1. Smart cities in Asia: an introduction

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INTRODUCTION

The smart city has become a trendy policy concept in recent years within the context of two notable trends: (1) the rapid development of novel Fourth Industrial Revolution technologies, such as the Internet of Things (IoT), big data and artificial intelligence (AI); and (2) a rapidly urbanising planet, with more than half the population now living in cities. By providing off-the-shelf technological solutions to urban challenges and proposing to change the way in which we manage and live in cities, smart cities have captured the imagination of policymakers and politicians worldwide. Against this backdrop, we are witnessing an upsurge in the number of smart city developments being launched in Asia. Take these examples: India announced its plan to build 100 smart cities in 2015; Singapore launched its Smart Nation initiative in 2014; South Korea and Japan have been developing a series of ubiquitous- and eco-cities since the early 2000s; and China has recently been receiving attention for eagerly adopting the latest smart technology for urban management. As these Asian economic powerhouses deeply engage in their smart city projects, other Asian countries are also quick to follow suit by putting into motion their own smart city plans. In 2018, the Association of Southeast Asian Nations (ASEAN) launched the ASEAN Smart Cities Network (ASCN), with 26 pilot cities across all ten countries in the regional intergovernmental organisation.

This edited volume brings together a collection of studies on the latest smart city developments in Asia. The focus on Asian smart cities was prompted by our observation that a rapidly growing number of smart city projects is developing in the region, but, nevertheless, a relative dearth of proper attention has been given to them in smart city literature. Having undergone (or currently undergoing) a rapid catch-up in economic development and equally fast-paced urbanisation, Asian countries in general appear to exhibit a much more favourable attitude towards the development of smart cities in their quest for the prestige – symbolic or otherwise – of being able to adopt the latest information and communication technology (ICT) for their urban management systems.

This stands in stark contrast to the more sceptical perceptions and privacy concerns found in the West.

In fact, we may look upon the phenomenon of smart city developments in Asia as a unique trend emerging in a region that is quickly urbanising and growing in the global economy, rather than interpreting them as merely 'catching up' with the smart city models and experiences of the West. For sure, many Asian smart cities embody globally shared key concepts, such as living labs, sustainability and, increasingly, the city-as-a-platform. Yet, the kind of challenges that Asian governments seek to address via their smart city plans and, in particular, the conditions under which these projects are being rolled out are quite different from those faced by American or European cities. After all, many Asian countries and cities have different governance structures, national institutions, and development histories and challenges. Hence, it is not surprising that the motivations behind their smart city projects would differ as well. The majority of smart city research, however, has thus far been carried out based on cases in the West, with but a few exceptions. Even when smart cities in Asia are examined, only a handful – such as Singapore and Songdo – are found in the literature. Given the relentless rise of smart cities in the region and their growing significance in the global economy, it is necessary to examine the phenomenon through a uniquely Asian perspective to achieve a richer and more accurate interpretation. Indeed, while politicians and policymakers in Asia launch their smart city initiatives with much fanfare and enthusiasm, exactly what these projects are and their policy relevance to development remain rather ambiguous in the concurrent discussion on smart cities in the literature.

The collection of chapters herein attempts to offer a more comprehensive and closer look at how and why various governments in Asia pursue smart cities in their specific locales. The goal is to examine the real-world applications of contemporary smart cities, including what motivates their developments, processes and concerns situated within their specific local contexts. As it seeks to draw attention to contextually grounded, specific case studies depicting actual planning experiences of smart cities in various parts of Asia, this edited volume also addresses ongoing calls in smart city literature for more empirically based, international, comparative research to understand the complex reality of smart city development (see, e.g., Carvalho 2015; Glasmeier & Christopherson 2015; Kitchin 2015; Luque-Ayala & Marvin 2015). The idea is that cities are not merely passive backdrops for globally trending policy; instead, local actors actively shape and reshape the smart city idea around their own priorities and objectives, situating it within their local-specific political economy and institutions. Hence, the 'lack of comparative analysis and a dearth of knowledge about the range of urban contexts within which [smart urbanism] is emerging' is an issue (Luque-Ayala & Marvin 2015, p. 2108).

Karvonen et al. (2018) recently published an edited volume, stating that it is the 'first attempt to reflect on how smart city initiatives are being realised in different locales' (p. 295) by studying 23 cities in both the Global North and the Global South. More of such international, comparative research to 'reveal the discursive and material realities of actually existing smart city developments' remains warranted (Glasmeier & Christopherson 2015, p. 9), which this book responds to by focusing exclusively on Asia.

How is the globally promoted smart city idea situated, and how does it become reshaped within the Asian context? What are the substantive differences between smart city initiatives in Asia and in the West? What motivates their developments, which processes are involved and what kind of concerns might there be? One of our key objectives is to understand the true nature of Asian smart cities as they are, rather than viewing them through the critical lens of theories and frameworks mostly based on cases from the West. For this reason, we have made it a point to bring together local scholars and experts on Asian smart cities, most of whom came from or are based in the country or city of their expertise. Being local experts not only on smart cities but also on other related local policies, governance and urban issues, their candid examination of contemporary smart city projects is expected to result in a meaningful and timely collection that will help unravel the globally shared idea of smart cities being reproduced in Asia through local knowledge.

