships
- Cultural expression and maintenance of cultural heritage
- Can help immigrants to develop gain a sense of belonging



HEALTH & WELLBEING

- Increases access to fresh, organic, and culturally appropriate produce
- Increases preferences for and consumption of fruits and vegetables
- Mitigates food insecurity
- Increases food system resilience by maintaining access to food in times of crisis
- Source of physical activity
- Mental health and therapeutic benefits



ENVIRONMENT

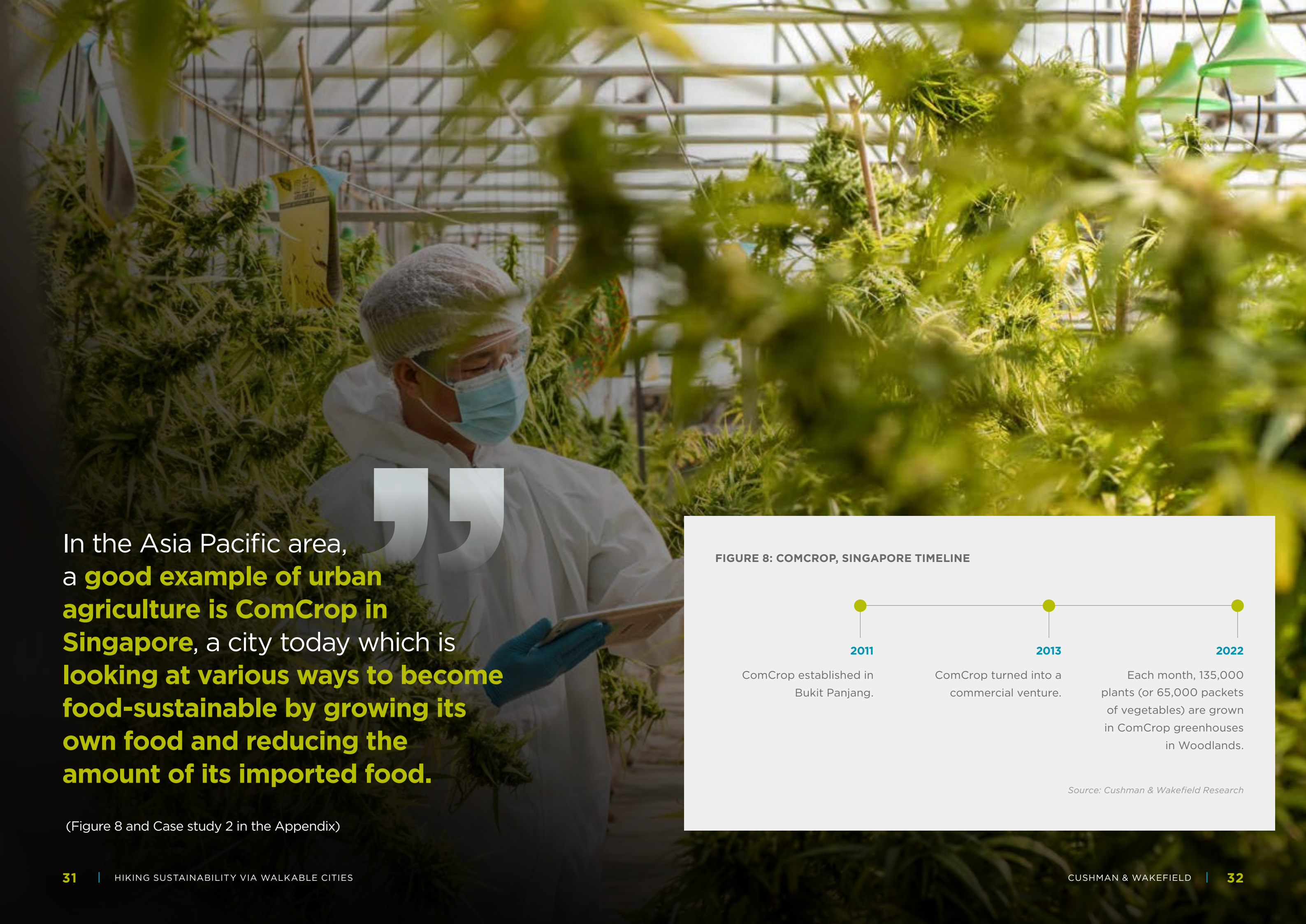
- Increases biodiversity including pollinator habitat
- Reduces energy and resource inputs
- Reduction in greenhouse gas emissions and air pollution
- Carbon sequestration by vegetation and crops
- Temperature regulation in urban areas



