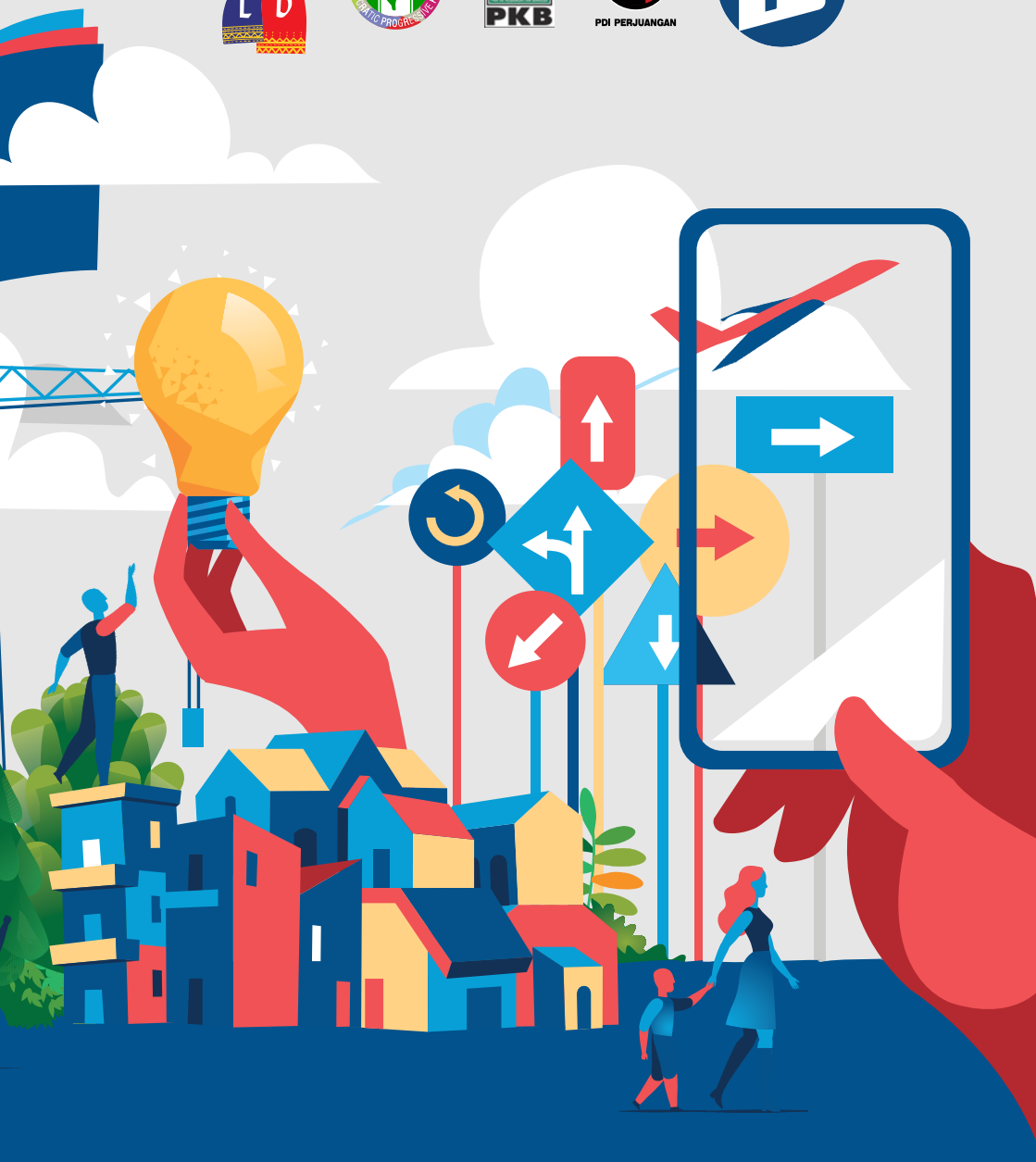
# EMPOWERED COMMUNITIES

## PATHWAYS TO CITIES OF THE FUTURE



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Special thanks to the local governments of Banyuwangi and Lumajang, Indonesia and Taoyuan, Taiwan for their active participation in the CALD Smart City Project. Their narratives and programs push the boundaries to seek resilient, efficient and responsive solutions and achieve better quality living. Gratitude to the Indonesian Democratic Party of Struggle (PDI-P), Nation Awakening Party (PKB), and the Democratic Progressive Party (DPP) of Taiwan for their steadfast cooperation and dedication to CALD. Our heartfelt gratitude as well to the Friedrich Naumann Foundation for Freedom for all the unwavering support and partnership.

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## CONTENTS



## Reimagining Tomorrow, Today: Pathways to Cities of the Future

The year is 2050 and two thirds of the world's population are expected to be living in urban areas; what will cities of the future be like?

Technology magazines and sci-fi movies have already presented us with plenty of ideas of the future; where cities continue to be at the forefront of technological and cultural change. With futuristic urban landscapes as the backdrop, the consensus for the future has always been for cities to be smarter.

With particular focus on the use of technology, smart cities are expected to think, anticipate, and solve problems. The onset or rather, the onslaught of big data, the Internet of Things (IoT) and artificial intelligence (AI) has dictated how we paint our cities of tomorrow.

Indeed, as we approach what many has called "the age of cities," the paradigm and the prescription has remained the same: smart cities.

This work argues for the need to significantly rethink the way we imagine the future of cities.

## A New Focus

Building on the experiences of three smart city projects in Indonesia and Taiwan, this manuscript argues for the need to shift our focus on what makes cities fundamentally smart. It will demonstrate how and why we should veer away from the predominant idea that every smart city problem needs a technological fix.

The Regencies of Lumajang and Banyuwangi in Indonesia and the City of Taoyuan in Taiwan are showing the way to reimagining the future of cities. From an overarching technological vision, the three local governments, assisted by their citizens, are building their smart cities by focusing on equally important priorities such as sustainability, inclusivity, and eliminating social inequities.

Rather than letting technology shape the future of their cities, these local governments wish to determine their future using the social lenses provided by the participatory mechanisms they incorporated in their smart city projects. These processes of collaboration, aided by technology and traditional community organizing, provided them alternative approaches to solving problems associated with urbanization.

By empowering their local communities, an identifiable shift in how future cities are being conceived and how smarter cities are being built has steadily emerged in Asia. The smart city projects in Lumajang, Banyuwangi, and Taoyuan are designed and delivered by the people involved in the processes.

The collaboration between the government and the people and between the public and the private is wide and deep. From localized eco-tourism projects in Banyuwangi to global initiative of making Taoyuan the Silicon Valley of Asia and reviving Lumajang's indigenous batik textile industry, participation in smart city projects by citizens is not just made practically available. It is guaranteed.

**Look global, do it local.**

New challenges require cities to reimagine not just how they look at the future but more importantly, how they do things. The experiences detailed in this work speaks of the strategy by the three local governments in meeting the growing demands of the global economy while expanding avenues for participation at the community level.

