Building New Cities: Challenges, Opportunities and Recommendations

Summary and analysis of themes emerging from Cityquest – KAEC Forum 2014
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Edited by Naureen Kabir Collings, Director of Research, New Cities Foundation.

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More people will move to cities in the next 40 years than in the entire span of human history. Building brand new cities as a response to this unprecedented urban boom is, perhaps, the boldest reaction so far. These urban utopias not only represent hundreds of billions of dollars of investments, millions of potential employment opportunities, but also help break ground for innovation and technology to become intrinsic to urban lifestyles.

Cityquest – KAEC Forum is the first global leadership exchange among key visionaries, builders and partners of the world’s largest and most innovative greenfield city projects. Co-founded and hosted by King Abdullah Economic City (KAEC), in partnership with the New Cities Foundation, the Forum’s chief objective is to generate cohesive strategies for making these cities of the future a sustainable success. It represents a vital cross-sector conversation among a unique community of new city builders.

The New Cities Foundation’s mission is to shape a better urban future for all by generating and scaling ideas and solutions through events, research and urban innovation projects. As one of the world’s largest new city projects, KAEC aims to become a great enabler of socio-economic development in the Kingdom of Saudi Arabia. As part of a vision of a world where cities drive economic, social and environmental progress, this partnership is founded upon a common belief in the unprecedented possibilities offered by this century of cities. Despite the controversies they can sometimes create, we are convinced that new cities offer a unique chance to turn radical ideas into reality.

The 2014 Cityquest – KAEC Forum brought together 227 participants from 28 countries, including senior executives and top decision-makers from the world’s foremost real estate, construction, technology, financing, consulting, architecture, and telecommunications firms, as well as mayors, thinkers, and researchers from top global universities. New cities represented included: Clark Green City (Philippines), Colombo Port City (Sri Lanka), Gujarat International Finance-Tec City (India), Iskandar Malaysia (Malaysia), Jazan Economic City (Saudi Arabia), Kabul New City (Afghanistan), King Abdullah Economic City (Saudi Arabia), Lavasa (India), Rawabi (Palestine), and the Sino-Singapore Tianjin Eco-City (China).

The following report by the New Cities Foundation provides analysis and recommendations on key themes that emerged during the Forum. Rather than a comprehensive summary of the conference program, the report draws from the discussions that took place during Cityquest – KAEC Forum 2014 and aims to capture the major challenges of new city builders today. Topics covered include the relationship between private and public stakeholders, attracting people, creating an identity, and the role of technology in new cities.

New city builders have a blank sheet and centuries’ worth of natural urban experiments to help shape tomorrow. Some new cities will succeed while others may stumble. We hope that the ideas presented here will provide insights and help new city builders define their priorities to achieve their bold vision.

John Rossant  
Chairman  
New Cities Foundation

Fahd Al Rasheed  
Chief Executive Officer  
King Abdullah Economic City

To encourage open conversations, the event followed Chatham House rules. Hence, quotations from the event are not attributed to a specific speaker or participant.
“The city is (...) a state of mind, a body of customs and traditions, and of the organized attitudes and sentiments that inhere in these customs and are transmitted with this tradition. The city is not, in other words, merely a physical mechanism and an artificial construction. It is involved in the vital processes of the people who compose it; it is a product of nature, and particularly of human nature.”

Robert E. Park, The City (1925)
Contemporary new city projects can be urban laboratories for testing new business models, technologies, and lifestyles of the future. Ambitious and visionary, they face myriad challenges.

**The Roles of the Public and Private Sectors in New City Building**

The first part of this report explores the challenges of balancing the roles of private and public stakeholders in new city building. What lessons can be drawn from past experiences? How can a functional partnership ensure both parties’ interests remain aligned?

If new cities of the past were spearheaded by the public sector, private stakeholders are the undisputed driving forces behind current projects. For conflicts not to hamper a new city’s viability, well-designed partnerships between the public and private sectors are of vital importance. These partnerships should offer mechanisms to address conflicts such as:

- Developing land to maximize profit at the expense of public space provision;
- Targeting high-income populations at the expense of creating affordable housing and inclusive cities;
- Corporatizing city management while enabling citizen representation and participation.