Consequently, our book also addresses Robinson's critique (2002, 2006) of urban scholarship as being focused on only a small handful of cities, particularly in the West, for the purpose of theory building and analyses. Following her call to 'de-colonize' urban scholarship and expand its geographic focus, this edited volume brings hitherto understudied cases of smart city development in Asia into the limelight. In addition to expanding the knowledge and analysis of smart cities as contextualised within diverse urban and national contexts, we hope it can be a starting point for triggering a discussion on how the field can develop appropriate narratives and ground-up theories for smart cities in Asia.

CONTEXTUALISING SMART CITIES IN ASIA

An Overview of Existing Smart City Narratives

Before we begin our discussions on situating the concept of the smart city in Asia, it is worthwhile to first unpack the existing understanding and narratives of smart cities. Indeed, the globally promulgated concept of the smart city has had quite a few definitions and conceptualisations (e.g., Caragliu et al. 2009; Nam & Pardo 2011; Deakin & Al Waer 2012; Angelidou 2015; Yigitcanlar et al. 2018) and has also been criticised for being somewhat ambiguous and

elusive at times (Vanolo 2014; Carvalho 2015). The lack of one clear and concrete definition, however, does not hinder our study on the actual practices of smart cities in Asia. Moreover, we note that there are emerging features associated with smart cities that allow us to start with some understanding of what they really are. For instance, smart cities involve actively using advanced, off-the-shelf technologies to *solve* urban problems (Glasmeier & Christopherson 2015). They also entail developing the 'city-as-a-platform', where silo-based services and systems are interconnected to produce a collaborative and integrated model (Anttiroiko 2016; Hwang 2016). A smart city can be summed up as a 'shift from innovation to application, from the back-office to front-line services' (Allwinkle & Cruickshank 2011, p. 9), based on a technical platform supported by cutting-edge technologies, including IoT, big data and AI. Its emphasis on the application of existing and available technologies seems to be opening doors for a diverse assortment of cities to not only aspire towards but also realise smart urbanism. Now, becoming smart is no longer the prerogative of a small handful of knowledge-intensive cities. Additionally, with the end goal emphasis on *cities*, rather than technology itself, multi-dimensional aspects are highlighted. The famous European Union (EU) smart city framework comprises multiple dimensions, including smart economy, people, governance, mobility, environment and living (EU 2014). Likewise, Yigitcanlar et al. (2018) highlight the desired economic, societal, environmental and governance outcomes in smart cities, which are then further developed into a multi-dimensional framework that includes the smart city's assets, drivers and outcomes.

Given the multi-dimensional aspects and goals inherent in smart cities, who the key actors are and their motivations behind the push for smart cities become important in relation to the kind of directions these urban projects might take. The most apparent ones identified in the literature are high-tech companies, which began to see 'cities' as huge untapped sources of revenue amid steep competition in their traditional markets (Townsend 2013). The popularisation of the term 'smart city' itself took off after IBM Chairman Sam Palmisano's speech 'A Smarter Planet: The Next Leadership Agenda' in November 2008, following the financial crisis of 2007–2008 (Söderström et al. 2014). Framing the trend as a 'corporate smart city', the literature began to explain the smart city as an outcome of corporate vision and the market creation strategy of profit-driven multinational corporations (e.g., IBM, Cisco, Intel, Accenture and Siemens) (Hollands 2015; Kitchin 2015) backed by international consulting firms (Glasmeier & Nebiolo 2016).

The emphasis placed on the role of global companies does not marginalise local actors in smart city pursuits, not least because their goals appear to be aligned. In fact, global companies have deliberately designed smart city concepts to court local governments. IBM (2012), for example, has marketed

its smarter city solutions by claiming that 'cities compete globally to attract both citizens and businesses [and] a city's attractiveness is directly related to its ability to offer the basic services that support growth opportunities, build economic value and create competitive differentiation'. Such local economic development motivation present in the smart city narrative has attracted quite a few entrepreneurial governments in post-industrial cities to come on board, urging them to keep up with the global circulation of smart city discourse.

This pursuit of a growth agenda under smart city development is analogous to Harvey's (1989) neoliberal urban entrepreneurialism. Indeed, becoming a smart city is often considered another form of entrepreneurial project, serving as an important global signal for competitiveness in today's tech-driven society and a means of attracting footloose capital and talent. It is not a surprise then that smart cities have often been criticised as neoliberal artefacts, improving little – if not aggravating – the digital divide and social inequality issues afflicting post-industrial cities (Hollands 2008, 2015; Greenfield 2013; Vanolo 2014).