ECONOMIC & COMMUNITY DEVELOPMENT

- Creates opportunities for youth education and development
- Increases property values
- Employment training and opportunities
- Entrepreneurial urban agriculture activity can attract capital and create business opportunities
- Creates opportunities to learn about agriculture, nutrition, and sustainability

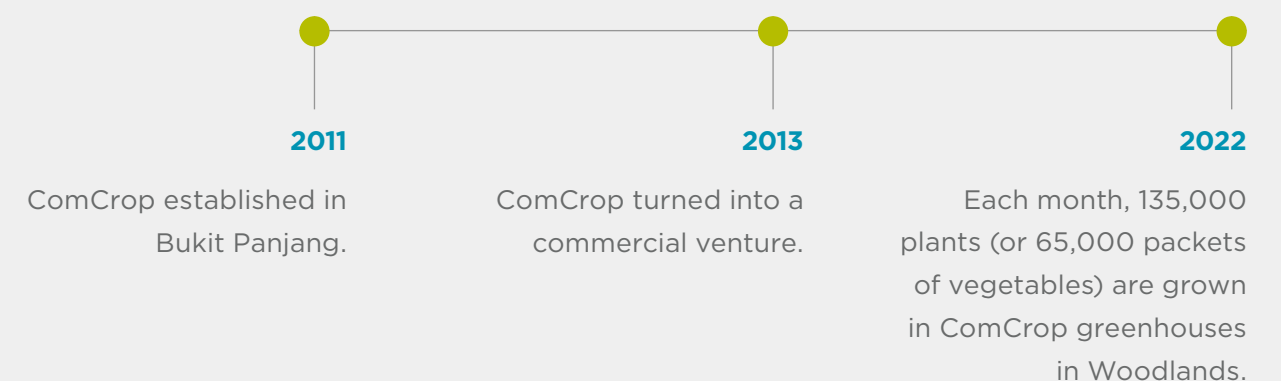
Source: University of Florida, Cushman & Wakefield Research



In the Asia Pacific area, a **good example of urban agriculture is ComCrop in Singapore**, a city today which is **looking at various ways to become food-sustainable by growing its own food and reducing the amount of its imported food.**

(Figure 8 and Case study 2 in the Appendix)