For the citizens of Taoyuan, Lumajang, and Banyuwangi, their participation in the process of building smarter communities paved the way for their intimate understanding of how they want their urban future to be: One that is prosperous yet sustainable and inclusive to a wider and more diverse set of people where everyone is better positioned to participate in and benefit from the smart city project.

This means smarter cities and better communities for everyone.

## The Urban Agenda: The Globalization of Cities

The rise of cities in the last – and the next – 30 years is truly phenomenal. The shift from rural to urban living by more than 3 billion people is nothing short of spectacular. It necessitated and continues to dictate the redrawing of local boundaries and international borders alike. All the while pulling resources, concentrating technological advancement, and challenging governance structures in cities around the world.

On the one hand, modern big cities are now the "engines of the modern global economy" and the pace of urbanization is seen to determine the trajectory of global growth and development in unprecedented ways." On the other hand, traffic congestion, pollution, disasters, rising criminality, and widening income gap threatens the promise of urbanization.

This positive-negative duality made possible by the rise of cities globally has called a necessary review of urbanization. And not a few ideas have been forwarded and proposals agreed. The first global discussion on problems besetting modern cities happened in 1976 during the United Nations (UN) Habitat Conference in Vancouver.

From there, as cities evolved, so did their problems require better, more comprehensive solutions. It was within this context that Habitat II, twenty years after, was presented with new and more daunting challenges. Unlike its predecessor, Habitat II saw human beings at the center of urbanization. It saw its purpose to finding ways to provide adequate

shelter for all and make human settlements sustainable. Sustainability now is seen above and beyond greeneries and open spaces and must include healthy and productive urban life in harmony with nature.

The second Conference on Human Settlements or Habitat II contributed in the development of the UN Millennium Development Goals (MDGs) that saw urbanization as a possible solution to inter-related problem spaces such as gender, education, access to water and sanitation, employment, and health. Concomitantly, problems associated with growing cities now include issues on inclusiveness, participation, and empowerment. The issue on sustainability has now been expanded to include climate change, energy use and consumption, and green housing and transportation.

Cities have become, without a doubt, the action arm of sustainable development.

## Cities and Sustainable Development Goals

How can cities meaningfully contribute to sustainable development?


Sustainable Development Goal (SDG) 11 aims to answer this as it attempts "to renew and plan cities and other human settlements in a way that offers opportunities for all, with access to basic services, energy, housing, transportation and green public spaces, while reducing resource use and environmental impact." Habitat III and SDG 11 propose that if the world puts enough resources and effort, sustainable cities and communities would be the best way to live and work in by 2030. This may or may not turn out to be true. No one knows.

What is known however is this: Globalization made the ascension of cities in the last forty years inevitable. And in doing so, made cities the epicenter of today's world.

And now that more than half of the world have begun living in urban areas, some argue that this is the right time to interrogate our idea of urbanization. A number of people are even pushing negotiating for a proper urbanization.

With the future of the planet at stake, discussions on climate change and sustainable development have thankfully shifted to cities, where many believe is where real action should play out.

## Global Cities:
## The Promise and Peril of Urbanization

By 2050, as many as seven billion people are expected to live and work in cities across the globe. Corollary to this, the number of people living in cities with a high risk of coastal flooding will reach 150 million – a threefold increase since 2015.

In the current global context, cities occupy only 2% of global land yet, they are responsible for 70% of the world's economy, consume 60% of the global energy supply, and produce 70% of greenhouse gas emissions and global wastes.

Clearly, with their immense population, technological innovations, cultural influence, and economic power, cities continue to shape the world to their image. Suffice to say then that anyone wishing to look at the future of sustainability should begin by looking at how cities are planned and managed now.

As urbanization continues to take center stage in many global affairs, the Council of Asian Liberals and Democrats (CALD) wishes to contribute to the discussion. It supports the assertion that cities deserve their spot in any conversation on sustainability and the future. CALD, a regional alliance of liberal and democratic political parties in Asia, offers a unique platform for dialogue and cooperation on smart, sustainable cities among its members and partners.

In 2019, CALD launched its Smart City Project to encourage cities in the region to cooperate and advance digital technology use within the framework of democracy, transparency, cooperation, and sustainability. On 24 August 2021, it also hosted a meeting with Local Governments to share their gains and challenges in

implementing their own smart city solutions.

This book is a product of CALD's attempt to elevate the discussion on Smart Cities in Asia. It also takes inspiration from the momentous August meeting among its partner Local Governments participated by the Indonesian Democratic Party of Struggle (PDI-P) and Nation Awakening Party (PKB) of Indonesia representing the Regencies of Banyuwangi and Lumajang, respectively; and officials from Taoyuan City from the Democratic Progressive Party (DPP) of Taiwan.

The meeting introduced the audiences to smart city tools and innovations that help deliver effective governance and public service amidst the pandemic. The highlight however was the sharing and candid dialogue among these three local governments and their leaders, which ultimately brought to the fore the need for local government leaders to listen and learn from each other. But how?

Echoing this concern has been the recurrent questions from the Local Governments that have yet to start their Smart City project: Where to start? How?

## Making a Case for Smarter Cities, The Asian Way

An online technology magazine proclaimed that "Asia's city leaders are among the world's most forward-thinking when it comes to smart cities." The same magazine noted that the Asia-Pacific region is set to account for 40% of the global smart city spending valued at $800 billion by 2025. More importantly, it added that 80% of all economic activities in the region is expected to shift to cities.

These assertions make looking closer at Smart Asian Cities all the more compelling. This manuscript aims to add to this growing work on smart cities in Asia through the work and initiative of the Council of Asian Liberals and Democrats with support from Friedrich Naumann Foundation (FNF) for Freedom for Southeast and East Asia. It presents three initiatives by local governments in Taiwan and Indonesia; chosen specifically to represent their unique approach to smart city building.

At the theoretical level, the manuscript looks deeper how these smart city projects were conceptualized and are being implemented in relation to participation of citizens and local institutions and organizations within the context of existing political dynamics and governance challenges.

At the practical level, the case studies looks at how the smart city projects of Lumajang and Banyuwangi in Indonesia and Taoyuan in Taiwan are affecting and effecting peoples' lives, influencing governance processes, and improving public-private partnerships.

Collectively, this work contains only a small sample of case studies. It does not intend to sway favor for smart cities. Yet, it can be considered a timely contribution to the growing comparative work on smart cities, especially in Asia, as seen through the lenses of local implementors and citizens.

## The Case of Smarter Villages by the Regency of Banyuwangi, Indonesia

The smart city project in Banyuwangi, a regency in East Java (pop. 1.7M), Indonesia, is a prime example of what national-local-village collaboration can accomplish to spur digital governance adoption in rural areas. ***Smart Kampung*** literally translates to Smart Villages. It is Banyuwangi's flagship smart city project. It takes off from the country's *Gerakan Menuju 100 Smart City* initiative, a multi-sectoral national government endeavor that aims to encourage and support local governments adopt and implement smart city concepts.

