Tomorrow's City Today

Asia Society

PACIFIC CITIES SUSTAINABILITY INITIATIVE
INSIGHTS FROM THE 2013 ANNUAL FORUM

ULI Urban Land Institute

ASIA SOCIETY is the leading educational organization dedicated to promoting mutual understanding and strengthening partnerships among peoples, leaders, and institutions of Asia and the United States in a global context. Across the fields of arts, business, culture, education, and policy, the Society provides insight, generates ideas, and promotes collaboration to address present challenges and create a shared future. Founded in 1956 by John D. Rockefeller 3rd, Asia Society is a nonpartisan, nonprofit institution with headquarters in New York and centers in Hong Kong, Houston, Los Angeles, Manila, Sydney, Mumbai, San Francisco, Seoul, Shanghai, and Washington, D.C.

THE URBAN LAND INSTITUTE is a global nonprofit education and research institute supported by its members. Its mission is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide. Established in 1936, the Institute has nearly 30,000 members representing all aspects of land use and development disciplines, and has offices around the world including Washington, D.C., London, Hong Kong, and Frankfurt.

THE PACIFIC CITIES SUSTAINABILITY INITIATIVE (PCSI) is a collaborative dialogue which aims to foster long-term sharing of urban sustainability strategies between communities across the Pacific Rim. Launched in 2009 with the support of the USC Marshall School of Business and the UCLA Anderson School of Management, the initiative is a joint program of the Asia Society and the Urban Land Institute with support from leading organizations engaged in solving unprecedented challenges associated with rapid urbanization in Asia and across the Pacific Rim. PCSI convenes select thought leaders from business, government, and academia with the express aim of fostering new alliances, sharing innovative strategies, and showcasing effective practices.

For more information about the Pacific Cities Sustainability Initiative, please visit
ASIASOCIETY.ORG/PCSI and **ULI.ORG/CLUE**

#PCSI and **#greencities**

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CHRISTINE LOH
HONG KONG SPECIAL ADMINISTRATIVE REGION

Foreword

RAPID DEVELOPMENT ALL OVER THE WORLD has resulted in the depletion of natural resources and pressure on the world's ecological system. With a rising global population, there is also growing concern about meeting energy, water, and food needs. Added to this list is climate change as global emissions of greenhouse gases continue to rise. The frequent occurrence of jolts—the "historic" snowstorm in the Northeastern United States in February of this year, the heavy rain and extensive flooding in northern England and Wales last year, and Hurricane Sandy in October 2012—remind us of the magnitude of the challenge. Countries, cities, enterprises, and individuals are all facing the need to develop sustainably.

Hong Kong, like other major cities around the world, suffers from air, water, and noise pollution. Our residents are voracious consumers of resources, and hence we are also producers of waste. Every day, we dump 13,500 tons of waste into our landfills, two-thirds of which is municipal solid waste generated as a result of our high level of commercial and personal consumption of goods. Our tall buildings alongside narrow roads in urban centers create a trapping effect of vehicular emissions, exposing very large numbers of our residents to high pollution every hour of the day.

Making Hong Kong a clean and livable city is one of our key public policy goals. We must reduce local pollution aggressively. We must work hard across government departments and with stakeholders to align public and private sector efforts; and we must work with the community in districts and as a whole to change our behavior so as to lead more environmentally sustainable lives.

Hong Kong Night Market (Maltman23/Flickr)

Tai Long Wan, Sai Kung, Hong Kong (Yauchase/Flickr)

No city can ignore its neighborhood. Hong Kong's immediate neighbors are Guangdong Province and the Special Administrative Region of Macao. We have worked on a regional cooperative vision to create a "Quality Living Area" that is environmentally resilient, economically vibrant, and socially harmonious. Our working plan covers long-term cooperation on the environment and ecology, low-carbon development, cultural and social living, spatial planning, and green transportation systems. Hong Kong's aim is to strengthen regional cooperation so that as we fight to reduce local pollution, we can work alongside our neighbors to improve the region as a whole.

There is another important and exciting task that Hong Kong is embarking on: we have adopted the United Nations Convention on Biological Diversity. To implement it locally, we are working closely with conservation experts and stakeholders to design the Biodiversity Strategy and Action Plan. We will then take the plan to the public and conduct community consultations widely. This process will help the whole community know more about Hong Kong's biodiversity and also deliberate and debate how to deal with the conflicts that can arise between development and conservation. This way, we will co-develop an action plan with the community.

It was my pleasure to participate in the Asia Society and Urban Land Institute's 2013 Pacific Cities Sustainability Initiative Forum. I trust that this report, which highlights some of the outstanding case studies and participants' innovative ideas, reflects the depth and breadth of the issues discussed at the forum. I wish to thank Asia Society and ULI for kick-starting a rich discussion on urban sustainability strategies among various stakeholders across the Pacific Rim.

Christine Loh is Under Secretary for the Environment of the Hong Kong Special Administrative Region.

"It is fitting that the Asia Society, which has a history of addressing the most important issues emerging from the Asia Pacific region, would inaugurate a world class dialogue on the future of sustainable cities. It was an even greater honor to host such an impressive group of global leaders at Asia Society's Hong Kong Centre for the 2013 PCSI Forum. Cities are at the heart of creating more sustainable and livable societies across Asia and the world and PCSI provides an important platform for problem-solving on today's urbanization issues."

RONNIE CHAN, CHAIRMAN, HANG LUNG GROUP LTD.; CO-CHAIR, ASIA SOCIETY

N. BRUCE PICKERING
ASIA SOCIETY

UWE BRANDES
URBAN LAND INSTITUTE

Introduction: Building Asia-Pacific Connections for Urban Sustainability

CITIES AROUND THE WORLD FACE ENORMOUS CHALLENGES as they seek to become more livable and sustainable. Rapid population growth, urban migration, economic globalization, air and water quality, and natural resource scarcity will drive new investments in cities around the Pacific Rim in unprecedented ways. The scale of urban growth across Asia is remarkable, turning its cities into laboratories of innovation and experimentation. By the end of this decade in China alone, 400 cities with 1 million people or more will form the economic backbone of the domestic economy.

The individuals and organizations responsible for creating healthy, livable, and sustainable cities must contend with a multitude of issues, in addition to growing resource scarcity and global climate change. In the face of these obstacles, the public sector cannot achieve success alone. Private businesses, planners, designers, academics, and civic groups all have crucial roles to play. Collaboration between sectors is necessary to catalyze the innovations that will lead to positive environmental, social, and economic outcomes for the cities of the future.