FIGURE 8: COMCROP, SINGAPORE TIMELINE

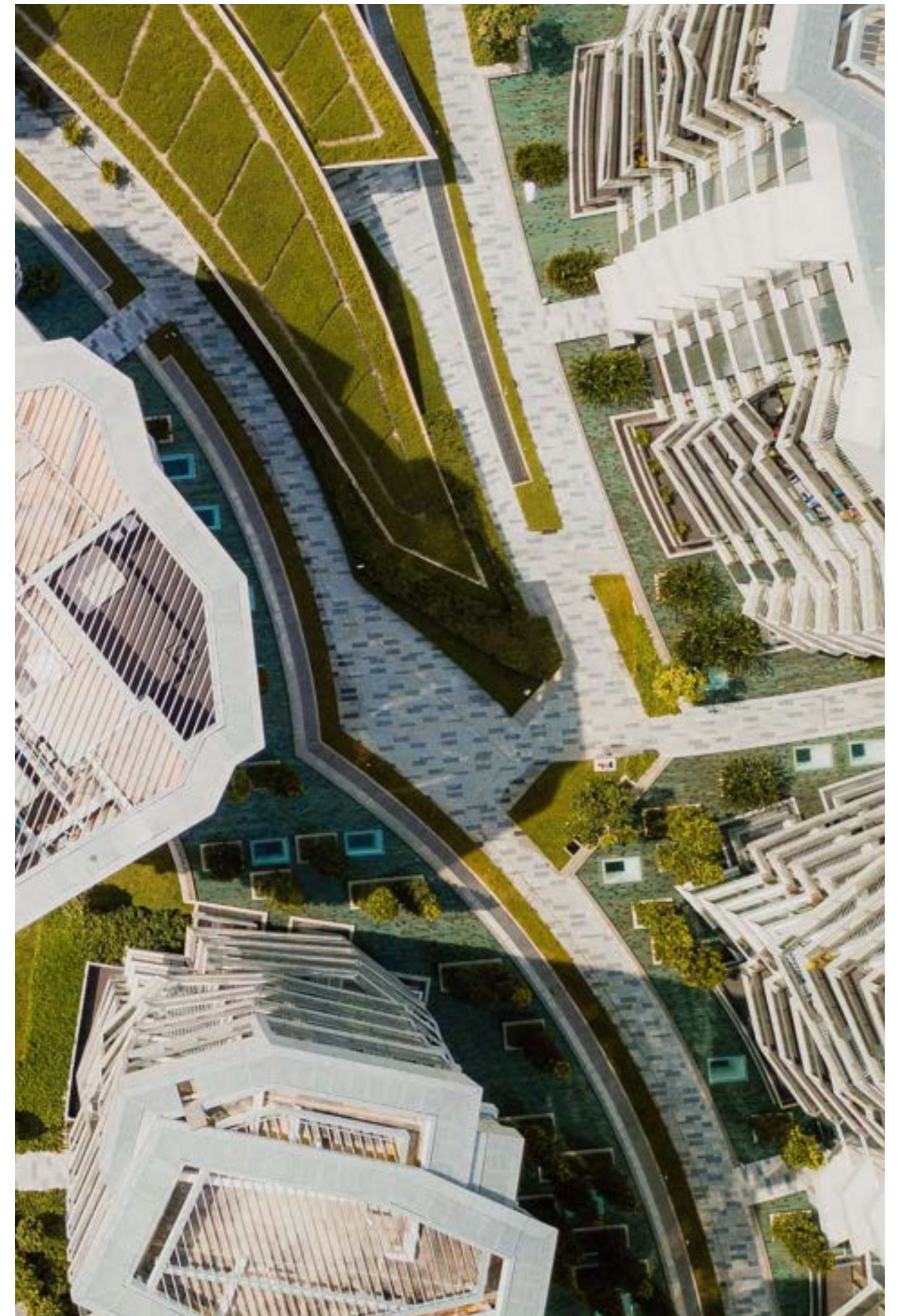


Source: Cushman & Wakefield Research

07

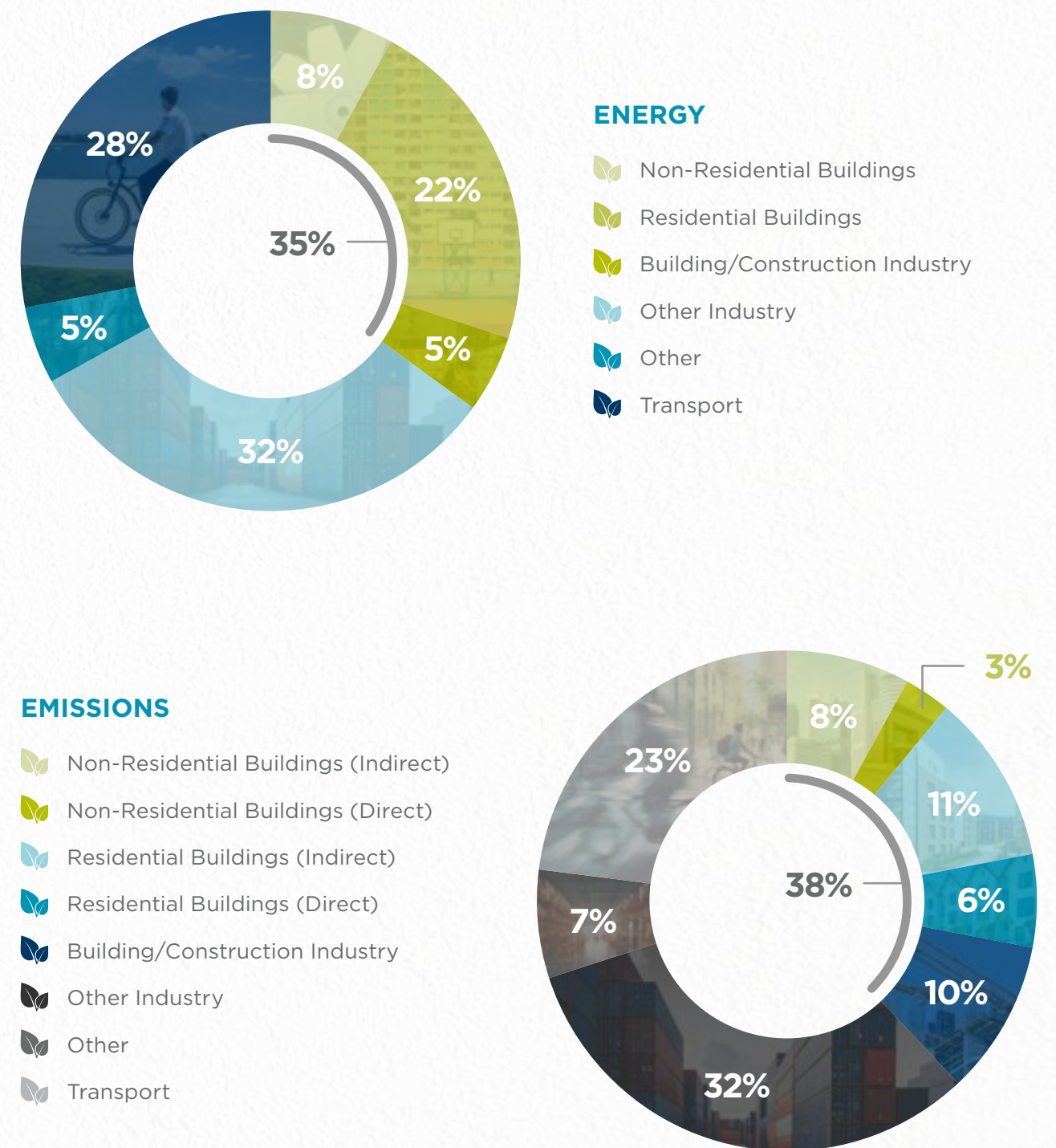


Net-Zero Buildings



According to **'The 2020 Global Status Report for Buildings and Construction'** report by the United Nations, while global building energy consumption in 2019 remained steady on an annual basis, energy-related carbon dioxide emissions increased to 9.95 Gt in 2019. When adding emissions from the building construction industry on top of operational emissions, the building sector was responsible for 38% of total global energy-related carbon dioxide emissions (Figure 9).

FIGURE 9: GLOBAL INDUSTRY ENERGY CONSUMPTION AND ENERGY-RELATED CARBON DIOXIDE EMISSIONS (2019)