In reaction to these concerns, the concept of the smart city has since evolved to emphasise participatory orientation and citizen empowerment, using IT-enhanced platforms to tackle urban problems with civic innovation (e.g., see Allwinkle & Cruickshank 2011; Komninos et al. 2013; Townsend 2013; Deakin 2014; Kitchin 2015) and even to promote a 'new citizenship regime' (Joss et al. 2017). In this view, people and communities are encouraged to take ownership and initiative, as well as to use technology to create social and public value (Hollands 2015; Foth 2016). Indeed, with smart cities' open data and innovation platforms, an entirely new technologically enhanced opportunity now exists to build not just participatory platforms but also citizen-driven, open and inclusive models to shape cities and innovations (Komninos et al. 2013; Deakin 2014; Anttiroiko 2016). The idea is to create an ecosystem or 'living lab' in which citizens can take part in co-designing and co-creating solutions with the government and other stakeholders. Building smart cities as participatory innovation platforms thus requires 'sufficient political will and a culture of citizen empowerment and co-creation' (Anttiroiko 2016, p. 7). Apparently, most cases discussed in this light are about Western cities with deeply rooted local democracy.

In fact, all smart city narratives introduced thus far arise from the Western context, with minimum contributions from the Asian archetype. At most, the latter has been viewed (somewhat critically) as being government-centred, hardware-driven projects that use cutting-edge technologies principally for economic competitiveness (Anttiroiko 2013; Yigitcanlar & Lee 2014). Needless to say, they serve as less than ideal examples of smart cities, especially when juxtaposed against the Western conception of the smart city as a new urban governance future based on digital democracy and a modern ecosystem where

local citizens actively develop urban solutions and economic opportunities with user-focused technologies. Given the substantively distinct economic and political contexts and development experiences in Asia, however, we argue that the smart city narrative situated in this region should be given a more nuanced treatment.

Setting the Scene: Government-led Smart Cities in Asia

Our edited volume focuses on both national and local government-led smart city initiatives in Asia, following the noticeably observable trend in the region where governments are not only announcing ambitious smart city initiatives but are spearheading them as well. The following chapters in the book will illustrate how the smart city concept is being used, developed and implemented to meet the policy objectives of these governments in Asia within their local contexts. To be sure, quite a few issues raised in the existing smart city narratives are also pertinent to these Asian cases, such as the nebulous role of multinational companies, widening inequality and the need to underline citizen-centricity in smart city projects. However, for government-led smart city initiatives in Asia, we must also draw attention to the following major differences.

Most notably, while national governments have seldom been discussed in smart city literature, they are often the main actor, actively promoting and planning smart cities in many cases in Asia. In the case of East Asian countries, national governments had a strong hand in their countries' industrialisation and development in the latter half of the twentieth century, and state-led smart city initiatives could indicate a lingering legacy of this state-led developmentalism. This trend may also be interpreted as national governments – whether in the East or in other parts of Asia – seeing the smart city as an opportunity to pursue their national development goals amid greater accessibility to modern technology in today's fast-paced society. What is evident is that economic development remains a high priority for many Asian countries, after having achieved rapid industrialisation relatively recently or currently undergoing one.

The role of local governments should also not be overlooked, as the concept is a smart *city*, not a smart *nation* – except in the case of the city-state of Singapore. Rather than local governments' entrepreneurial pursuits to become globally competitive as identified in the literature, in Asia, the motivations and capacity of local governments in developing smart cities are expected to vary widely. Some local governments of Asian global cities are vying for a leading position in the global smart city ranking, but these examples would be comparatively few amid the widespread boom of smart city projects in the region. More participating local governments are likely to be challenged by either

underdevelopment or being unable to catch up with their population growth. While 'development' is the key driver behind smart city endeavours, the level of development goals and the kinds of communication technology become subject to local interpretation and capacity.

For sure, this would not be the very first book to examine Asian smart cities. There are, for example, *Smart Eco-City Development in Europe and China* (Caprotti et al. 2017); *Singapore: Smart City, Smart State* (Calder 2016); and *Smart Cities and Urban Development in India* (Mani 2016). However, our edited volume stands out in the literature, as it surveys the latest smart city projects initiated by governments across varying geographical, economic, political, social and institutional settings in Asia. As implied earlier, although we attempt to highlight notable characteristics and motivations of smart city developments in Asia in this book, there are considerable variations among the countries involved. Each chapter herein studies contextually situated smart cities as they travel within unique local institutions, political dynamics, socio-economic conditions and urban development challenges.

SURVEY OF SMART CITIES IN ASIA: BOOK OVERVIEW

A major contribution of this book is that it surveys countries in Asia, examining the similarities as well as the differences in their development and implementation of the globally adopted smart city concept. To highlight Asia's diverging local contexts in which smart cities are situated and to provide a clearer understanding of them, this book is divided into three parts. In an attempt to group those countries or cases with key shared commonalities, the first part brings together smart cities of the developed-economies of Japan and the Four Asian Tigers (i.e., Singapore, Hong Kong, Taiwan and South Korea); the second part examines the smart cities of the two giants in Asia – China and India – and the third and final part specifically focuses on the smart city development and plans of second-tier cities in Indonesia, Thailand and South Korea. While we do arrive at some conclusions in the subsequent section of this chapter, we also invite the readers to draw their own conclusions and meaningful lessons from this survey.