The Pacific Cities Sustainability Initiative (PCSI), a partnership between Asia Society and the Urban Land Institute (ULI), provides a unique platform for trans-Pacific learning and exchange. This dialogue includes not only urban communities but also the planners, policymakers, developers, investors, designers, and researchers who shape the urban landscape. By bringing together leaders from diverse backgrounds, PCSI aims to foster new avenues for long-term collaboration in order to address the unprecedented challenges faced by urban communities across the Pacific Rim.

Asia Society's Hong Kong Center (Asia Society)

In February 2013, the first annual PCSI Forum was convened in Hong Kong. The forum brought together highly engaged leaders from across Asia, Europe, and North America for three days of workshops, presentations, and leadership dialogue. Hong Kong was the ideal setting for the forum: as one of the densest cities in the world, Hong Kong has employed myriad innovative solutions to make it one of the most sustainable and livable cities in Asia.

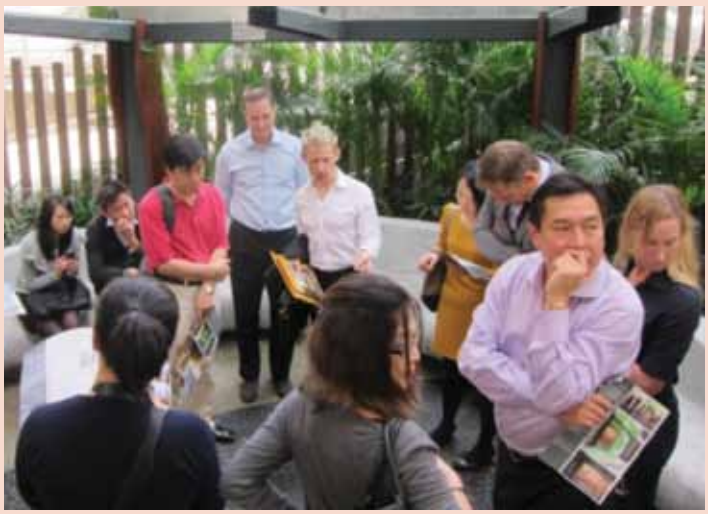
This report, *Tomorrow's City Today,* presents highlights from this year's dialogue. All of the contributing authors participated in the event, and they capture the range of voices that makes PCSI so unique. They represent government (Christine Loh), urban planning (Thai Ker Liu), civil society (Simon Ng, Kevin Mo, Karl Fjellstrom, Xiaomei Duan), the private sector (Sujata Govada), and academia (Richard Drobnick, Robert Spich, In Kuen-Lee, Katie Grace, David Wood). Our hope is that this report is both informative and inspiring to readers.

Asia Society and ULI will continue to expand the global network that makes PCSI so exceptional. We hope that this initiative will inspire leaders across Asia and around the world to foster thriving urban communities across the Pacific Rim for today and for generations to come.

N. Bruce Pickering is Vice President of Global Programs at the Asia Society and is also Executive Director of the Asia Society Northern California Center. Uwe Brandes is Senior Vice President for Initiatives at the Urban Land Institute.

Roger Platt of USGBC, Christine Loh, N. Bruce Pickering, and Asia Society Vice Chair Jack Wadsworth (Asia Society)

Wendy Soone-Broder of Asia Society, James von Klemperer of KPF, and Ashok Raiji of Arup (Asia Society)



PCSI Forum participants tour Old Wanchai (Asia Society)

PCSI MOBILE WORKSHOPS

The PCSI Annual Forum kicked off with a series of mobile workshops in the host city of Hong Kong. The workshops showed participants real world examples of how Hong Kong is working to create a sustainable and livable city. The mobile workshops included site visits to Asia Society's new Hong Kong Center, the site of this year's Forum; to Hysan Place, the city's first LEED platinum certified building; and a tour through Hong Kong's redeveloping Old Wanchai district.

SIMON K. W. NG
CIVIC EXCHANGE

Hong Kong's Sustainability Challenge: A Lesson for the Pacific Rim Cities

HONG KONG IS WELL KNOWN for its density, compactness, high-rises, and efficiency. Because of the lack of land space, Hong Kong has gone vertical in scale, to heights that are unrivaled in other parts of the world. For the same reason, Hong Kong people are encouraged to patronize public transport instead of driving their own cars. Almost 90% of Hong Kong's daily passenger journeys are made on public transport modes such as railways and buses, and car ownership rates are very low compared to cities of similar economic status. Hong Kong's transport system is considered by many to be one of the best in the world.

However, while Hong Kong surely possesses some of the qualities of a livable city, we are also facing a number of sustainability challenges in light of the changing aspirations of Hong Kong people for the city.

Clean air is a basic for healthy living, and it is a key quality that defines a city's livability.

First, clean air is a basic for healthy living, and it is a key quality that defines a city's livability. For decades, air quality has been deteriorating in Hong Kong at an alarming rate. Local residents and international talents who are working and living in the city and breathing the filthy air are demanding that the government swiftly improve air quality or else risk people's health, the city's reputation and long-term competitiveness, and an exodus of talent. Responding to that call, a new "Clean Air Plan" recently was put in place by the new administration, with measures to tackle local emissions sources such as road vehicles, vessels, and power plants, as well as to collaborate with regional authorities to control regional sources. The Pacific Rim cities, especially those in the developing Asian countries, are also facing acute air pollution problems. Air quality management strategy and capability are badly needed to protect public health and to enhance quality of life. The costs of no or slow action are painfully high.

Second, the majority of Hong Kong people are pedestrians every day. However, Hong Kong's transport development in the past has long focused on the efficient movement of vehicles, often at the expense of the needs of pedestrians as well as cyclists. In recent years, there has been a growing voice from citizens asking for better policy and planning to promote walking and cycling in Hong Kong as a means to ease traffic congestion, improve roadside air quality, reduce fuel consumption, and promote a healthy lifestyle. Enhanced pedestrian and street environments will not only facilitate pedestrian movements but also provide engaging public space for social interaction and, in doing so, foster a better sense of

Hong Kong under smog (Simon Ng)

A Vibrant Street Market in Mongkok, Hong Kong (David Choi)

community and social togetherness. A shift from a car-based to a pro-pedestrian planning approach will present a real challenge to Hong Kong, as it will involve not just expertise and financial resources, which Hong Kong has an abundance of, but also an overarching vision and political will to drive the change. In light of rapid motorization, Pacific Rim cities that have a tradition of sharing space among motorists, pedestrians, and cyclists should try to preserve that quality. Once the city is taken over by cars, reclaiming the streets will be difficult and expensive.