Blessed with picturesque mountains and coastlines, Banyunwagi boasts of 5,697 square kilometers of sceneries defined by captivating terrains and diverse land layers and contours. Considered as one of the districts with the largest land areas in the island of Java, as much as 87% of Banyuwangi Regency remains rural with most of its citizens and 217 villages still relying on agriculture, fisheries, trades and crafts, and tourism for livelihood and revenues, respectively.

Prior to Smart Kampung, rural living in Banyuwangi has been accompanied by typical rural problems: difficulty in accessing public services, limited connectivity, and lack of economic opportunities. Mr. Firman Sanyoto, the forty-nine year old Head of the Genteng sub-district notes with relief that since Smart Kampung's implementation, availing of government services became easier for residents. "We need not go to the center to transact with the government," he adds.

The more important aspect of the change brought about by Smart Kampung however is reflected in the new opportunities presented to the young. Sahaja Nektar Martadi, a 16 year-old Senior High School in Taruna Giri exudes with excitement as he describes how their generation has now become "exposed" to the outside world. The student adds that Smart Kampung "played an important role" in introducing and sustaining his hobby of making videos.

It is in this belief in transformative and generational benefits of technology, government efficiency, and the young that the Ipuk Fiestiandani, the current Regent of Banyuwangi, had hoped Smart Kampung would bring about to her constituents. She asserts that by "focusing on information technology-based public service, Smart Kampung provides efficiency in village budgeting, health care, economic empowerment, and provides students unlimited access to information."

She further declares, "with Smart Kampung, starting, building, and enriching a local economy fueled by creativity and innovation is now possible."

**Banyunwagi's Smart Kampung Journey: Where to Begin? How to Implement?**

Due mainly to its geography and topography, villages in Banyuwangi face diverse and sometimes even diverging issues. For the Banyuwangi Regency, the problem of implementing technology-based solutions like the smart city initiative remains two-fold: first, the terrain conditions and distances of villages from one another make implementation of development projects naturally difficult. For the same reason, equitably allocating resources and opportunities to the villages and in turn, to their citizens also becomes problematic.

For former Banyuwangi Regent Abdullah Azwar Anas; this second problem of making sure that no one from their constituents gets left behind became his primary reason in treating technology allocation and re-allocation as the greatest equalizer.

Considered as the prime architect of *Smart Kampung*, Regent Anas saw technology not just as a means to improve public service but also as an incentive and impetus to spur growth, development, and modernization among their people. His response then to the clamor to bring equitable development in his region is a technology-driven, people-centered approach to rural development.

Regulation Number 60 issued in 2017 by Regent Anas localizes the implementation of *Gerakan Menuju 100 Smart City* initiative. Banyuwangi's *Smart Kampung* identified six dimensions where the Regency can assist villages towards achieving "smart" status. The six also serve as pillars where villages, through consultations and discussions among local leaders and citizens, decide strategies and select which among these should receive their utmost priority:

**Governance.** Efficient, transparent, and accessible public service by the village.

**Technology.** Use of appropriate technologies in rural setting.

**Living.** Safety, security, ease of living, and convenient access to public facilities.

**Resources.** Efficient management, distribution, and capacitation (human resources) of local resources by the villagers.

**Village Services.** Essential and economic services aimed at increasing income of villagers through village-owned business entities.

**Tourism.** Village Promotion and Village Branding.

Since the implementation of the project, these six dimensions have served both as guides for village implementers and barometers of success for regency officials to measure the levels of maturity of Smart Kampung implementation across the region. However and perhaps more importantly, for the village councils and citizens who *actually* experience and benefit from Smart Kampung, these different yet inter-related dimensions of smart city are desirable goals with adaptable strategies that allow for adjustments during their implementation of the project.

It can now be said that Smart Kampung is unique from traditional smart city projects for three particular reasons. First, it is spearheaded by a province — not by a city. Second, it is implemented in a region primarily known to be rural and agricultural. Third and perhaps most importantly, the project benefits and seeks direct involvement of villagers.

**People, Processes, and Partnership**
**Banyuwangi's Not so Secret Recipe for Success**

Dr. Santika Pramesti, the 38 year-old vetenarian of the Banyuwangi Regency Animal Hospital, talks animatedly of his experience with Smart Kampung.

"As a veterinarian for the Regency, I often go to villages to check on livestock or pets. It used to be a tiresome, strenuous activity because of paper works, scheduling, and community information drive. Everything became easier for us with Smart Kampung because the literacy of villagers on issues affecting pet ownership and animal welfare can be easily accessed and directed to them through Smart Kampung."

"Some days ago, we organized a mass rabies vaccination in some villages. What used to be weeks of preparation and execution were completed in just a matter of days. With Smart Kampung's online registration, what used to be a laborious activity of selling and seeking slots for the vaccine became a hassle-free affair. All slots were filled with accurate and updated information of both pets and owners days ahead; such is the speed and convenience afforded to us by Smart Kampung technology."

How did Banyuwangi achieve this kind of technology adaptation by its villages? Regent Fiestiandani expounded on the role of the Regency as partnership builder and enabler for Smart Kampung. She avers that the regency provides the guidance, the framework, and the enabling environment through provision of infrastructure, direction and planning, as well as training and even recruitment of IT staff if needed. Working with PT Telkom Indonesia, she says, "the Regency arranges to fill in the needs in infrastructure, human resources, and facility of villages that agreed to implement Smart Kampung."

Support for facilities makes sure that each village complies with the standard set by Smart Kampung for a smart center hub. This requires village halls and recreation areas to be equipped with proper furniture, sound system, multi-media equipment, information boards, learning materials for children, and even facilities for out-patient medical and health care.

For the infrastructure, Smart Kampung hubs receive support from the Regency and its partners to ensure availability of electricity, internet connection, landscaping and structure improvements, clean water and toilets. If needed, the villages are also afforded support for recruitment, staffing, and training of personnel.

This process of leading, stewardship, and capacity-building by the Regency has resulted to empowerment. Now, citizens of Banyuwangi are active participants in community building.

Dr. Bintari Wuryaningsih, a physician by training but an environmentalist at heart, is a community leader working with Osohi, a local NGO in Banyuwangi that helps villages deal with issues of the environment, hygiene, and waste management.

"Smart Kampung has made everything village-based connected," she declares. "It has integrated hygiene and health issues in the village. We operate in other areas and we do socialization through women organizations in the village and tourism awareness groups to minimize and reduce wastes.'

"Kelir Village in Kalipuro Sub-District inquired about what we do and we plan to conduct a training there soon. We plan to make Kelir Village a pilot project for regional waste management. We continue to educate about sustainable waste management and farming and because of Smart Kampung, people are now more technologically literate, making our task for socialization and education a lot easier. For example, they can learn a lot just by watching our OSOJI channel in Youtube."