Smart Cities of the Four Asian Tigers and Japan

Japan and the Four Asian Tigers are leading economies in Asia, with a keen interest in technological developments and a strong state that guided their rapid economic growth throughout the latter half of the twentieth century. The developmental state theory has explained the industrialisation and economic successes of Japan (Johnson 1982) and the Four Asian Tigers (see, e.g., Amsden 1989; Evans 1989), highlighting the states' strong intervention in

the economy and society with their forward-looking plans, albeit to varying degrees (Castells 1992). What these successful economies share is an interventionist state, followed by rapid industrialisation based primarily on the strategy of catching up. Given their initial condition of rather limited natural resources for economic development, these countries had to rely almost exclusively on human capital while placing heavy emphasis on technological developments. Hence, it is not a surprise that a number of these countries have been early adopters of technologies in their urban landscapes, in addition to promoting high-tech industries as part of their economic development strategy. Regardless of whether the 'smart city' title is attached to them, the major cities of these five countries are known for their extensively wired urban environments. In fact, TechRepublic ranked Seoul, Hong Kong, Tokyo and Singapore as the top four 'most connected, innovative cities' in the world (Forrest 2015). These cities are also well-acknowledged 'global cities', with the following Global Cities Index ranking by AT Kearney (2019): Tokyo fourth, Hong Kong fifth, Singapore sixth and Seoul thirteenth.

For these Asian economies – already boasting their high-tech global cities – what are the main motivations behind their latest smart city pushes? What policy ends are they trying to achieve? What are their key strategies and challenges? The first part of this book begins with Singapore, which has received much attention from policymakers and scholars across both the East and West for its latest flagship Smart Nation initiative. Yu-Min Joo, Teck-Boon Tan and Ming-Yee Foo (Chapter 2) unpack this mega digitalisation push, launched in 2014, including its development motivations, governance structure and notable characteristics of related projects that span across diverse aspects of the Singaporean economy and society. The authors argue that the Smart Nation is the Singapore Government's next big idea – after the city-state's successful economic transformation under the global-city development goals – to be pursued in the coming decades amid an impending wave of technological change and disruption. The chapter underscores the 'going global' thinking associated with the Smart Nation as a continuation of Singapore's development strategy, and it highlights the international networks and urban solutions (to be exported) sought after under the flagship project. It also introduces the case of an autonomous vehicle living lab as an example of the developmental state's targeting of sunrise industries, *inter alia*. From this calculated state-led push, the authors then draw attention to how difficult it has been to get citizens on board.

Hong Kong and Singapore have often been placed side-by-side in comparative studies. When it comes to smart city development, Hong Kong can be considered a latecomer, having announced its Smart City Blueprint only in late 2017. It also lacks the well-acclaimed position and branding of Singapore's Smart Nation. However, this does not automatically imply that the city lags

behind smart city solutions and their implementations in the urban landscape. As Xin Li, Kyung-Min Nam and Chee Keong Khoo (Chapter 3) explain, Hong Kong had long embraced ICT in various domains of urban development and management. What differentiates its latest smart city vision is how it attempts to bring disparate technology applications together in a comprehensive, system-level and integrated manner, as well as its ostensibly people-centric (as opposed to its previously techno-centric) approach to smart city development. The plan promises to deliver smart mobility, environment, people, economy, government and living to cater to the city's contemporary challenges and needs. As a notable case, the chapter introduces the Kowloon East smart city pilot project, which has been spurred by urban renewal goals of building Hong Kong's second central business district.

Next, Shang-su Wu (Chapter 4) takes us to Taipei, Taiwan. As the author points out, few studies exist on Taipei as a smart city in the literature, even though Taiwan has long been known for its ICT industry. The chapter explains the government's ambition to turn Taiwan into a digital smart island and how decision makers in both the public and private sectors are eager to promote smart Taipei as the way for its next development path by leveraging Taiwan's strength in ICT. Under the policy to develop innovative industries, the chapter discusses how Taipei develops and implements comprehensive smart city plans that meet local needs and challenges. A particularly notable point to highlight in this chapter is how Taipei seizes the smart city movement as an opportunity for city diplomacy to overcome the constraints and pressure it faces. In addition to forming a platform for international cooperation under the smart city banner, the goal is for local companies to showcase and export their smart city technologies.