Finally, Hong Kong is almost unique in the way that our built, urban landscape is intertwined with the natural environment. For example, our central business district is only a 30-minute walk away from Victoria Peak and other hiking spots. Natural beaches are scattered around the territory, including one within walking distance of a rail station in the New Territories. Given the lack of land resources, however, urban development in our city has very often taken priority over nature conservation. Highways were built along the waterfront and virgin coastlines, and wetlands were reclaimed to provide housing. There are also new plans to reclaim near-shore sites to enhance land supply for development—potentially affecting marine life in some of the sites—that have met with disapproval from different sectors of society. As the city becomes affluent, more residents are unwilling to compromise the natural environment and the enjoyment that they can get from it for man-made development. We need to strike a balance between development and conservation, which is, of course, a key sustainability challenge across the world.

People are now looking for human-scale projects that improve their quality of life.

Hong Kong has a lot to offer to other Pacific Rim cities. Perhaps our ability to rise to the sustainability challenge of building a small, dense, vertical city is the most obvious one. However, the biggest challenge ahead of Hong Kong is actually how to live up to the escalating expectation of our people when it comes to urban sustainability and livability. Gone are the days when people were thrilled by new mega-scale infrastructure projects. People are now looking for human-scale projects that improve their quality of life.

Simon Ng is Head of Transport and Sustainability Research at Civic Exchange.

"While this event marks the first forum held in Asia, ULI and the Asia Society have been collaborating together for many years. We are proud to jointly explore the complex issues of urban sustainability and resilience with the Asia Society."

RAYMOND CHOW, CEO, HONG KONG LAND; CHAIRMAN, ULI ASIA

THAI KER LIU
RSP ARCHITECTS PLANNERS & ENGINEERS (PTE) LTD.

Towards a Sustainable and Livable City: The Singapore Experience

SINGAPORE IS ONE OF THE FEW EXAMPLES of a relatively successful urbanization experience in the last 50 years. In 1960, when the British colonial government left, about 1.3 million people out of a population of 1.9 million lived in squatter colonies. Through careful formulation of government vision and policies, a strong commitment to success, and an ambitious and effective public housing policy, the city/island-state became a credible modern metropolis in one generation.

By 1985, driven by the policy of "Homeownership For All," Singapore could claim to be a city with no homeless, no squatters, no poverty ghettoes, and no ethnic enclaves. Today, 82% of Singaporeans live in public housing apartments, with a satisfaction level of 95% sustained over the last two decades. And the homeownership rate of all Singaporeans in Singapore stands at 93%. This robust housing track record is complemented by a modern central business district, a wide variety of industrial estates, excellent educational institutions, and several world-class arts venues. Some 70% of the people travel by the mass transit system, while international air and sea links rank among the best worldwide. Singapore is also a safe city and a garden city.

Good government is key to these achievements. We were in a hurry, but we gave ourselves adequate time to think through strategies and turn ideas into plans. It was clear from the beginning that we had to focus our energy and resources on fundamental problems such as housing, employment, education, traffic, and infrastructure. Despite our poverty, we also wasted no time in tackling a number of non–bread and butter issues, such as air pollution, ecology protection, flood control, and greening of the city. The temptation to create a glamorous urban image took a low priority until recently: once the stage was set, the buzz and vibrancy happened naturally.

In formulating a plan to help the city function well and look handsome, a few key concepts and principles were considered. These included a long planning time horizon, quantitative approach, key urban components, key urban cells, and macro-environmental image design. Let me elaborate.

LONG-TERM PLAN

As Singapore can only aspire to expand to a land area of around 750 square kilometers through a series of reclamations, it was decided in 1991 that the planning horizon should be set at Year X, approximately 100 years. The population size was to increase from 2.6 million in 1991 to 5.5 million in 2091, while still leaving ample land for further population growth. By 2013, our population had already surged to 5.3 million! Thus, it is time to look at another long-term plan.

Singapore Central Business District (RSP)

QUANTITATIVE APPROACH

Prior to preparation of the 1991 Master Plan, the government, across ministries

and departments, spent four years calculating the floor areas needed for all kinds of urban institutions, facilities, and amenities required for Singaporeans to live, work, play, learn, and move. This study served very well as specifications for the plan. As it was expressed mainly in words, statistics, and numbers, our planning department, known as the Urban Redevelopment Authority, spent another year to convert the findings into floor areas, plot ratios, and then land area in order to incorporate them into the land use plan. The combination of this study and the solid data from our public housing agency, the Housing and Development Board, for the planning of new towns, neighborhoods, and precincts, provided a comprehensive range of vital information for the Master Plan.

KEY URBAN COMPONENTS

The quantitative approach helps a planner become acquainted with the key urban components, their sizes, the number required of each, and the relation among them. These key components are the grids, which refer to the roads and metro lines, hills, river networks, green buffers, and so on; the commercial centers, which include the central business districts, regional centers, town centers, and so on; the industrial estates of different categories; institutions, facilities, amenities, as well as major urban organs such as infrastructure plants and air and sea ports.

The beauty of our urban landscape does not begin and end with architecture design.

URBAN CELLS

All of the aforementioned components are allocated to a series of urban cells at different hierarchical levels. The main island of Singapore is first divided into four regions. Each region, with a population of just over 1 million, is about the size of a small city and usually contains about five new towns. Each new town, with a population of around 200,000, accommodates an average of 10 neighborhoods, and each neighborhood is made up of around a dozen precincts. Each of these cells in the hierarchy is a functional as well as a social unit. The cell concept is a vital tool to promote quality of the physical environment and nurture community spirit.

URBAN IMAGE

The beauty of our urban landscape does not begin and end with architecture design. In allocating land use parcels, density distributions, and height control across the city, a broad visual image of the physical environment will inevitably emerge. Rather than letting it happen by default, the city needs an architect-planner to mold the macro-environmental design. At the regional level, be it a new town, neighborhood, or precinct, this architect-planner would have to consider its district—environmental design together with the preparation of the city-wide Master Plan. After that, at the street and block level, urban design comes into play.