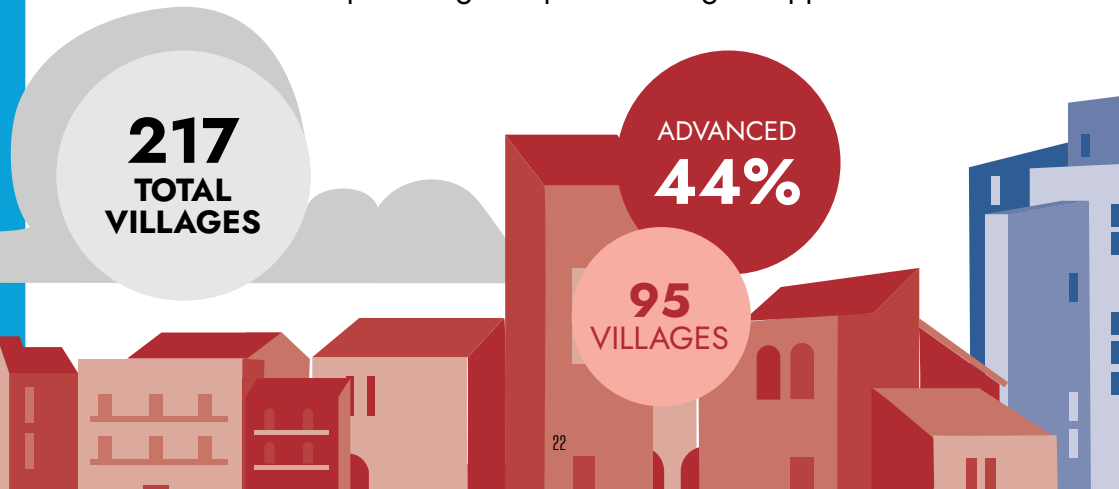
Indeed, in just half a decade after the Regency started Smart Kampung, it has brought tremendous benefits for all those involved, especially the villagers. Smart Kampung has resulted in uplifting the quality of life of the people while enhancing local governance. It has successfully integrated several aspects of government administration and thus, proven that rural areas can *actually* become centers of creative economy. A business enterprise often associated with urban, modern cities.

Since collaboration was made a key indicator to the success of the project, adoption and success rates for Smart Kampung have been steadily positive and increasing. Of the 217 villages in the region, 95 villages or 44% are in advanced category, 98 or 45% are in the development stage, and 24, representing 11% are still receiving priority guidance and assistance from partners.

The Banyuwangi Smart City project gave bias to rural areas and has put emphasis in promoting digital technology as a tool for innovation not for those in the city but rather, at the kampung level in rural areas. In doing so, it enabled rural residents in the lowest level of governance have access to information and services they need to develop their potential and introduced their community, business, products, and creative crafts to wider and varying audiences.

Yunan Fahmy is a dentist but he dabbles with Information Technology (IT) for a hobby and now has found a new business venture. Thanks to Smart Kampung. In answering the question on whether Smart Kampung brought about major changes in his village, he answered with a resounding yes.

"It directly affected and changed the mindset of the villagers. The direct impact I see is that new jobs are emerging in the village as a result of the effort to increase use of IT. In tourism alone, there are now vloggers, trip documenters, and even tourism operators now entice and respond to guest queries through IT apparatuses."

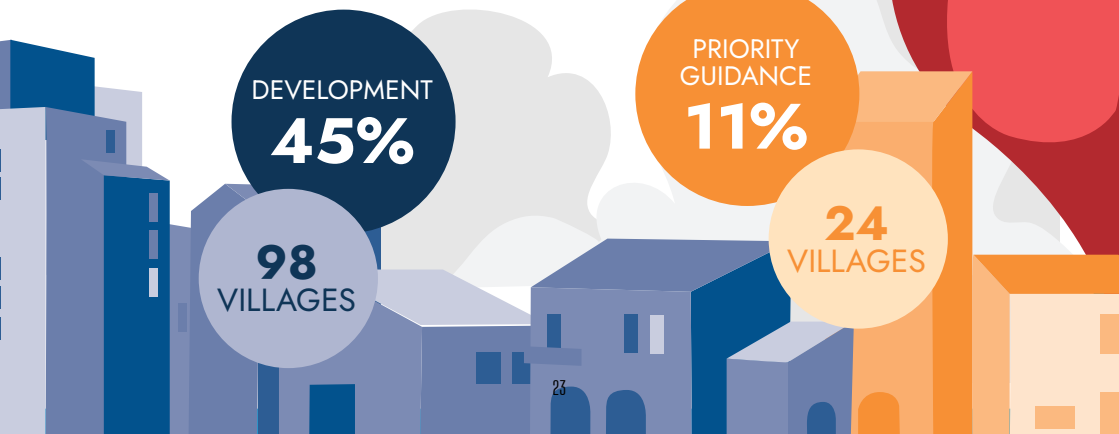


Smart Kampung, for all its technological accompaniments, is actually about partnership. Collaboration with civil society organizations such as OSOJI, enthusiasts like Yunan Fahmy, the private sector, and regular consultations with various government agencies (central government, ministries, state owned corporations, regencies) accelerated and facilitated delivery of services at the village level.

The unique combination of technology and collaborative partnership not only enabled more efficient government services but most importantly, it resulted in the creation of village-based economic enterprises and centers for creativity and innovation.

This is not just democracy working. This is democracy at its finest.

Through the village-kind democracy of Smart Kampung, development was achieved. Economic equity is within reach. Smart Kampung made this possible by focusing on the basic, by starting small, and by reminding us that it is just as important to have smart villages as it is to have smart cities.

## Taoyuan City, Taiwan: Building the Intelligent Communities of Tomorrow, Today

Cities are essentially communities; social units defined by ties and relationships. Whether its ethnicity, norms and customs, values, or identity, communities find ways to bind people together. Modern, complex cities define and shape the identities of their citizens based on the requisites of the knowledge-based economy.

Taoyuan, a city of 2.2. million in Northern Taiwan, is considered the largest science and technology city in the country. Cheng Wen-Tsan, Mayor of Taoyuan, is a firm believer and advocate of "Citizen-centric Smart City," promoting Taoyuan to be a humanistic intelligent community. He believes that partnerships are the heart of innovation and "just as relationship is to people; the entire existence of communities depends on building and sustaining partnerships where government works with businesses, institutions like universities, and citizen groups."

Home to Taiwan's largest airport and a third of the country's Top 500 manufacturing firms, Taoyuan has been an industrial and economic powerhouse domestically and internationally. It decided to pursue its smart city project a decade ago and it would have been acceptable if Taoyuan continued with its traditional development trajectory of state-led industrialization.