The case of smart cities in South Korea, especially exemplified by the well-known case of Songdo, has often been portrayed as top-down, infrastructure-driven developments (see, e.g., Carvalho 2015; Anttiroiko 2013). This, however, is an old version of the country's smart city plan, according to Jong-Sung Hwang (Chapter 5). South Korea has been one of the early pioneers of smart cities, beginning in the early 2000s, even before the smart city concept became popular. They were then locally referred to as ubiquitous-cities, and due to lacklustre outcomes in some of these smart city projects, South Korea underwent what Hwang termed the 'smart city winter'. With this experience in mind, the national government recently launched its latest smart city plan as a new development model based on a holistic city-as-a-platform strategy. The chapter provides a comprehensive overview of the evolution of smart city developments in South Korea as well as detailed explanations behind each phase.

Part I ends with the case of Japan – the frontrunner of East Asian economic development. Japan's smart city aspirations place heavy emphasis on *inter alia*

energy issues, rather than the all-encompassing aspects of urban life – which, in that regard, sets it apart from the other four smart city cases discussed earlier. Using the innovation systems framework, Masaru Yarime (Chapter 6) introduces the key actors and policies behind Japan's smart city development to tackle the country's persistent concerns over efficient and sustainable energy supply and uses. While such concerns can be traced back to the oil crisis of the 1970s, the agenda received a shot in the arm when the Fukushima accident occurred in 2011. In the case of Japan, smart cities are demonstrations or showcase projects constructed by the Japanese Government and the private sector (i.e., electric power companies and electronic companies). As a form of 'societal experimentation', their purpose is to localise and test out new energy-related technologies and to build business models with multiple stakeholders, while at the same time raising energy and climate change awareness among the public. The chapter also provides some details of policies designed to facilitate innovation in the energy industries and new smart technology adoption by end-users, which could offer useful insights to smart city policymakers elsewhere.

Smart City Initiatives of Two Asian Giants

China and India are by far the most populous countries in the world. Both have a population of more than 1.3 billion, while the world's third most populous country – the United States – only has a population of roughly 330 million. In terms of size, China and India rank third and seventh in the world, respectively (World Population Review 2019). With their sheer population and land size, China and India no doubt stand out from other countries in Asia. They both share great economic potentials – with China already wielding its economic power in the global economy. At the same time, they are often compared with one another for their different political systems and institutions. This begs the question: how are these two giants going to develop and govern their latest smart city initiatives, and equally important, what are their key motivations?

Souvanic Roy and Tathagata Chatterji (Chapter 7) explore the Smart City Mission launched by India in 2015, also widely known as India's ambitious plan to build 100 smart cities. The authors aptly capture the challenges of India's smart city initiative, describing it as 'implementing big data and a knowledge-intensive urban agenda in a developing country with a large, mostly poor, digitally divided population across diverse geographies and varied institutional landscapes'. The chapter explains how the smart city initiative signals the Indian government's focus on cities as the development engine in the twenty-first century, departing from its decades of rural bias. Seeking to embark on leapfrog development, smart city projects are expected to deliver 'world-class' urban services and trigger further developments in other parts of

the city. In addition to introducing India's smart city initiative – including its key agencies, selection processes, implementation and financing – the chapter analyses the policy through the 'good governance framework' and makes a compelling argument that the initiative is resulting in corporatised urban governance in India. In other words, the authors raise the concern over a centralised technocratic governance model that is being reinforced by top-down and outcome-oriented smart city development plans, implemented in localities by newly institutionalised corporation-like agencies called special purpose vehicles.

Equally ambitious, China has also launched hundreds of smart city pilot projects – a scale that is unimaginable for most countries. While China's smart city development aspirations might not have received as much attention and exposure as India's Smart City Mission, its speedy integration of advanced technologies in managing cities and urban life (e.g., the social credit system, cashless payments, AI-enabled transportation network and face-recognition system) is beginning to attract international scrutiny (Ng & Tanu 2019). Xinhui Yang and Lin Ye (Chapter 8) introduce China's smart city endeavours, including a series of supporting policies and pilot projects launched by various ministries, as well as China's latest push towards developing an evaluation index system for its many smart cities. While the chapter points out that a number of current evaluation index systems stress 'economic development and infrastructure construction', it also emphasises Chinese smart cities as a key remedy for solving urban woes and management challenges, reflecting the country's rapid and massive urbanisation. In particular, it explores the traffic congestion problem, introducing the development of the smart transportation system in the Sino–Singapore Suzhou Industrial Park. The chapter thus showcases one of the examples of Singapore 'going global' with its smart city expertise and branding.

Second-tier Cities and Smart City Development

In the last part of the book, we turn our attention to the smart city aspirations of second-tier cities in Asia. Glasmeier and Nebiolo (2016) note that the top smart cities are often national capitals or major metropolitan areas. In Asia – often manifesting in the concentrated development of the national capital or a few key cities – smart cities indeed tend to be national capitals or representative metropolitan cities. However, second-tier cities are not left out of the picture. For example, there are cases in which the smart city concept is applied to a new city (such as Songdo in South Korea). There are also cases in which existing second-tier cities actively seek to get on board the national smart city agenda to boost local development or become selected as pilot cases. Part III highlights some of the issues and local perspectives that arise from these cases.