Bishan, Singapore (RSP)

To help put all of these ideas together for the city and its people, a planner could well be guided by value, science, and art. The city mayor, his colleagues, and technocrats need to know the *value* that is most beneficial to the people and physical environment. Next, a planner has to know how to assemble all of the urban components into the Master Plan, not unlike the assembly machine forms spare parts into a very workable urban living machine that is simple, convenient, and enjoyable to use. That calls for the intellectual rigor of *science*. Finally, the planner needs to have the artistic sensitivity to massage the plan into the existing man-made and natural landscape. That is the *art* of planning. This paints the big picture of how modern Singapore was put together.

Thai Ker Liu is Director of RSP Architects, Planners & Engineers (Pte) Ltd.

KATIE GRACE
HARVARD UNIVERSITY

DAVID WOOD
HARVARD UNIVERSITY

Public Policy and Private Investment in Sustainable Cities

SUSTAINABLE URBANIZATION HAS BECOME A CORE THEME of global governance. It is on the agenda of UN agencies, development institutions, national governments, regional policymakers, and civil society organizations. These organizations see in sustainable urban development an opportunity to address core challenges of rapid urbanization, demographic change, wealth inequality, resource scarcity, and climate change.

Sustainable cities have also become an object of interest for investors, especially for the 1,100 investors representing more than $30 trillion in assets under management who have signed the UN Principles for Responsible Investment and adopted the incorporation of environmental, social, and governance (ESG) analysis into their investment decision making. For these investors, the implications of rapid urbanization and its environmental effects, especially in emerging markets, are a fundamental macro trend that will drive financial performance over the long term. And cities themselves offer opportunities for investment at scale that appeals in particular to large institutional investors. The challenge is how to link these two conversations—the broad international sustainable development conversation with investment trends—so that private investment supports the development and resiliency of sustainable cities.

Songdo, Korea (redjef25/Flickr)

Policy can help create that link. Here are a few examples that suggest the range of efforts meant to engage private investment to support the development of sustainable cities. These activities include a wide range of policies:

Planning can help policymakers prioritize projects that together move towards a sustainable city.

REGIONAL PLANNING EFFORTS

Planning can help policymakers prioritize projects that together move towards a sustainable city. For instance, MetroFuture, the regional plan for sustainable and equitable development in metropolitan Boston, provides a map for future efforts in important sectors such as education, job growth, housing, transportation, safety, and conservation. But coordinating between the long-term plan and projects that do or might attract investor interest requires intense work to align the many rules and subsidies that make such projects financially viable.

PUBLIC–PRIVATE PARTNERSHIPS

The Songdo International Business District, a newly developing smart city in South Korea, is the result of a $40 billion public–private partnership between Gale International, Morgan Stanley Real Estate,

Bogota Bus (Carlos Pardo/The City Fix)

POSCO, the city of Incheon, and the government of South Korea. The city is being designed to meet or exceed LEED building standards and has set aside 40% of its land for green space. Songdo represents the appeal of (most often greenfield) projects at scale, which receive public attention as models for "sustainable cities." In practice, the hard work of coordinating sustainable outcomes with financially viable real estate development illustrates the trade-offs necessary to make these partnerships work.

SECTOR-SPECIFIC INVESTMENT OPPORTUNITIES

Investment in sectors such as transit or waste, and those that exist at an infrastructural scale, are of increasing interest to investors. In Colombia, public transportation systems in Bogotá and Curitiba have presented partnership opportunities for private investors. They also illustrate the challenges in linking specific, idiosyncratic transit projects for investment at scale and, on the flipside, offer models for what a larger sector of private transit investment might look like.

REGIONAL INVESTMENT FUNDS

Place-based investment funds can tie capital directly to regionally planned outcomes. One example is the Joint European Support for Sustainable Investment in City Areas (JESSICA), a program of the European Commission and the European Investment Bank. JESSICA, which allows European Union cities and regions to capitalize urban development funds with public and private sources, has built sustainability principles into the fund design. In theory, this offers a powerful vehicle for building sustainability principles into investment strategies, though, in practice, it may also demonstrate the complexity of building complex place-based investment instruments.

GREEN BONDS

Perhaps the simplest of the policies and opportunities highlighted here, green bonds allow private investors to invest in fixed-income products whose proceeds are directed specifically towards sustainability projects. These bonds, which are meant to fit snugly into existing institutional fixed-income portfolios, are offered by a variety of issuers, including the International Finance Corporation and World Bank, and span a range of risk/return profiles. Their simplicity makes them easy for investors to understand, but the coordinating work of integrating projects into the investment instrument requires a measure of effort and subsidy from public or nonprofit sources to make the product viable for investors.

Each of these strategies can help the public and private sectors negotiate appropriate risk/return profiles of investments, different time horizons among stakeholders, and the mechanics of implementing long-term goals. Each involves a great deal of complicated work, and none of them is, as of yet, fully integrated into capital markets at scale. They cannot alone, or even together, resolve the fundamental challenges that rapid demographic change and urbanization present. But they do offer ideas for how at least one key issue—the mobilization of private capital investment towards a vital public purpose—can be utilized as we address the social and environmental challenges that will inevitably reshape the built environment in which we live.

David Wood is Director and Katie Wood is Program Manager at the Initiative for Responsible Investment at the Hauser Center for Nonprofit Organizations at Harvard University.

IN-KEUN LEE
UNIVERSITY OF SEOUL

Cheong Gye Cheon Restoration Project: A Fine Example of Sustainable Development

SEOUL HAS BEEN THE CAPITAL of the Korean peninsula since 1394. The city was developed based on the principles of feng shui, encircled by four inner and four outer mountains. The old capital maintained a population of up to 200,000 and kept the original topography until the beginning of the last century.

The concept of modern urban planning was introduced by the Japanese colonial authority, which built new major roads and railways, in the process sacrificing the original urban fabric. Seoul suffered during the Korean War between 1950 and 1953, just after independence, and more than one-third of its urban areas were damaged. Regeneration of the city continued well into the late 1950s, and from 1960 onwards, Korea undertook a strong economic development drive, which was very successful.

The restored stream also created ecological benefits, becoming a haven for both animals and people.