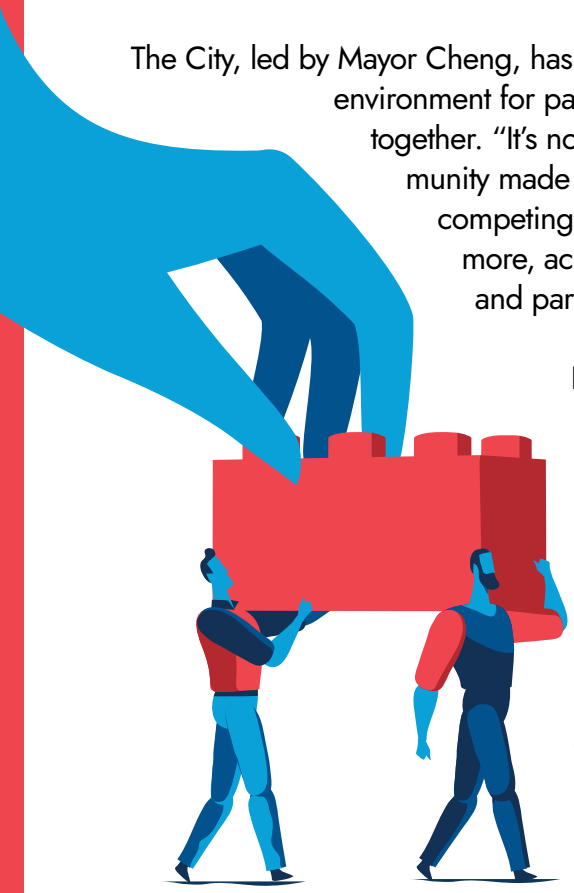
It chose not to.

For Mayor Wen-Tsan, the goal of a making Taoyuan a smart city does not begin and end with industrialization and development. Rather, it puts front and center the requisite of civility and humanity by partnering with the citizens.

Collaboration, he adds, is the foundation of "smartness" in cities. He apparently knows what he is talking about because Taoyuan bagged the much-coveted Most Intelligent Community Award in 2019, besting hundreds of cities around the world.

**Why Collaborate for a Smart City?**

The City, led by Mayor Cheng, has established a collaborative environment for partners to work and achieve this goal together. "It's not easy, he says, "but like any community made of various sectors and groups with competing interests, cities like Taoyuan can do more, achieve more if resources are pooled and partners agree to work together."



Indeed, any aspiration for community-wide transformation must be infused with political gravitas, which in turn should be reciprocated with public backing.

Only through collaboration this process of transformation is made possible. And only an effective leader can convince partners to make achieving this goal desirable. This, in a nutshell, is Taoyuan's smart city narrative.

## Inclusive Technology for Connected and Civic Citizenry

The Taoyuan City Government realized early on that if their smart city project must succeed, then every plan and decision must involve and require the support of partners. And the most effective and reliable partners cities can have are their citizens. Henceforth, Taoyuan's first ambitious project is to redefine the concept of citizenship; infuse it with more welcoming rather than restrictive meaning.

As an industrial and science city, Taoyuan has always been a prime destination for foreign migrants and new residents. The city receives the most number of foreign migrants annually and ranks fourth in welcoming new residents. The steady influx of people with different languages, vocation, and ways of life presents a challenge of adaptation for the new residents on the one hand and issues of integration to city leaders on the other.

Taoyuan addressed these issues with multiple solutions; introducing new


processes, creating new offices, inventing software applications, organizing multicultural events. The goal has always been to assist the new members of the community adapt and get integrated into Taoyuan living in the most urgent and amiable manner possible.

Of these numerous programs, the ubiquitous Taoyuan Citizen Card stands out. The card is offered to anyone who works, resides, and conducts business in Taoyuan without consideration to one's nationality, immigration stature, economic standing, and work permit status. It allows users to avail various services, access to facilities, and provide them an electronic payment card for everyday use.

Since its introduction in 2015, it has been swiped more than 500 million times by people for their daily transactions, making it one of the most utilized smart cards in Taiwan. In 2018, the Taoyuan Citizen card also became the primary vehicle for promoting and encouraging participatory governance. The City developed application games, introduced new processes, and created an independent office to allow minorities – from seniors to persons with disabilities to migrant workers – to be heard and be involved in planning, budgeting, and policy-making processes of the city.

According to the Department of Information Technology, the new department created in 2018 to continuously enhance the smart city policy and integrate services of the card, the public consultation modules are being utilized at least 10,000 times a year resulting to thousands of project and activity recommendations including 52 budget proposals that benefited 28,000 recipients and 14 new features for the Citizen Card.

While Taoyuan Mayor Cheng Weng-Tsan saw these participatory features of the Citizen Card as necessary to understand the actual needs of the citizens and create opportunities for them to learn and participate in democracy, he adds that these "also made implementing democratic processes more efficient as they resulted to easier and faster integration in civic life, including increased citizen involvement in public affairs.

By making the Citizen Card open to membership, Taoyuan has redefined its relationship with its constituency. Instead of being based on ethnicity or national identity, Taoyuan Citizen Card made the virtues of civility and civic duty the basis for membership in the community.


This move goes beyond being smart. It made Taoyuan a community that is kind, open, and trustful.

## Comprehensive Technology for Digital Equality

Taoyuan City's broadband internet coverage is 100%. Yet, digital inequality remains a concern for city leaders and partners.

Whether caused by poverty, lack of skills, or cultural prejudice, whatever is causing and sustaining it, the city took actions to put a stop to the unequal distribution of gains from digital technology.

Taoyuan's comprehensive approach to technology adoption is laden with adaptation recommendations based on the needs of each disadvantaged population. Aside from massive investment in broadband, the City has implement a series of solutions anchored on inclusive education, bold policies on unique and ethnic-based understanding and dialogue, and ambitious funding for continuing, unlimited learning for all and by all.

Taoyuan's digital divide is fueled by unequal access to and usage of digital technology. Residents of rural areas and mountain villages in Taoyuan are significantly less inclined to use digital technology due to socio-economic conditions, low literacy, shortage of educational resources and customized learning activities, and general lack of motivation.

This digital use and learning gap extends to minorities and the disadvantaged. The seniors. Migrant workers from Southeast Asia. The aborigenes. And women – women belonging to the minorities and the disadvantaged especially. Residents belonging to these groups are not only behind the learning curve but in appreciating technology and its uses as well. Their appreciation gap is manifested by their disinterest to learn about and use digital technology.

After documenting and understanding their plight and challenges, Taoyuan's strategies on digital equality primarily focused on increasing and expanding access to learning by the minorities and the disadvantaged. Through cooperation with academic and research institutes, goals and strategies were agreed to narrow the digital learning gap, break distance and terrain barriers to technology adaptation, and integrate a multi-teaching and multi-learning resource platform supported by networks of tutors, teachers, and volunteers.

Accompanying investments on computers and connectivity, modular digital courses targeting specific groups were promoted, with learners rewarded for every milestone reached and partner learning institutions incentivized for every target met. Tribal University and PunCar Action are just some of the projects introduced to level the learning opportunities for the minorities, where special courses handled by partner universities for the indigenous population were pushed.

Online academies with courses and tutoring tailor-fitted to the needs of seniors, new residents, children in rural areas, and women were supported by professional staff and volunteers. Offices created for enhanced and continuing learning such as the Digital Opportunity Center, Senior Age Learning Centres (as lifelong learning centre for districts), and Taoyuan City Gender Equality Academy provided steady stewardwardship to these programs.