Two of the three chapters in Part III are on ASEAN countries. There are a total of ten countries in ASEAN, and Indonesia and Thailand (examined herein) are its two largest economies. Besides Singapore, ASEAN comprises developing countries currently undergoing rapid urbanisation with relatively high economic growth rates. At various stages of development, how are smart city policies interpreted, developed and implemented? In addition, these countries differ from East Asian countries in that they comparatively lack the experience of strong national governments guiding and leading their economic and technological developments. In the case of Indonesia, Arif Budy Pratama and Satria Aji Imawan (Chapter 9) explain that it is the local governments that initiate their own smart city developments, amid the absence of a clear conceptualisation of the smart city at the national government level. Accordingly, 'every city has its own understanding of the "smart city" concept, which affects their agenda setting and smart city policymaking', and the authors argue that 'bureaucracy readiness' at the local level is thus a critical factor for smart city projects in Indonesia. Based on interviews with Yogyakarta's key civil servants, they elaborate on the four dimensions of readiness in bureaucracy that have allowed the small secondary city of education and tourism to successfully pursue its smart city agenda, centred on smart culture.

The chapter on Thailand (Chapter 10) by Ora-orn Poocharoen, Poon Thiengburanathum and Kian Cheng Lee highlights the case of another second-tier city, Chiang Mai, which happens to be one of the first three smart city projects in Thailand. (The other two are Phuket and Khon Kaen.) According to the authors, 'the smart city outlook … is viewed as critical for secondary cities with a burgeoning urban population' and to 'help redistribute the unbalanced wealth generation in Thailand, which has been concentrated in Bangkok'. Based on the field experiences of the authors – who have been involved in developing the smart city plan of Chiang Mai – the chapter mainly discusses the city as a complex adaptive system and introduces the multiplicity of urban systems as a framework for smart city projects. While this framework is far from being specific to Thailand, it nevertheless offers a rare glimpse into the developing country's local visions and viewpoints vis-à-vis its smart city development.

The book ends with the case of Songdo – a smart city built from scratch. In addition to criticisms of being a top-down smart city development (Carvalho 2015; Anttiroiko 2013), Songdo has been referred to as a by-product of the South Korean government and companies' attempt to develop a new growth engine and exportable development model (Shwayri 2013; Mullins & Shwayri 2016), combined with the development aspiration of the local government of Incheon (Shin 2016; Joo 2019). Michael Manning, Jill L. Tao and Jae-in Noh (Chapter 11) shed light on yet another angle of analysis. Focusing on the overlap between 'smart' and 'green' cities in the project, the authors carried

out a survey with the city's residents and visitors in order to explore their perceptions of the concept of 'green'. The authors find that ordinary citizens tend to perceive 'green spaces' and 'cleanness' as the key attributes of a green city. This differs from the concept envisioned by the national government and how it markets the Songdo project abroad. In fact, the Korean Government's own perception of a 'green city' – which mixes 'sustainability elements and economic development' as a growth model – is in itself catering to 'Korean sensibilities', rather than identifying with general international viewpoints. The authors thus argue that Songdo represents uniquely local renditions of the green and smart city, especially those of the residents, by being 'modern and convenient'. In that regard, it may then warrant a more nuanced evaluation than concurrent critiques of Songdo.

CONCLUSION: GOVERNING DEVELOPMENT IN AN ERA OF HYPER-CONNECTIVITY

The collection of chapters in this edited volume are empirical case studies, with an eye to drawing out relevant narratives and findings of smart cities in the Asian context and policymaking space. In particular, the chapters showcase local academics' views and interpretations of their smart cities and what they consider to be the key issues, which may or may not always complement views from the West. What stands out from our collection of studies is that many smart cities in Asia are part of the governments' new development strategy. Whether governments are searching for the next big development push or just trying not to fall behind in this hyper-connected era, they are embarking on the smart city journey as a key development strategy. At the same time, many national and local governments also appear to be taking it as an opportunity to test out new governance modes or ways in which development is pursued in their locales, leveraging on the ideas being promoted by the smart city concept. Examples such as an emphasis on citizens as co-creators, living labs and system-level integration that have come up in a number of chapters illustrate such efforts. We also note that while there are certainly globally shared aspects of the smart city, what is particularly noteworthy from this collection is local specificity. Just to highlight a few examples: Taipei's attempt to forge international connections via smart city networking; Japan's focus on energy issues; India's use of smart cities for leapfrog development; and Singapore's emphasis on building international cooperation networks and promoting urban solution exports, all reflect goals and approaches that are closely associated with specific local challenges and contexts. According to our cases, the smart city is more of a development strategy in an era of hyper-connectivity than the pursuit of a tech-enabled utopia.