With economic development came unprecedented urbanization. From 1960 to 1990, the population increased from 2.4 million to 10 million people, and per capita income leaped from US$80 to more than US$6,000. During this period, Seoul expanded massively, and there was continuous construction of new urban infrastructure. However, the less desirable side effects of this explosive urbanization turned out to be overcrowding, congestion, and pollution. Beginning in the mid-1990s, the population stabilized at 10.5 million, and the standard of living improved considerably. Public aspirations started to change. People still wanted urban development, but also quality of life and a human-oriented, sustainable city. This change in mind-set was revealed in a striking manner through the Cheong Gye Cheon Restoration Project.

The Cheong Gye Cheon is a stream running through the center of Seoul from west to east. Over the centuries, the stream became an integral part of daily life and was a primary means of disposing of wastewater. Following the war, conditions in the area worsened as farmers migrated to the capital and built shanties along the banks of the stream. Soon the "clean stream" was filled with domestic waste and rubbish; it became a polluted breeding ground for disease and crime, and it was an unwelcome symbol of poverty.

During the colonial era, the government implemented a master plan to cover the stream, and the project continued until after the war. Covered with concrete, the stream became Cheong Gye Road, and an

Cheong Gye Cheon Before (left), and after (right) (Seoul Metropolitan Government)

Highway under construction (Seoul Metropolitan Government)

elevated highway was built over the road in the early 1970s. A 10-lane road and four-lane highway 5.8 kilometers long carried more than 170,000 vehicles daily. The covering of the Cheong Gye Cheon eased urban traffic flow, improved sanitation, and played a role in converting the shanty area into an improved residential area, but the stream was forgotten as time passed.

The huge amount of traffic and associated air pollution were taking their toll, and the surrounding areas were once again in decline. The concrete deteriorated in the severely polluted river bed, and the safety of the covering structures became a social issue. During the mayoral campaign in 2002, Mr. Myung-Bak Lee proposed the demolition of the road and the highway and the restoration of the Cheong Gye Cheon. After his election, the restoration project got under way.

The restoration plan included major improvements to the waterway, sewage system, roads, bridges, and landscaping. A key challenge in delivering the project was the removal of the backbone corridor while avoiding traffic chaos. The city government considered various alternatives, and this led to public transport reform in the metropolitan area. The capacity of the buses and subways was increased and upgraded, and bus-only lanes were expanded. A synchronized fare collection system was installed across the network, and car owners were encouraged to leave their cars at home.

Started in July 2003, the restored Cheong Gye Cheon was opened to the public on schedule on October 1, 2005. More than 10 million people visited the restored stream in the first two months, and 95% of them expressed their delight with the new open space. The environment in and around Cheong Gye Cheon improved greatly, with levels of harmful gases, dust particles, and noise decreasing significantly. The restored stream also created ecological benefits, becoming a haven for both animals and people. This improved environment has opened up the land around the stream to new uses, converting it into a very desirable business area.

Cheong Gye Cheon provides the perfect place for residents to reconnect with their heritage and celebrate their culture.

The Cheong Gye Cheon project is more than the restoration of a stream. It is a paradigm shift for urban management in the 21st century, concentrating not only on development but also on the environment and conservation. The project restored Seoul from grey to green and from a hard to a softened city, with the focus on people rather than cars. Cheong Gye Cheon provides the perfect place for residents to reconnect with their heritage and celebrate their culture. The project is an inspiring example of how to transform a covered river and leads the way for river restorations at home and abroad.

Restored Stream (In Keun LEE)

In-Keun Lee is Visiting Professor at the University of Seoul. He is the Former Director General for Urban Planning and Assistant Mayor for Infrastructure of the Seoul Metropolitan Government.

High-Capacity BRT Emerging as Mass Transit Option in Pacific Rim Cities

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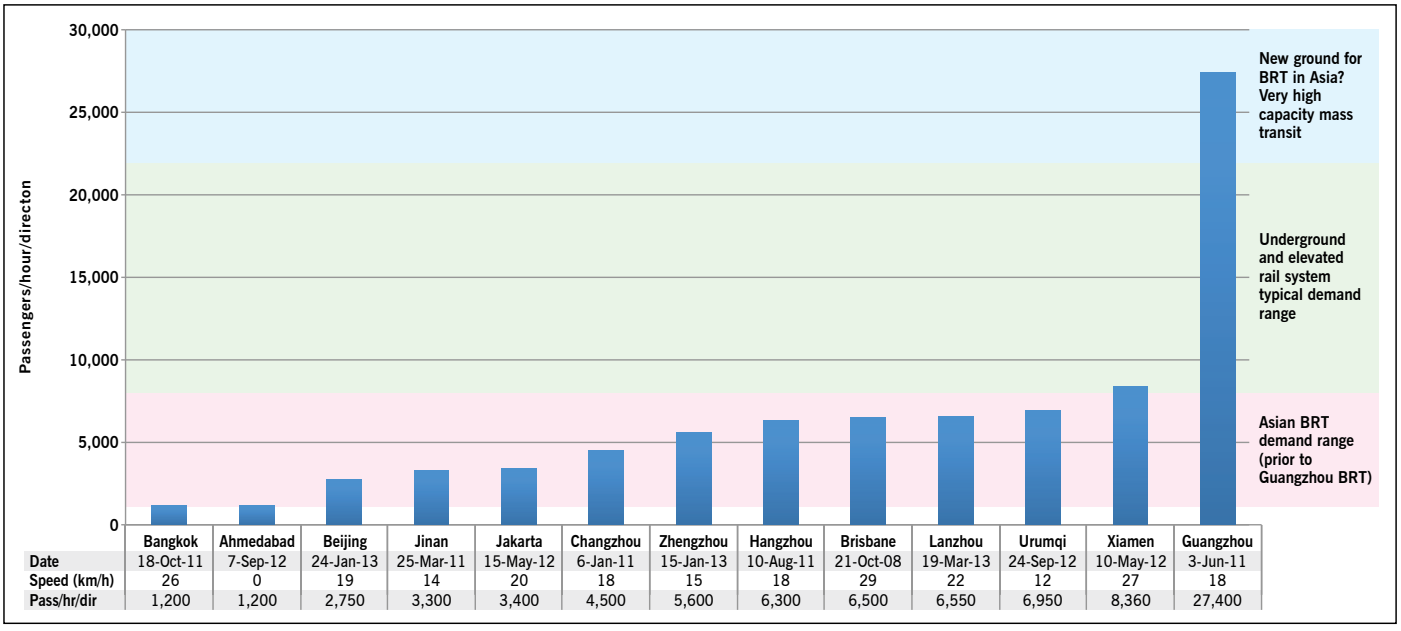
BUS RAPID TRANSIT (BRT) aims to provide a subway-like level of service and speed but using buses rather than fixed rail trains. BRT systems are especially appealing to Pacific Rim cities that are growing rapidly because they are more than 10 times cheaper than subway systems to build and operate and can be built much faster. BRT has been rapidly expanding worldwide, but until early 2010, Bogota's TransMilenio BRT system, which opened in 2000, was still the only BRT system worldwide with a "metro level" one-directional maximum ridership of more than 20,000 passengers per hour per direction passing a single location.