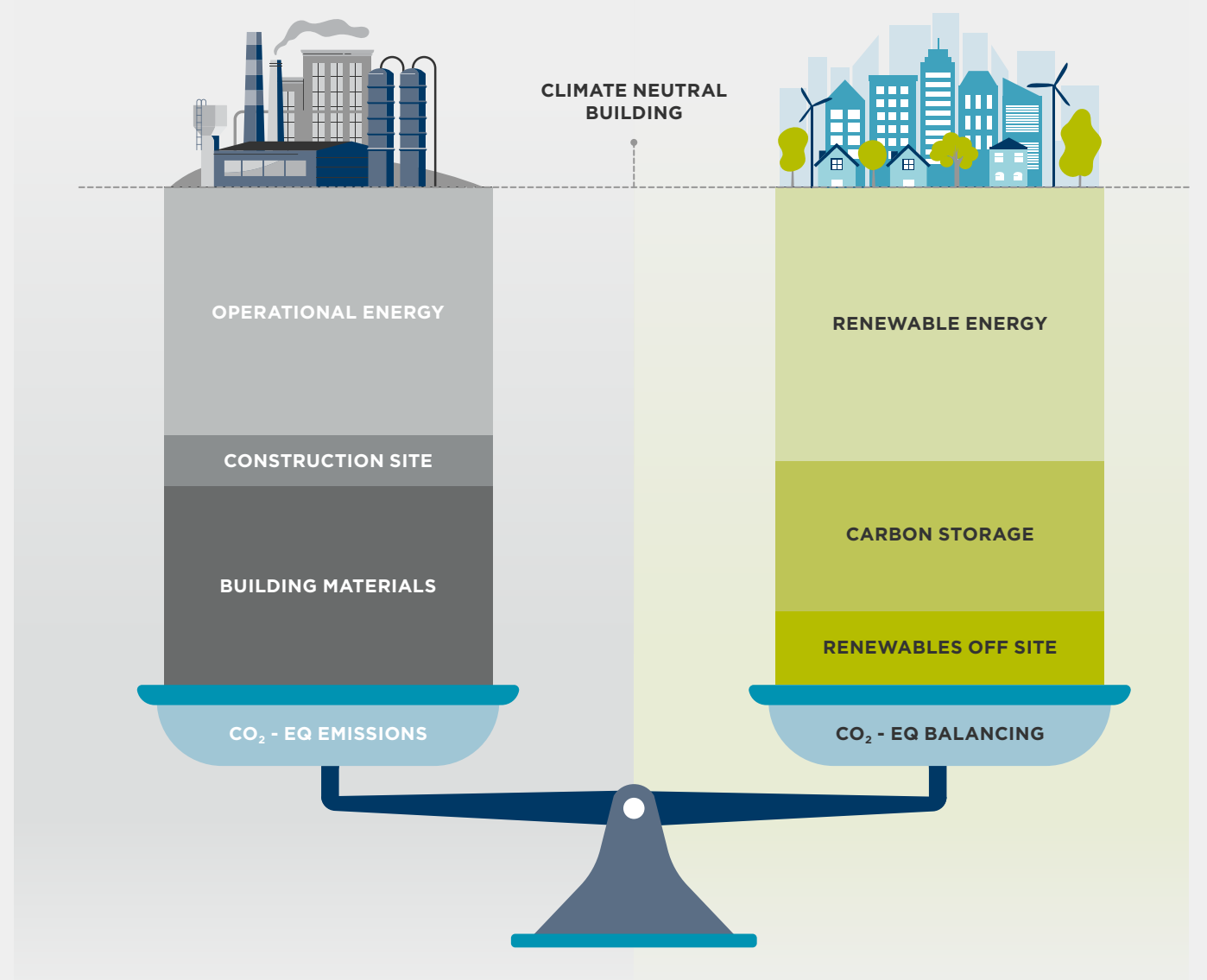


Source: IEA, UN, Cushman & Wakefield Research

In Asia Pacific, the urban built environment is no different. It is one of the principal sources of GHG emissions in the region.

In order to reduce the amount of energy used by, and carbon emissions from, buildings in the Asia Pacific region, including buildings in walkable 15-minute city precincts, it will be important to take the next step and go carbon neutral, which requires a 'carbon balance' to be established (Figure 10).

FIGURE 10: FINDING A BALANCE FOR A CLIMATE NEUTRAL BUILDING



Source: White Arkitekter, Cushman & Wakefield Research



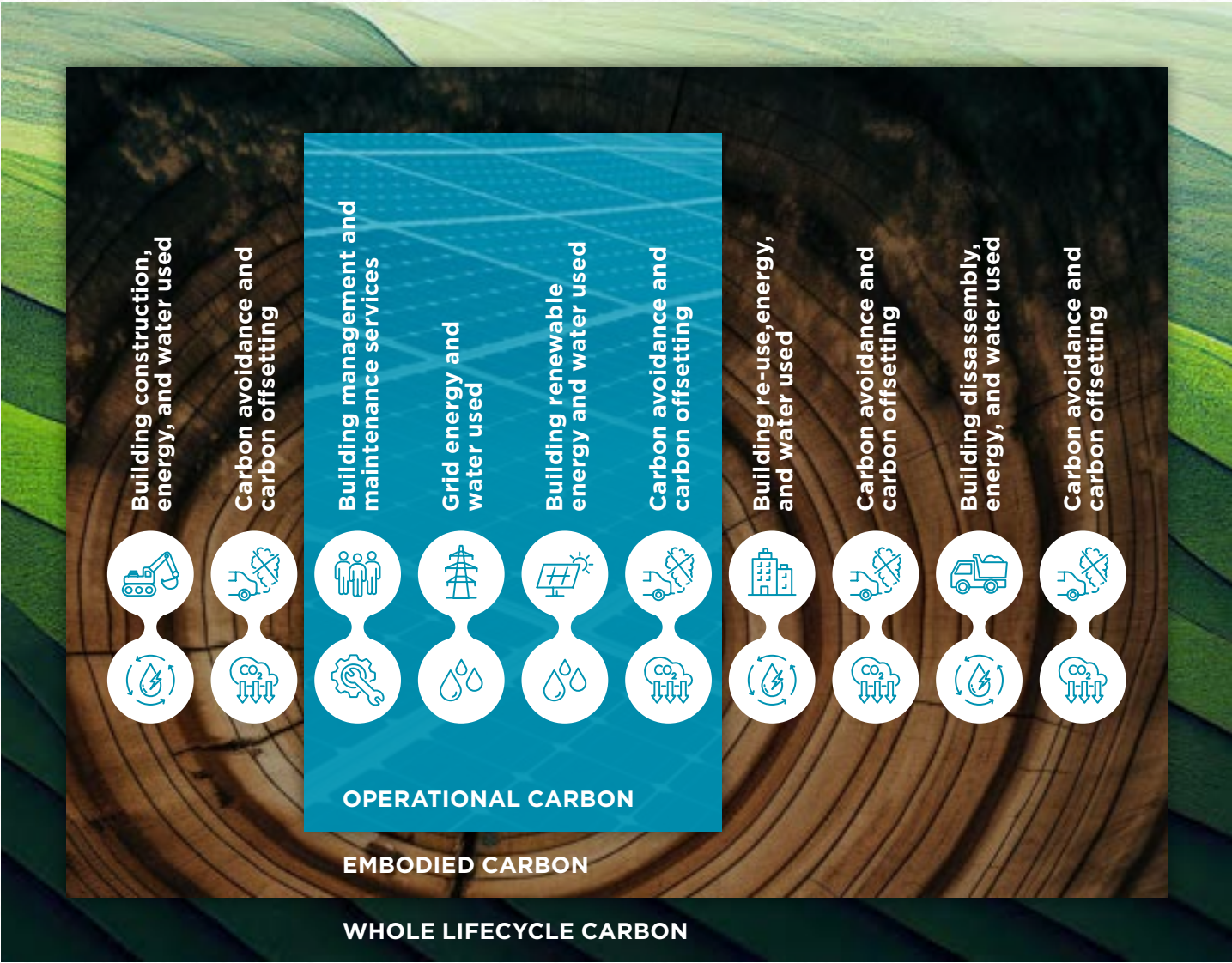
Looking at whole building lifecycle carbon, the amount of energy and water used during a building’s lifespan needs to be considered. When ruminating on this, many aspects about a building project have to be assessed, including:

- The proposed use of the building
- The proposed design of the building
- The proposed building systems, plant and machinery used in the building
- The extraction of the building materials
- The processing and manufacturing of the building materials
- The transportation of the new building materials
- The construction of the building
- The operation, management and maintenance of the building
- The re-use/disassembly of the building (if known)
- The transportation of the old building materials
- The recycling of the old building materials
- The landsite where the rest of the old building materials will be deposited

Before building, operating and re-using/dismantling a building, it will be important for building investors, developers, owners and users in Asia Pacific, to execute on the right whole-building lifecycle approach and to do this, the following elements will also need to be taken into consideration:



FIGURE 11: WHOLE BUILDING LIFECYCLE CARBON



Source: Cushman & Wakefield Research

Finally, when considering optimal carbon neutrality solutions for buildings in Asia Pacific, there needs to be collective and early involvement of all professionals within a design team. In addition, the 15-minute city concept is not just about how we move around but also about how we live on a daily basis, such as how we utilise buildings. Multiple-use buildings which can also accommodate a mix of living and commercial space are ideal in terms of urban environmental sustainability for walkable sustainable urban environs in Asia Pacific.

08



Key Takeaways





To hike sustainability and bring about beneficial urban environmental sustainability change that results in walkable sustainable urban environs, one concept cities in Asia Pacific can look to adopt and implement is the '15-minute city' concept.



When specifically considering urban public space in the Asia Pacific region in relation to sustainable 15-minute city urban environs, the aim for local governments is to generate all-inclusive citizen-friendly settings that are also economically workable.



The 15-minute city concept also places much emphasis on the need for greater food production via urban agriculture.