These diversified, partnership-driven approaches aptly covers the gaps in digital learning that puts certain populations and groups at a disadvantage; making them unprepared for a world steadily going digital. Taoyuan's experience is showing the world that technology alone will not bring equity. Taoyuan's investment in lifelong, non-stop learning is not only a footnote to its aspiration to build a technologically advanced community. Rather, it is a testament to its uncompromising stance that no citizen-resident of Taoyuan should be left behind.

**Innovation: Investment for the Future**

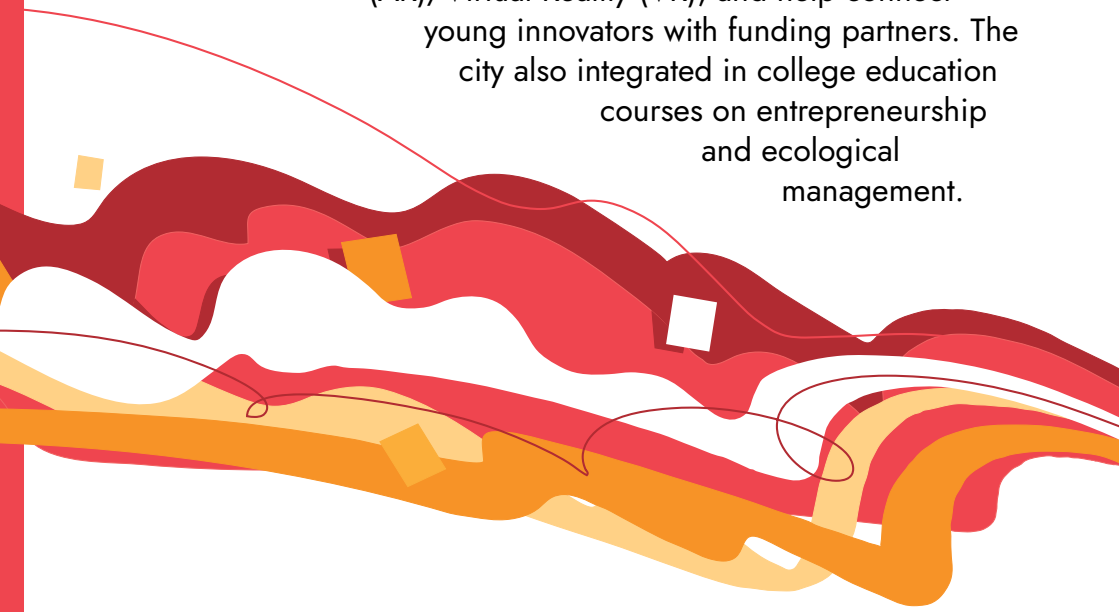
Just as smart people look to stay ahead by devoting time to improve their craft, smart cities invest in the future by being strategic and innovative. Just as smart people do not sacrifice the present in favor of tomorrow, smart cities need not sacrifice today's communal goal of improved standard of living in exchange for a sustainable future.

It is no coincidence that the innovative measures developed by many smart cities around the world to improve quality living are also rooted on sustainability. Innovation means creating better products and providing more efficient services by using fewer resources in less time. Innovation also ensures that these new processes and products are not just replicable and scalable, but sustainable as well.

Whether it is in using renewables for cleaner air and water or to improve commuting; or putting up green buildings with solar technology to creating mini urban forests to re-introduce biodiversity in the city; Taoyuan has kept the wheels of innovation turning; producing new practices and products that are helping shape a sustainable future.

The key to Taoyuan's success in innovation lies in the belief that people, not technology, is the lifeblood of an intelligent community. And that producing smart people, not smart technology, should be the central focus of innovation. It is the role of the city to assist its people discover, share, and scale-up innovation.

As such, Taoyuan invested heavily on its people, turning them not only into innovators but entrepreneurs as well. It constructed several startup hubs and R&D centers; foremost of which is the "Asian Silicon Valley project", the Hutoushan Innovation Park to provide new ventures such as IoT technology and to connect the manufacturing strengths of major industrial areas. It also established the Youth Entrepreneurship Headquarters to introduce breakthrough knowledge on industrial smart applications such as Artificial Intelligence (AI)/Augmented Reality (AR)/Virtual Reality (VR), and help connect young innovators with funding partners. The city also integrated in college education courses on entrepreneurship and ecological management.



Taoyuan is a youthful city. As one of the cities with the highest proportion of young people in Taiwan, it saw an opportunity to create a good entrepreneurial base composed of soon-to-be innovators. Beginning with establishing more than 5,000 smart classrooms advocating for focused teaching

of STREAM (Science, Technology, Reading, Engineering and Mathematics), logical computing, and programming, Taoyuan now leads the country in abandoning traditional teaching frameworks as it cultivates the talent pool for its smart city drive.

We can all learn from Taoyuan's experience. First, we introduce innovation to young people by giving them unlimited access to knowledge and learning. Second, we capacitate them with technological tools and instruments and imbue them with an entrepreneurial spirit. Third, we build them a space and a platform to work with other innovators. And fourth, we connect them to funding partners so they can turn their ideas into assets.

True to this strategy, the City Government cooperated with several local companies and organizations to support fundamental IT education and promote several funding proposals from the Youth Entrepreneurship program. This year with IBM Taiwan, Taoyuan brought several online lectures on e-learning for high school students. And a number of Taoyuan's green technologies, which are also showcased globally, are products of the city's multi-partnership and multi-level approach to innovation.

## Smart City for a Sustainable Future

Like people, systems work better and produce better results when they inter-operate. Taoyuan's Smart Management and Big Data Analysis Platform and Open Data X are the crown jewels to its ever expanding and deepening commitment to innovation through collaboration of systems and citizens. The platform combines and analyzes big data from nine major municipalities from traffic, transport, population, and environment with the aim to optimize governance, improve business efficiency and competitiveness, and spur regional development.

From as basic as lighting a street lamp to managing the city's complex sewerage system and vehicle traffic, several smart monitoring and management systems help make Taoyuan a low carbon green city: Campus Power Management, Street Lighting, Wind and Solar Farming, Sewerage Cloud Management, and Vehicle Traffic.

The Open Data project aims to democratize information to ease urban living by allowing citizens access to granular and aggregated data on traffic and parking, tourism, health care, pollution emissions, among others. Corollary to this, the City also organizes regular Open Data Hackathon to encourage students to use open government data and inspire data-driven community planning and organizing to address specific local needs.

Systems must work together to produce better results. In the same manner, people must collaborate to introduce, produce, replicate, and propagate innovative ideas.

What Taoyuan's experience on smart city has shown us is that innovation has become not an just an end point of an empirical and collaborative exercise. It has become the vehicle to serve a larger purpose: that of sustainability.