The Guangzhou BRT, which opened in February 2010 after several years of planning and design led by the Institute for Transportation and Development Policy (ITDP) with the Guangzhou Municipal Engineering Design and Research Institute (GMEDRI), is the system that breaks the mold of low- to medium-capacity BRT that was becoming entrenched in Asia. It is the first "metro replacement" level BRT system outside South America. The graph below compares the demand levels of BRT systems in Asia, showing that the Guangzhou BRT has more than triple the peak passenger flows of any other BRT system in Asia and also has significantly higher ridership than most metro systems.

Guangzhou's BRT also includes a bike-sharing system, with 5,000 bikes at 109 stations located along and around the BRT corridor, as well as a smart card ticketing system integrated with the BRT, which was also planned and designed with substantial input by ITDP and opened in June 2010. The Guangzhou BRT corridor also features parking and public space improvements, as well as greenways and connecting tunnels between BRT and metro stations. All of these improvements combined make the BRT corridor a leading model of transit-oriented development and multimodal integration. The Guangzhou BRT is also the first in China with more than one bus operator, including private sector



	Bangkok	Ahmedabad	Beijing	Jinan	Jakarta	Changzhou	Zhengzhou	Hangzhou	Brisbane	Lanzhou	Urumqi	Xiamen	Guangzhou
Date	18-Oct-11	7-Sep-12	24-Jan-13	25-Mar-11	15-May-12	6-Jan-11	15-Jan-13	10-Aug-11	21-Oct-08	19-Mar-13	24-Sep-12	10-May-12	3-Jun-11
Speed (km/h)	26	0	19	14	20	18	15	18	29	22	12	27	18
Pass/hr/dir	1,200	1,200	2,750	3,300	3,400	4,500	5,600	6,300	6,500	6,550	6,950	8,360	27,400

Comparison of Asian BRT systems throughput (ITDP China)

Ganding bus stop before and after BRT (ITDP China)

bus operators. This approach allows the city to maintain and control the quality of services provided by operators, who are paid a proportion of system revenues based on the total number of bus-kilometers traveled rather than the number of passengers.

The Guangzhou BRT has had a range of impressive impacts, one of the most important being the "direct service" operational mode. Before Guangzhou, it was thought that high-capacity BRT required terminals and interchange stations where, as in metro rail systems, passengers transfer between vehicles and routes. However, the Guangzhou BRT has no terminals or interchange stations, with BRT buses entering and leaving the BRT corridor at various points and operating both inside and outside the BRT corridor. This approach minimizes passenger transfers and enables the system to carry an average of 850,000 daily passengers. Since Guangzhou implemented "direct service" high-capacity BRT operations, this approach is now increasingly favored among new BRT systems in the Pacific Rim and worldwide.

Other impacts of the Guangzhou BRT include the following:

- 30% higher bus speeds, resulting in time savings of more than 30 million passenger-hours each year
- A halving of out-of-pocket bus trip costs for passengers, from 4.9 yuan (December 2009) to 2.6 yuan (August 2010), partly as a result of free transfers within BRT stations
- A decline in operational losses (revenue minus costs) per bus-kilometer from 0.9 yuan (before BRT) to 0.3 yuan (after BRT)
- A 15% decrease in bus waiting times along the BRT corridor, compared to a 7% increase in another (non-BRT) corridor, done as a control survey
- An increase of more than 30% in residential and commercial real estate prices in properties along the BRT corridor, more than the Tianhe District average over the first two years of BRT operation
- A decrease in those dissatisfied with public transport in the BRT corridor, from 21% (December 2009) to 2% (December 2010)
- An increase in those agreeing that "I feel safe walking along Zhongshan Avenue," from 28% before the BRT to 68% after the BRT
- A 50% increase in cyclists along the BRT corridor in the highest demand locations
- Significantly less greenhouse gas and local emissions, with faster and smoother traffic and faster, fewer, and newer buses—the first BRT corridor alone will average 84,000 tons of carbon dioxide emissions reductions per year over the next 10 years

A number of BRT systems around China and Asia have been directly inspired by the example set by Guangzhou and are in various stages of planning, implementation and operation. The first such system to open was the Lanzhou BRT, which was also planned and designed by ITDP and GMEDRI. It is also the first BRT project funded by Asian Development Bank loans. It opened in January 2013 and is already carrying 140,000 daily passengers.

Karl Fjellstrom is Regional Director for East & Southeast Asia at ITDP and Director of ITDP, China. Xiaomei Duan is Chief Technical Officer at ITDP, China, and Chief Engineer at GMEDRI.

Bike-sharing in Guangzhou (ITDP China)

KEVIN MO
THE ENERGY FOUNDATION

Scale Urban Retrofits in China

CHINA'S RAPID URBANIZATION is the driving force of its booming economy. In the next two decades, more than 300 million Chinese people will move to cities, ensuring a sustained and robust housing market for years. China's existing building stock amounts to 45 billion square meters, with an additional 2 billion square meters of new construction per year. By 2030, China's urbanization ratio will increase to 70% from the current 50%, and more than 1 billion people will live in cities. Studies show that when a Chinese resident relocates to a city, his or her annual electricity consumption is estimated to at least triple. It is widely believed that energy use in China's building sector will grow to as much as one-third of China's total energy consumption.

China's building sector accounts for 20% to 25% of total greenhouse gas emissions.

Currently, China's building sector accounts for 20% to 25% of total greenhouse gas emissions. The central government breaks down its Twelfth Five-Year Plan goal of carbon emissions reduction by province and municipality. Coastal cities along the Pacific Rim are more economically developed and their building sectors face bigger demands, for two reasons. First, the highest polluting and energy-consuming industries were moved out of the cities during the period of the Eleventh Five-Year Plan. Second, the service industries continue to grow and dominate the economy. This means that the low-hanging fruit of energy savings in heavy industry is gone, and cities have to address the building sector, which is a harder challenge. For example, in Beijing, the building sector has to shoulder 41% of the

A street in Shanghai (Beggs/Flickr)

greenhouse gas emissions reduction goal in order for the city to achieve the Twelfth Five-Year Plan's carbon reduction goal.