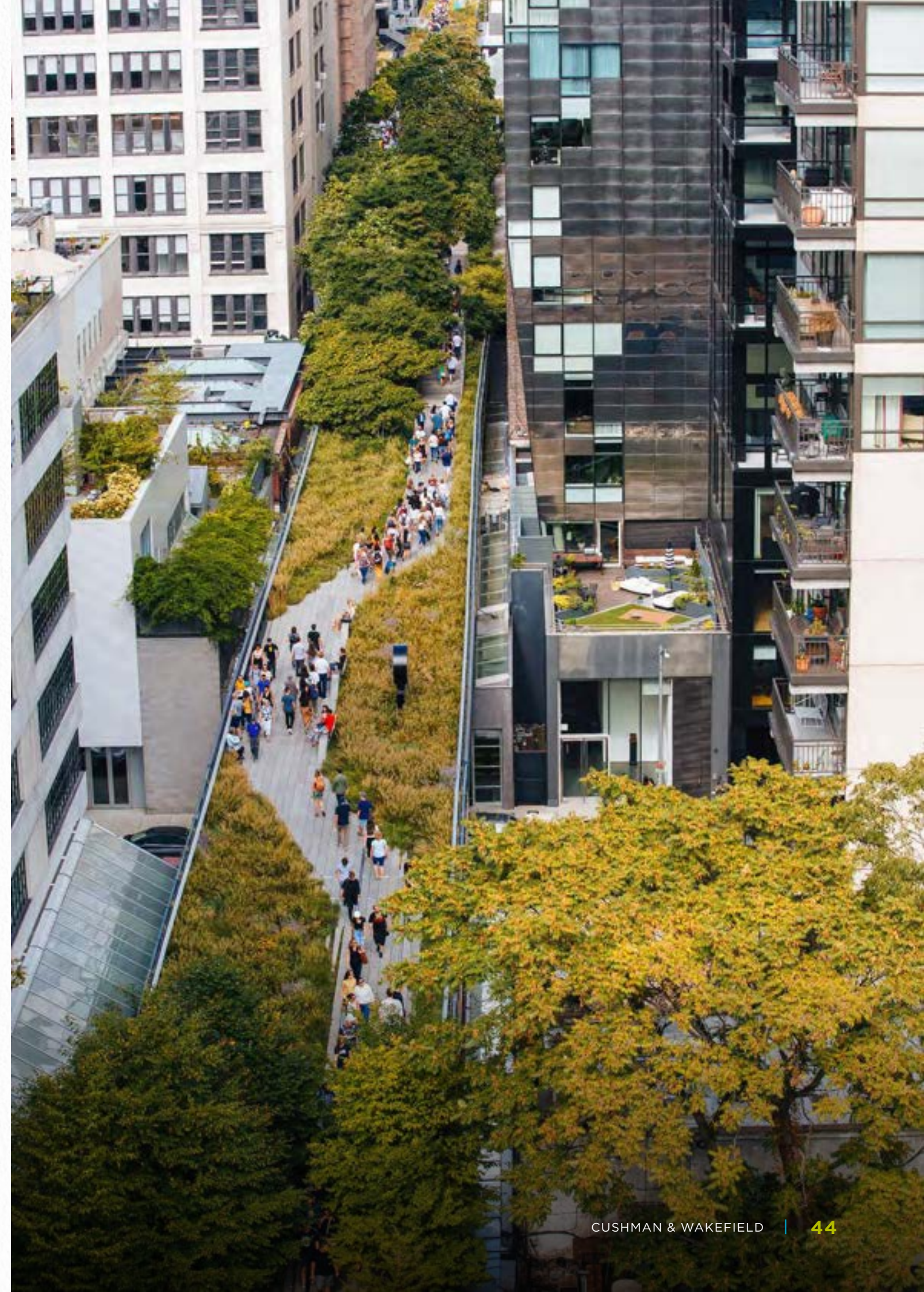
The 15-minute city is a fresh concept that promotes both urban environmental sustainability and urban liveability.



To interconnect sustainable 15-minute urban environs, it is essential for cities in general, including those in Asia Pacific, to have a well-planned and efficient overall public transport system that is easily accessible, is convenient and cuts both journey times and air pollution levels for all their citizens.



Finally, in order to reduce the amount of energy used by, and carbon emissions from, buildings in the Asia Pacific region, including buildings in walkable 15-minute city precincts, it will additionally be important to take the next step and go carbon neutral, which requires a 'carbon balance' to be established.



09

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Appendix



CASE STUDY 1

798 ART ZONE, BEIJING
FORMER MILITARY FACTORY CONVERTED INTO A THRIVING ARTISTIC COMMUNITY
2001 – PRESENT

SUMMARY:

Rebirth of a 640,000 sq m space from a former military factory to a thriving new community complete with art galleries, museums, publishing firms, design companies, high-end tailor shops, cafes and upscale restaurants.

OVERVIEW:

- The complex on which Beijing 798 Art Zone was built was a military factory since the 1950s. In the mid-1990s, the factory was decommissioned and converted into a thriving artistic community.
- In the early 2000s, a number of artists and institutions began to move to the area thanks to a conducive artistic environment, affordable rentals and ample flexible workshop space.
- Ullens Centre for Contemporary Art (UCCA) leased 5,000 sq m in the area, whilst the Beijing Tokyo Art Projects (BTAP) acquired 400 sq m and Long March took up 2,500 sq m.