The need for innovation in the relationship between the private and public sectors is immense. Drawing from past lessons, a governance-design exercise that can contribute to the success of new city projects should consider:

- Ensuring that a vision is clearly laid out;
- Involving local, regional, and/or national authorities early in the planning process to ensure sustained support throughout construction and implementation;
- A PPP model that ensures that each sector’s interests are addressed in the development process;
- Taking into account the local context when defining roles for public authorities; what a state can/is expected to provide in an emerging economy is not the same as what it can/is expected to provide in a developed one;
- Separating operations and city building from matters related to political representation.

**Building Identity through Technology and Design**

The second part of the report takes a closer look at building identity and a sense of community in new cities. What does it mean for new city builders to build people-centric cities? Can bold and futuristic urban visions reconcile inclusivity and give birth to thriving communities? How can technology contribute? What is a “happy” city? To what extent should urban growth be planned?

People-centric cities are characterized by a strong identity, a sense of community, and inclusivity. The role of technology in creating innovative participation mechanisms is discussed as well as an exploration of the design principles of happy, compact cities. Recommendations for achieving these goals are to:

- Explicitly include compact city goals as part of an inclusive vision;

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OECD, 2012).
• Encourage density and proximity-oriented development through effective regulatory tools, appropriate locations, and synchronization of urban and rural land-use;
• Enhance quality of life by promoting mixed land use, attracting residents and local services to urban centers, and promoting a walking and cycling environment;
• Minimize adverse negative effects such as congestion, unaffordable housing, and loss of public space, while encouraging the creation of a sense of place and the greening of built-up areas.

Finally, the report provides recommendations to facilitate the emergence of an identity in new city projects, which include:

• Using nature and unique features, such as architectural tradition, culture, light, water, and so on, to make a place memorable;
• Ensuring that the city’s vision builds on its pioneering elements and offers individuals the possibility to be part of an inspiring project;
• Providing a sense of purpose and ensuring that the vision includes all citizens, not just the elite;
• Leveraging technology to facilitate citizen participation in decision-making and city management;
• Focusing on how technology can empower citizens by implementing open data policies, developing citizen services, and building accessible IT infrastructure;
• Creating dense, diverse and mixed-use neighborhoods that include rather than separate;
• Ensuring cities are walkable and aim for happiness.

We close our analysis by underlining the importance of flexible planning in new city building, which is one of the largest challenges facing new city builders. Flexibility means building today what is needed today, and building tomorrow what is needed tomorrow. This sort of just-in-time approach to city building can facilitate the financing of new infrastructure by capitalizing on growing land value and using taxing mechanisms to capture revenue.

The conversations during Cityquest – KAEC Forum 2014 revealed as many interesting ideas as it did questions that need further exploration and analysis. How should infrastructure building be sequenced? To what extent can citizen demands change a city’s master plan and timeline? Should new cities have a branding strategy? Will new cities be affordable for its future residents? How can massive upfront real estate investments be offset by reasonably priced options that attract a representative demographic mix to the new city? New cities have the potential to inspire urban stakeholders for generations to come. Their achievements will become references and may foster urban innovation around the world.
“Connected competitive cities are more than the sum of their parts: they are vibrant, accessible communities that attract businesses and provide an environment where people want to live and work.”

Cityquest – KAEC Forum 2014

Building a city from the ground up is not a radically new idea. Whether it is Marne la Vallée in France, or Brasilia in Brazil, the 20th century has myriad examples to offer. If the dominant model for greenfield urban development in the 20th century was government-driven master planning and construction, the 21st century has created a whole set of new configurations. The major involvement of private sector stakeholders in contemporary new city development has led to the prioritization of topics such as robust business models, return on investment, and the value proposition of urban environments, regulation, innovation, and efficiency. Models like Dubai and Singapore are often cited by planners and real estate developers. These cities encourage new city stakeholders to think creatively and develop ambitious visions.