While eco-cities, low-carbon cities, and green cities are hot topics in China, nearly all are about new cities, partially driven by local governments that want to sell more land to raise revenue. A formidable challenge for China lies in making its existing cities more climate friendly, mainly by reducing energy use in the building sector. The China Buildings Program of the Energy Foundation wanted to explore a transformation model for urban-scale building retrofits and launched a first-of-its-kind project in Shanghai's Changning District, where the building sector accounts for 80% of energy use, comparable to that of New York City.

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We funded a group of local grantees—coordinated by the Changning Low Carbon Management Office—that crafted a comprehensive plan for energy retrofits of the district's building stock. Gao Yun, deputy chief of the district government and the Energy Foundation's Chinese Dialogue Partner, provided strong political support for the project and recruited Chen Rumei, former director of the Shanghai Energy Conservation Supervision Center, to lead the effort.

The World Bank used the plan to underwrite a $100 million loan for an urban-scale building retrofit project in Changning, matched by a one-to-one subsidy from local banks (the Shanghai Pudong Development Bank and the Shanghai Bank) and the district government. The project will retrofit more than 100 commercial buildings in five years, resulting in an estimated annual energy savings of 33,000 tons of coal equivalent and a reduction of 170,000 metric tons of carbon dioxide.

This project exemplifies the Energy Foundation's strategic philanthropy. With a focused strategy and targeted project, the foundation leveraged a $280,000 grant to generate an investment of $200 million—a ratio of more than 1:700—and helped create a model for urban retrofits that will be replicable in other Chinese cities.

The foundation is now supporting Shanghai to apply the Changning District model to the entire city. In the next few years, all large commercial buildings in Shanghai's 17 districts will be wired to a centralized energy use monitoring platform. With all building performance data collected, analyzed, and benchmarked, the city will be able to systematically target and retrofit inefficient buildings and, eventually, drive down carbon emissions in the building sector.

Kevin Mo is China Buildings Program Director at The Energy Foundation.

"Whether related to the global economy, the advancement of society or to the many issues associated with energy and the environment, the manner in which we invest in Asia's cities is of global significance."

NICHOLAS BROOKE, CHAIRMAN, HARBOURFRONT COMMISSION (HONG KONG); TRUSTEE, ULI

The University and the Sustainable City

ROBERT SPICH
UNIVERSITY OF CALIFORNIA, LOS ANGELES

RICHARD DROBNICK
UNIVERSITY OF SOUTHERN CALIFORNIA

A SPECIAL SESSION at the 2013 Pacific Cities Sustainability Initiative (PCSI) Forum in Hong Kong addressed the role that universities can play in defining, developing, and debating issues of sustainability for cities. In addition to the fundamental roles that the university plays in the creation, refinement, and dissemination of knowledge, four other issues were discussed.

First, it was noted that urban issues are often strongly political and that settling policy conflicts on the basis of power and personality alone is problematic. Here, the university can contribute by providing relatively neutral criteria and objective analysis grounded in the scientific method, an arena of free debate and studied critique, and empirical research to support fact-based decision making. In addition, the university can serve as an experimental center for new sustainability practices. For example, both the University of California, Los Angeles (UCLA), and the University of Southern California (USC) have initiated full-scale sustainability programs for their campuses, which include new programs and practices in waste management, energy efficiency, space use, and security.

Second, over time, public decision making on sustainability issues is often driven by short-term pain avoidance and political expediency. The university can take a longer-term perspective while paying methodical attention to cause and effect.

Third, sustainability issues are truly global in scale, and the university plays an essential role in advocating an inclusive, global outlook. We see the global nature of the sustainability challenge in global clean water and food scarcity, the constant search for sustainable and low-cost energy, the involuntary "sharing" of transnational pollution and transmittable disease, and the challenge of global warming. These transnational and cross-discipline challenges are a natural fit for further inquiry by the university. In order to make progress towards developing global mind-sets, UCLA created the Institute for the Environment, which is dedicated to sustainability best practices management. In addition, the UCLA Anderson School of Management is working with the Institute for the Environment to offer a one-year sustainability certificate program, with about 70 students graduating per year. USC's Center for Sustainable Cities as well as the Center for Effective Organizations are both engaged in substantial sustainability research activities. Additionally, the USC Marshall School of Business offers a number of undergraduate and graduate courses that are focused on sustainability issues. These numerous offerings speak to the importance that academia has ascribed to addressing global urban and sustainability topics.

Sustainability issues are truly global in scale, and the university plays an essential role in advocating an inclusive, global outlook.

Finally, the PCSI Forum discussion on the role of research and the university highlighted the critical importance of recruiting the next generation into the ranks of sustainability researchers, policymakers, and public and private sector managers. While established professionals provide experience and continuity, the presence of a strong, smart youth contingent is critical to further developing the field of urban sustainability research. The PCSI initiative is working to engage this next generation—two PhD candidates from USC participated in the PCSI Forum, and PCSI funders have supported student

sustainability research projects. Both USC and UCLA, as well as many other academic institutions, are actively engaged in offering ongoing sustainability contests, case study research paper competitions, and field visits. UCLA even sponsors "Global Green Business Week," a summer program for high school seniors to learn about the various facets of sustainability management. Within the PCSI network, another strong supporter of engaging the next generation in sustainability research is the Sustainability and Climate Change program of the Association of Pacific Rim Universities, which is a consortium of 42 leading research universities around the Pacific Rim.

It is critical that best practices and creative thinking about sustainability management continue to be developed and shared among the growing cities of the Pacific Rim region.

The university continues to be a "city within the city," yet one that is more cognizant of its interdependence with the environment in which it operates, and one that is more open and supportive of efforts to make all cities more sustainable and livable. Through PCSI, the partnership of Asia Society, Urban Land Institute, USC, and UCLA provides a unique opportunity to wed perspectives, values, and ideas from a diverse set of institutions. It is critical that best practices and creative thinking about sustainability management continue to be developed and shared among the growing cities of the Pacific Rim region—one of the key goals of the Pacific Cities Sustainability Initiative.