TIMELINE OF MAJOR EVENTS/ MILESTONES REACHED:

- MID-1950 – MID-1990**
A booming compound for the state’s pre-reform electronic industries.
- MID-1990 – 2000**
Businesses move out, leaving empty factory shells behind.
- 2001**
The Central Academy of Fine Arts sets up.
- 2001 – 2003**
Artist studios begin to pop up.
- 2006 – 2007**
Identified in the first batch of Beijing Cultural and Creative Industry Parks; the government and Seven Starts Group officially become involved in the development’s operation.
- 2008 – PRESENT**
Continues to drive development in the surrounding areas such as 751, the tube plant and other industrial zones.

IMPACT:

- Beijing 798 Art Zone has been designated by the Beijing government as a Cultural Tourism and Consumption Zone.
- The area benefits from the attractive combination of a free and creative spirited environment which is emphasised by the nostalgic architectural style of a bygone era.
- This locality became famous within artistic circles across the world, attracting more than 5 million tourists annually.

RESULTS:

- Recognised as “one of the top 22 most famous landmarks throughout the world” by Time magazine in 2003.
- Regeneration of these old, partly abandoned factories has become a good example of highly successful and innovative urban renewal, facilitating the protection and sustainable development of China’s urban industrial landscapes.
- As a result, this culturally enhancing concept has since been replicated in projects across China such as Eastern Suburb Memory in Chengdu.

HOW IT WAS DONE:

- The project was initiated by the spontaneous initiative of Beijing’s artistic community.
- Over time, the government and original factory owner bought in to and supported the concept and drove the redevelopment and operation to make the artists’ creative vision a reality.
- Beijing 798 Art Zone is operated by a coalition of artists, a management committee and the government – all of whom have been critical to success.

KEY TAKEAWAYS:

- Even old industrial areas, when renewed in the right manner can be of immense benefit to the surrounding urban community.

CASE STUDY 2

COMCROP, SINGAPORE
FEEDING THE COMMUNITY
2011 – PRESENT

SUMMARY:

ComCrop is Singapore’s urban farming pioneer. The organisation grows food on rooftops near where communities live. ComCrop reinvigorates marginalised spaces and embraces marginalised workforces to grow and harvest the highest quality pesticide-free produce in the city.

OVERVIEW:

- In an abiding commitment to sustainability and community, ComCrop is blazing a trail for urban agriculture in Singapore.
- First established in 2011, the island’s first-ever commercial rooftop farm relies on advanced hydroponics technology and dedicated members of the community to nurture its bounty of pesticide-free herbs and vegetables.
- ComCrop’s mission is to feed the community.
- ComCrop has three key principles: To use marginalised land to grow food; To employ technology that enables the local community, especially those who are marginalised in employment, and; To do what they do as sustainably as possible.

TIMELINE OF MAJOR EVENTS/ MILESTONES REACHED:

- **2011**
ComCrop established in Bukit Panjang.
- **2013**
ComCrop turned into a commercial venture.
- **2022**
Each month, 135,000 plants (or 65,000 packets of vegetables) are grown in ComCrop greenhouses in Woodlands.

IMPACT:

- ComCrop employs a hybrid model of urban agriculture that balances both cost and efficiency.
- As a hybrid farm, ComCrop has been able to embrace modern indoor farming technology in combination with a cost-effective environment.
- ComCrop can use natural sunlight supplemented with artificial lighting to grow their crops.
- This results in ComCrop’s energy costs being lower than that of a typical indoor farm.

RESULTS:

- Each month, 135,000 plants (or 65,000 packets of vegetables) are grown in ComCrop greenhouses in Woodlands.
- Totally, ComCrop produces a yield of 20 tons of vegetables per month.

HOW IT WAS DONE:

- The 36,000 square feet farm aims to use automated systems to grow pesticide-free greens for the local community.
- The greenhouses are designed to keep pests out and provide the best environment for the vegetables to grow.
- Mini weather stations inside the greenhouses take measurements of the temperature, sunlight and windspeed at any given time.
- These are used to then determine if there is a need to deploy a shade over the greenhouse, or to turn on fans to provide the optimal level of cooling.
- At the Fertigation Room, computers control the levels of fertiliser and water that is being supplied to the gully systems where the plants are growing.
- The vegetables are harvested by hand before being sent to the Packing Room.
- There, they are inspected and packed before being shipped out to local supermarkets.

KEY TAKEAWAYS:

- Besides feeding the heartlands in Singapore, ComCrop’s commitment to growing local also comes in the form of partnering with senior citizens and other members of the community to help grow their crops.
- ComCrop believes sustainable farming isn’t just about processes, but people as well.

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