Admittedly, this book is by no means comprehensive, but we do hope that it serves as an important starting point to explore a contextually grounded examination of smart cities, inviting diverse viewpoints and analyses. Although this book touches on a range of smart city development projects in Asia, it could have benefited from more extensive coverage of ASEAN in particular. The contextually grounded study of smart cities in ASEAN, which is rapidly growing in terms of economy and urbanisation, would be meaningful, as their conceptualisation and development of smart cities can differ significantly from those not only in the West but also the tech-savvy frontrunner economies of East Asia. What kind of smart cities these developing countries envision and how they approach their developments definitely merit more detailed examination. Especially with all ten countries of ASEAN having at least one (if not a few) pilot smart cities as part of their ASCN, the dearth of knowledge on these rising smart cities suggests much room for further investigation down the road.

Our book also does not address the outcomes and achievements of smart city projects. How do smart city policies fare as a development strategy? What positive and negative impacts do they have on our societies? Many of these policies have been introduced only recently, and it is yet too early for an accurate evaluation. As they engender more concrete outcomes in the future, it would be wise to revisit and analyse whether they have achieved their development goals and how they have changed our cities. Nevertheless, there is still value in currently studying the local perceptions and approaches of smart cities in order for us to understand the diverse range of conceptualisations and evolutions of the globally popular trend taking place on the ground. We hope that the featured cases, as well as some of the commonly shared themes and insights distilled from the chapters, will benefit not only those readers interested in smart cities and contemporary Asian urbanisation but also practitioners and policymakers looking to gain insights into the specific and actual practices of our much talked about smart cities.

REFERENCES

Allwinkle, S & Cruickshank, P 2011, 'Creating smart-er cities: An overview', *Journal of Urban Technology*, vol. 18, no. 2, pp. 1–16.

Amsden, AH 1989, *Asia's next giant: South Korea and late industrialization*. New York: Oxford University Press.

Angelidou, M 2015, 'Smart cities: A conjuncture of four forces', *Cities*, vol. 47, pp. 95–106.

Anttiroiko, AV 2013, 'U-cities reshaping our future: Reflections on ubiquitous infrastructure as an enabler of smart urban development', *AI & Society*, vol. 28, no. 4, pp. 491–507.

Anttiroiko, AV 2016, 'City-as-a-platform: The rise of participatory innovation platforms in Finnish cities', *Sustainability*, vol. 8, no. 9, article 922.

AT Kearney 2019, 'A question of talent: How human capital will determine the next global leaders', *2019 Global Cities Report*, viewed 28 June 2019, https://www.atkearney.com/global-cities/2019.

Calder, KE 2016, *Singapore: Smart city, smart state*. Washington, DC: Brookings Institution Press.

Caprotti, F, Cowley, R, Bailey, I, Joss, S, Sengers, F, Raven, R, Spaeth, P, Jolivet, E, Tan-Mullins, M, Cheshmehzangi, A & Xie, L 2017, *Smart Eco-city development in Europe and China: Opportunities, drivers and challenges*. Exeter: University of Exeter.

Caragliu, A, Del Bo, C & Nijkamp, P 2009, 'Smart cities in Europe', *Series Research Memoranda 0048*. Amsterdam: Free University Amsterdam, Faculty of Economics, Business Administration and Econometrics.

Carvalho, L 2015, 'Smart cities from scratch? A socio-technical perspective', *Cambridge Journal of Regions, Economy and Society*, vol. 8, no. 1, pp. 43–60.

Castells, M 1992, 'Four Asian tigers with a dragon head: A comparative analysis of the state, economy, and society in the Asian Pacific Rim', in Appelbaum, R & Henderson, J (eds.), *States and development in the Asia Pacific Rim*, pp. 33–70. London: Sage.

Deakin, M 2014, 'Smart cities: The state-of-the-art and governance challenge', *Triple Helix*, vol. 1, no. 7, pp. 1–16.

Deakin, M & Al Waer, H 2012, *From intelligent to smart cities*. London: Routledge.

EU 2014, *Mapping smart cities in the EU*. Brussels: European Union Directorate General for Internal Policies.

Evans, P 1989, 'Predatory, developmental and other apparatuses: A comparative political economy perspective on the third world stat', *Sociological Forum*, vol. 4, no. 4, pp. 561−587.

Forrest, C 2015, 'Photos: 20 of the world's most connected, innovative cities', TechRepublic, 9 April, viewed 28 June 2019, https://www.techrepublic.com/pictures/photos-20-of-the-worlds-most-connected-innovative-cities/.

Foth, M 2016, 'Early experiments show a smart city plan should start with people first', *The Conversation*, 1 June, viewed 11 August 2017, http://theconversation.com/early-experiments-show-a-smart-city-plan-should-start-with-people-first-60174.

Glasmeier, A & Christopherson, S 2015, 'Thinking about smart cities', *Cambridge Journal of Regions, Economy and Society*, vol. 8, no. 1, pp. 3–12.

Glasmeier, A & Nebiolo, M 2016, 'Thinking about smart cities: The travels of a policy idea that promises a great deal, but so far has delivered modest results', *Sustainability*, vol. 8, no. 11, article 1122.

Greenfield, A 2013, *Against the smart city*. New York: DO projects.