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Bikes on USC campus (imelda/Flickr)

SUJATA GOVADA
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Towards a Sustainable Approach to New Development

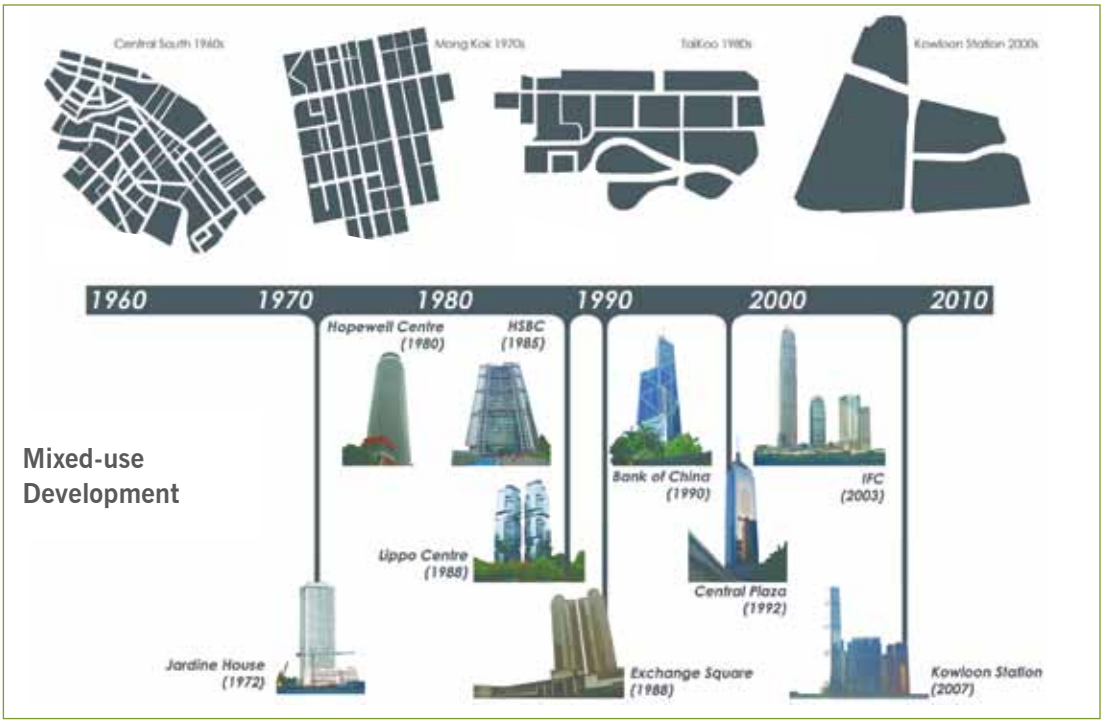
Tokyo Midtown (UDP)

HONG KONG IS KNOWN for its high-density, compact development and vibrant street life. Over the past few decades, the urban landscape of Hong Kong has become increasingly dominated and defined by large-scale podium developments. Though they are frequently commercially successful, they often have little or no functional relationship to the urban street grid because of their inward-looking design surrounded by wide road footprint. These large-scale developments have essentially become islands that detract from the city's vibrancy because of poor integration with adjacent urban areas and surrounding districts.

Problems related to this development model include having huge podiums with large site coverage; limited access to public space or activities at street level; blockage of airflow and street-level integration; and large, isolated developments that form deep street canyons, trapping air pollutants and exacerbating the heat-island effect. Additionally, a growing concern has been the disappearing urban grid caused by large-scale developments, which are only getting larger and more isolated. An exception is Taikoo Place, which creates a vibrant street with the existing urban fabric, as it was developed in phases over time.

The Urban Land Institute's *Ten Principles for a Sustainable Approach to New Development Towards Sustainable and Large-Scale Developments for a More Livable Hong Kong* were developed using a collaborative approach (including academics, developers, investors, urban designers, and planners, as well as members of the community) analyzing local large-scale projects and benchmarking them against regional and international case studies. These principles can be used to guide the form of future development and make high-density cities more livable. They emphasize more integrated and sustainable developments to promote a greener future for Hong Kong and the region. Some specific examples of large-scale development that are

1. BUILD ON YOUR STRENGTHS Rethink the strategic vision and policy framework	**6. ACTIVATE THE STREETS** Enhance street level interface and continuity
2. CREATE GREAT PLACES Adopt a place-making approach	**7. KEEP IT FLEXIBLE** Facilitate good urban design and flexible zoning
3. EXTEND THE URBAN GRID Develop to an appropriate scale and density	**8. PROMOTE SUSTAINABILITY** Go beyond sustainable building design
4. OPEN UP PUBLIC SPACE Provide accessible public open space	**9. ENGAGE PEOPLE EARLY ON** Enable upfront public engagement
5. INTEGRATE INFRASTRUCTURE Ensure transport and infrastructure integration	**10. MANAGE, CONTROL, AND COORDINATE** Implement coordinated management control



Hong Kong Development Timeline (UDP International)

more successful in the preservation of the urban grid, and its characteristics at street level, while remaining economically viable are highlighted below.

TOKYO MIDTOWN is a mixed-use development in Minato District in Tokyo that was completed in March 2007. The US$3 billion project includes office, residential, commercial, hotel, and leisure space, as well as the tallest building in Tokyo—Midtown Tower—and the new quarters of the Suntory Museum of Art. The project site takes up 7.9 hectares previously occupied by the Japan Defense Agency in the Roppongi area of Minato. The development is well integrated into the adjacent areas through a large open space at grade. It is also well connected to the Roppongi railway station. The location of the railway and the at-grade open space help make Tokyo Midtown a success in terms of accessibility.

Life Hub at Daning (RTKL)

LIFE HUB AT DANING is a mixed-use retail development on a 5.5-hectare site in Shanghai's urban district. It was developed in several phases and includes a 2-kilometer pedestrian promenade. The project consists of a total of 15 buildings with 11 plazas and open spaces. It offers pedestrian-friendly, retail-lined streets, with bicycle parking on the ground floor and space to park 1,200 cars in the basement. The development is close to the Metro station—within 80 meters of the Metro line and buses. The site had no access on three sides, and the existing road was congested. To address this issue, four roads were built within the site. Retail facilities with internal vehicular and pedestrian connections at grade offer a development that is trendy while respecting local tradition with stylish shop fronts that are functional and flexible.

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To learn more about the Pacific Cities Sustainability Initiative, visit

AsiaSociety.org/PCSI and **ULI.org/CLUE**