By making collaboration imperative to the innovation process, Taoyuan made sustainability a shared goal. And it is through this laboring process of people working together that mutual understanding is reinforced and civic pride becomes a shared value.

When this happens, the process itself becomes the result as residents with so little commonality from each other achieve together for their community.

## The Case of Lumajang, Indonesia: How They Started Small and Ended Up Achieving Big

It was triggered by several performance and attendance issues.

This was the simple and direct response of Mr. Akhmad Taufik Hidayat, the Regional Head for Indonesia's Civil Service Agency (BKD) in Lumajang when asked how his office and partners from the Regency came about the idea of developing SIPERLU or the Lumajang Presence Information System for Civil Servants, an Android-based application that allows government employees to record and report attendance and daily outputs online.

Since its introduction, it has made the life of civil servants comfortable as they spend less time manually inputting attendance and daily activities resulting to having more time delivering *actual* public service. It also made the work of BKD simpler as they now monitor the presence and performance of the employees online; with the system-generated reports easily measurable against their outputs and ultimately, their payroll.

SIPERLU is Lumajang's initial venture with the growing Smart City initiative world-wide. Barely a year after its implementation, Mr. Hidayat has already seen progress. He notes that, "the level of discipline of the PNS (civil servants) and contract workers has improved and the office leaders can now easily supervise employees under them even if these are doing field work."

## If the Government Leads, the People Will Follow

Lumajang is a city-regency in East Java. Its 1.2 million population is watched over by the majestic Mount Semeru, which has bestowed upon its inhabitants crater lakes, waterfalls, and caves that have become part of the province's identity.


Lumajang's coat of arms, *Amreta Brata Wira Bhakti*, speaks of its people's eternal virtue through acts of gallantry and devotion. By any measurement, Lumajang is a small regency whose people are tied by their long and rich history of bravery and loyalty to their province and their leaders.

For Lumajang's Regent Hon. Thoriqul Haq, it is this devotion and trust in their leaders that prompted him to begin their Smart City journey by instilling professionalism and transparency in the bureaucracy. He highlights the ethical value of SIPERLU as it has now become the "benchmark on measuring *Aparatur Sipil Negara* (ASN, civil servants) performances in relation to their duties and functions." He adds that, "by showing the people that public servants are supportive in using technology for transparency and professionalism in government, we are also showing to our constituency to trust technology and of course, their leaders."

Instilling change in people requires trust, especially if we are changing their behavior. Dr. Muhammad Yusuf, a 51 year old Principal in SDN Ditotrunan was first hesitant about SIPERLU when it was introduced to them as an attendance and performance monitoring system. SIPERLU showed them the way as tardiness and absences are now properly – and easily – monitored.

More importantly, the minutes or sometimes hours lost if one has to re-do his or her attendance and performance report are now used for preparing learning activities and catching up with students and colleagues instead. It removed a burden and added layers of meaningful interaction between and among teachers and students.

The gains from the first year implementation of SIPERLU has resulted in the support to expand its features. Now, the civil servants can also use it to give additional feedback about their work and complete administrative work like filing for leaves. With SIPERLU's integration with SI SKP (Employee Work Target Information System) and SI Leave (Employee Leave Information System), the Regency is looking ahead to carry out more digital technology initiatives that would add to its growing list of Smart City projects.

## Onward to Touristic and Authentic Lumajang

Ranu Pani is a Village located 28 kilometers from Lumajang City. It derives its name from the Tengger Tribe of the Senduro District of the province. It is home to the Ranu Pane Lake and considered the gateway to reach Mount Semeru. In September 2021, Ranu Pani was selected as one of the fifty best tourist villages in Indonesia.

During the awarding ceremony in front of Ranu Pani villagers and officials of the Regency, Hon. Sandiaga Uno of the Tourism and Creative Economy explained that "the current condition of Indonesian tourism is moving from quantity-based tourism towards quality-based tourism. This is reflected in the high interest of tourists in nature and culture. And places like Ranu Pani, which offers experiential tourism through homestays, cultural immersion, and various opportunities to commune with nature."

Minister Sandiaga closed his congratulatory message by saying that he is proud of the achievements of Ranu Pani Village and encouraged them to develop further the potential of tourism. He ended by promising that the Ministry of Tourism and Creative Economy would be there to help mobilize resources for the tourism economy and will continue to work hard to create more sustainable jobs. He asked the village and provincial leaders to do the same.

Not soon after, the Regency and the village heeded the call to prepare Ranu Pani for sustainable tourism. With their success in implementing SIPERLU, the Regency saw it fit to expand the use of Smart City concepts to the booming tourism industry. And so, Ranu Pani became the first village in Lumajang to be enrolled in the Smart Village project with the help of partners from the national government, including PT Telkom, Indonesia.

The village will undergo massive infrastructure development to introduce digital technology while the villagers receive support and guidance on how to adopt and practice the principles of Smart Village from PT Telkom, the Regency, and national government agencies.

To date, Ranu Pani is just one of the five Smart Villages in the entire archipelago undergoing intensive mentoring to learning the three 'smart' points to implement the Smart Village program: Smart Governance, Smart Economy, and Smart Society.

Deputy Regent of Lumajang, Hon. Indah Amperawati expects the "ease of government services will bring convenience to the residents and accelerate development in the village." "This is our shared dream, and together we will make it a reality," she adds.

For the village of Ranu Pani, tourism managers will be trained on digital ticketing system that can be accessed via a smartphone to help navigate digital payments and reservations. Simple activity monitoring of tourist spots and establishments will also be possible through the local Command Center that will be created at the Ranu Pani Village Hall.

**Invest on Infrastructure, Invest on People: The Future Belongs to the Young**

Similar to SIPERLU, the capacity-building aspect of technology adaptation by the target community is equally important as investing in infrastructure. Deputy Regent Bunda Indah stressed that while the Smart Village project is a strategic program, "the provision of infrastructure and development of various applications must also be balanced with the readiness and willingness of the community itself for change."

Smart Village is Lumajang's biggest venture thus far in Smart City implementation. And unlike SIPERLU where the primary partners are civil servants, the target of behavior change in Ranu Pani are primarily the villagers. How will Lumajang's leaders go about convincing the people of Ranu Pani get on board with change and technology?

Regent Thoriqul Haq declares that "the smart village in Ranu Pani is in line with Lumajang Regency government's program to make Senduro District a tourism gateway in the region." He further believes that the implementation of the Smart Village program in Ranu Pani can be optimized if everyone is convinced of its benefits and have agreed to work together.

The key, he adds, is that "the young people of Ranu Pani should be the central motor of the program and they will be the ones to ensure and benefit the most from its success." He praises the young people in Ranu Pani; considering them as "extraordinary and having strong desires to make their village more advanced."

Meanwhile, Deputy Regent Bundah Indah notes that "the availability of infrastructures and sophisticated applications will not be of any use if the community is not ready. It is the duty of the community leaders and DPMD (Community and Village Empowerment Service) to prepare and lead the community."