Harvey, D 1989, 'From managerialism to entrepreneurialism: The transformation in urban governance in late capitalism', *Geografiska Annaler, Series B: Human Geography*, vol. 71, no. 1, pp. 3–17.

Hollands, RG 2008, 'Will the real smart city please stand up? Intelligent, progressive or entrepreneurial?', *City*, vol. 12, no. 3, pp. 303–320.

Hollands, RG 2015, 'Critical interventions into the corporate smart city', *Cambridge Journal of Regions, Economy and Society*, vol. 8, no. 1, pp. 61–77.

Hwang, JS 2016, 'Seumateusiti baljeonjeonmang-gwa hangug-ui gyeongjaenglyeog', *IT & Future Strategy*, NIA, vol. 6, pp. 1–42.

IBM 2012, 'Smarter more competitive cities', *IBM Smarter Cities: Point of view*, viewed 2 June 2017, http://smartcitiescouncil.com/system/tdf/public_resources/Smarter,%20more%20competitive%20cities.pdf?file=1&type=node&id=156.

Johnson, CA 1982, *MITI and the Japanese miracle: The growth of industrial policy, 1925–1975*. Stanford, CA: Stanford University Press.

Joo, YM 2019, *Megacity Seoul: Urbanization and the development of modern South Korea*. Oxford and New York: Routledge.

Joss, S, Cook, M & Dayot, Y 2017, 'Smart cities: Towards a new citizenship regime? A discourse analysis of the British smart city standard', *Journal of Urban Technology*, vol. 24, no. 4, pp. 29–49.

Karvonen, A, Cugurullo F & Caprotti, F 2018, *Inside smart cities: Place, politics and urban innovation*. London: Routledge.

Kitchin, R 2015, 'Making sense of smart cities: Addressing present shortcomings', *Cambridge Journal of Regions, Economy and Society*, vol. 8, no. 1, pp. 131–136.

Komninos, N, Pallot, M & Schaffers, H 2013, 'Special issue on smart cities and the future Internet in Europe', *Journal of the Knowledge Economy*, vol. 4, pp. 119–134.

Luque-Ayala, A & Marvin, S 2015, 'Developing a critical understanding of smart urbanism?', *Urban Studies*, vol. 52, no. 12, pp. 2105–2116.

Mani, N 2016, *Smart cities and urban development in India*. New Delhi: New Century Publications.

Mullins, PD & Shwayri, ST 2016, 'Green cities and "IT839": A new paradigm for economic growth in South Korea', *Journal of Urban Technology*, vol. 23, no. 2, pp. 47–64.

Nam, T & Pardo, T 2011, 'Conceptualizing smart city with dimensions of technology, people, and institutions', in *The Proceedings of the 12th Annual International Conference on Digital Government Research*, pp. 282–291. New York: ACM.

Ng, D & Tanu, E 2019, 'From dispensing toilet paper to shaming jaywalkers, China powers up on facial recognition', *Channel NewsAsia*, 2 February, viewed 28 June 2019, https://www.channelnewsasia.com/news/cnainsider/shaming-jaywalkers-china-facial-recognition-technology-privacy-11196684.

Robinson, J 2002, 'Global and world cities: a view from off the map', *International Journal of Urban and Regional Research*, vol. 26, no. 3, pp. 531–554.

Robinson, J 2006, *Ordinary cities: Between modernity and development*. London: Routledge.

Shin, HB 2016, 'Envisioned by the state: Entrepreneurial urbanism and the making of Songdo City, South Korea', in Datta, A & Shaban, A (eds.), *Mega-urbanization in the Global South: Fast cities and new urban utopias of the postcolonial state*, pp. 83–100. Oxon: Routledge.

Shwayri, ST 2013, 'A model Korean ubiquitous eco-city? The politics of making Songdo', *Journal of Urban Technology*, vol. 20, no. 1, pp. 39–55.

Söderström, O, Paasche, T & Klauser, F 2014, 'Smart cities as corporate storytelling', *City*, vol. 18, no. 3, pp. 307–320.

Townsend, A 2013, *Smart cities: Big data, civic hackers, and the quest for a new utopia*. New York: WW Norton & Co.

Vanolo, A 2014, 'Smartmentality: The smart city as disciplinary strategy', *Urban Studies*, vol. 51, no. 5, pp. 883–898.

World Population Review 2019, 'Largest countries in the world by area 2019', viewed 28 June 2019, http://worldpopulationreview.com/countries/countries-in-world-by-area/.

Yigitcanlar, T & Lee, SH 2014, 'Korean ubiquitous-eco-city: A smart-sustainable urban form or a branding hoax?', *Technological Forecasting and Social Change*, vol. 89, pp. 100–114.

Yigitcanlar, T, Kamruzzaman, LB, Ioppolo, G, Sabatini-Marques, J, da Costa, EM & Yun, JH 2018, 'Understanding "smart cities": Intertwining development drivers with desired outcomes in a multidimensional framework', *Cities*, vol. 81, pp. 145–160.