Indeed, if the Smart Village Nusantara (SVN) is to succeed at all, both the young the old must work together to preserve Ranu Pani's authentic tourism appeal. SVN will give birth to a new Ranu Pani that is a fusion of its past and its future.

The community elders must work with their young to pass on centuries of stories of their bravery for their community, their gallantry in having faced new and bigger challenges, and devotion to their ways of life and history. And the young must listen intently and weave the new, modern Ranu Pani story from the old.

For it is only by honoring their past that they are also ensuring a better and brighter future for Ranu Pani and for themselves.

## The Age of "Smarter" Cities

The fifty years preceding the new century (1950-2000) introduced us to never before seen pace of urbanization. The next fifty (2000-2050) are seen to decide not just how people in the cities should live but more opportunely, the fate of urbanization as well.

By 2035, the world's most populous city will be Jakarta, at which point it will push the current holder of that title, Tokyo, into second place. They will be followed by Chongqing, Dhaka and Shanghai, respectively. Together, the top five biggest cities in the world – all in Asia – will be home to more than 165 million people.

There is no doubt that the world is flocking to cities in the Asia Pacific region where massive undertaking and numerous initiatives focusing on digitizing the government, society, and economy are also taking place.

It seems Asia is leading the way as we finally enter the age of cities. The empirical and normative implications of this are profound. Previous works presented arguments and evidences on supporting the kind of cities we are supposed to be living in. This manuscript has put forward three cases arguing for the quality of city we are supposed to build together.

It asserts that with democracy as its beacon, smart cities are now the torch bearers for a future that is not only technologically advanced, but sustainable and participatory as well.

The three case studies gave an alternative meaning to what makes cities smart: they do not only mean delivering the convenience of urban living to the rural but must also bring back the comforts of rural living to the urban.

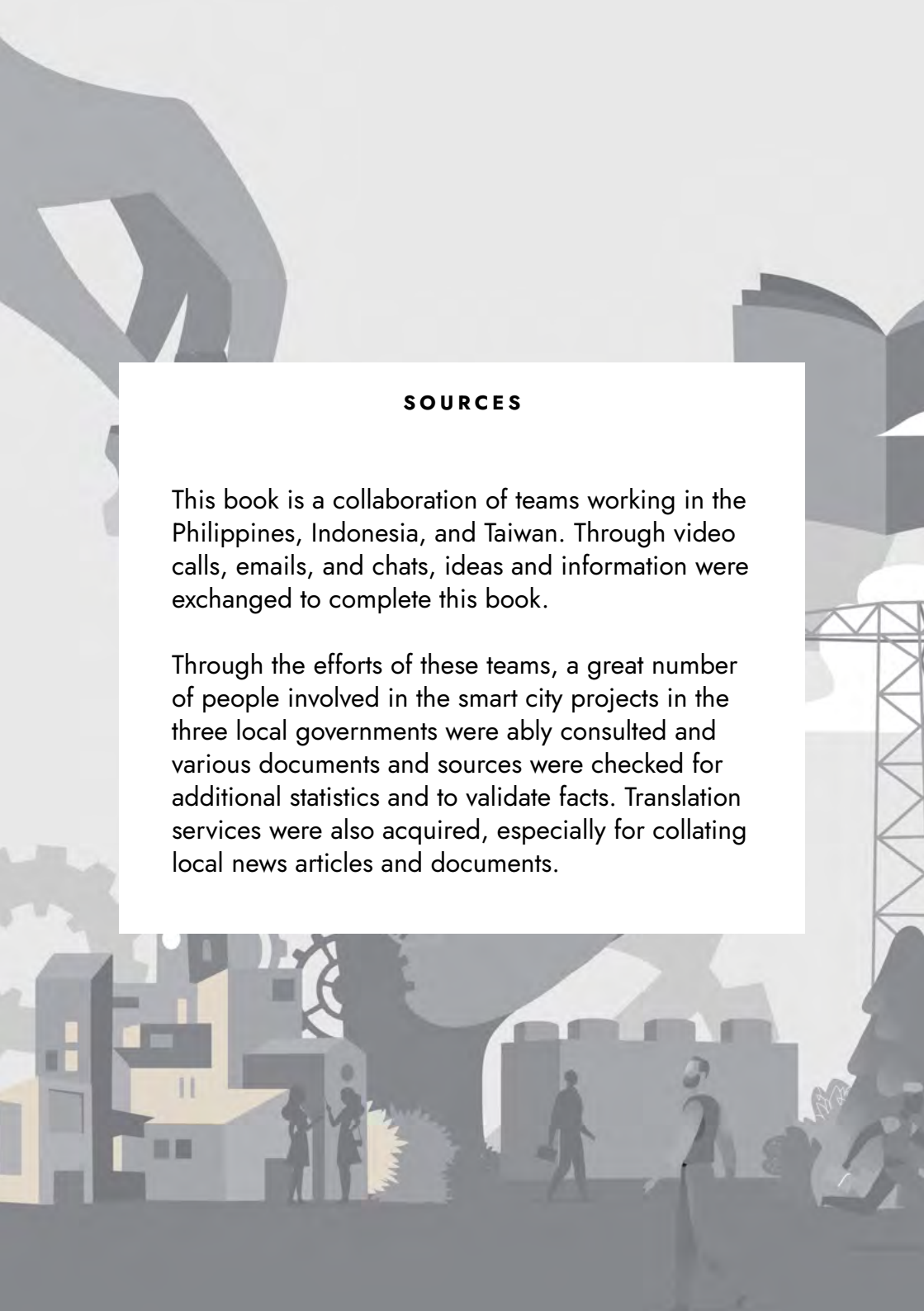
Taken together, Taoyuan, Lumajang, and Banyuwangi assert a common theme: that the use of technology through their smart city projects is not only for optimizing resources, but also for carrying out sustainable, equitable development in a process largely participated in by the citizens themselves.

What was once then an idea to expand use and access to technology has *now* evolved to become a democratic governance mechanism where residents are given reliable access to public service, which in turn empowers them to initiate change by innovating and creating new opportunities for themselves.

By recognizing their democratic rights to participation, the leaders of these local governments also honored their citizen's liberty to choose how they should implement their own smart city initiatives. In turn, they essentially gave their own meaning to what makes a province, a city, and a village smart.

At the practical level, smart city initiatives encourage citizens to be IT literate so they can use technology to avail of public services and participate in the process of governing. At the ideational level, smart city initiatives guided by democratic values use technology as an enabler and a development tool to improve access to and quality of education, increase local business opportunities, enhance health and welfare, and widen democratic involvement.

Thus, the pursuit of a smarter city as vision must center on empowering resident-citizens; ensure they are assisted, capacitated, and are involved in realizing their unique collective ambitions for a better, more sustainable future. There is just no *smarter* way than this.



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Through the efforts of these teams, a great number of people involved in the smart city projects in the three local governments were ably consulted and various documents and sources were checked for additional statistics and to validate facts. Translation services were also acquired, especially for collating local news articles and documents.

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