Contemporary greenfield projects are also seen to be pioneering ways to tackle the planet’s environmental and sustainability challenges. They are urban laboratories for testing new business models, technologies, and lifestyles of the future. King Abdullah Economic City (KAEC), for example, is expected to be home to two million people and to illustrate to the citizens of Saudi Arabia what the future of their country could be like. Tianjin Eco-city is showing China how to aspire to live green in a country traumatized by Beijing’s air pollution. New cities may be a realistic solution for emerging and urbanizing countries to diversify their economy and drive development.

In a world that has yet to recover from the aftereffects of the global economic crisis, competitive cities offer the promise of resilient, innovative economies that can reinvent themselves, create value, drive new markets, and respond to future demand. To fulfill this promise, economic output alone does not suffice: competitive cities need social and environmental features that bring together the various components that constitute a city.

As the McKinsey Global Institute states, “[a]n urban environment that attracts and retains skilled individuals and improves citizens’ well-being will act as a draw for businesses looking to invest”². The promise of a cutting-edge future is not enough to create the intangible soul of a city, or give it the attributes that make public space memorable enough for residents to feel ownership of the city. Simply knowing how to build the infrastructure and integrating ICT is insufficient. Vision matters.

Designing people-centered cities is “not about the gadgets, the buildings, the transportation, and the infrastructure: it’s about the spaces in between. It’s about how we create the public experience - streets, squares, parks, urban water, etc”³.

The first part of this report explores the role of public and private stakeholders in new city building. The second takes a closer look at building identity and a sense of community in new cities. The final section closes with reflections on future topics of interest for the Cityquest – KAEC Forum community.

2 MGI (2011)
3 Cityquest – KAEC Forum 2014 participant
The relationship between private and public stakeholders in new city building is changing. Many new city projects in the past, such as Brasilia, Washington DC, and European New Towns, were largely public sector driven endeavours. The successes and failures of many of these projects have led to private and public stakeholders redefining their respective roles in greenfield development.

Now in their maturity, former new cities are the subject of several studies from which lessons can be learned. Criticisms of these projects appear in most contemporary new city projects’ not-to-do list. Earlier projects are criticized “because they tend to be mono-functional and are not ‘environmentally’ friendly enough.” Their struggles in creating wealth are attributed to a poor balance between housing and jobs, as well as failing to develop an identity and sense of community. As a result of these cities’ shortcomings, which are largely due to poor planning, the role of public authorities, in particular the central authorities involved in past projects, is being revisited.

Lessons from the Past

Combined with the criticisms of former new cities, several factors have led to a revision of the role of public stakeholders in new city building. These factors include: the decline of central government authority (with the exception of China), the increasing legitimacy of municipal government in addressing citizen needs, and finally, current perceived success stories in city building.

The Limitations of Nation-States: A Case for Mayors

The increased level of interdependence among societies today highlights the limits of nation-states in responding efficiently to major challenges of our century, such as urbanization, climate change, or rising inequality. Increasingly, in a variety of areas, cities are better able to cope with the problems of a cross-border world. As one Forum participant observed, municipalities are more “independent, less walled, less territorial, and more engaged in cooperation through city networks.”

The global debate on whether central or municipal governments are the most legitimate decision-makers is broader in scope than the conversation on new cities. However, as the discussions at Cityquest highlighted, it is present in new city builders’ minds.

Corporatizing City Management

Dubai and Singapore are contemporary examples of cities that moved from being little-known players to major influencers and market actors, and are often cited as examples of successful new governing approaches. In both cases, public authorities developed a corporatized approach to government, creating government-owned entities with corporate structures to manage certain city services. In contrast to past public sector-led projects, the Dubai/Singapore models suggest that their achievements were a result of private sector principles and management techniques.

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4 Gaborit (2010), Baraud-Serfaty (2011), or Baudelle and Ducom (2008)
5 Gaborit (2010)
6 Barber (2013), Khanna (2010), Next City (2015)
7 Cityquest KAEC – Forum 2014 session The Rise of the City State
8 Kanna (2011), and Dili Liow (2012)
Leaving aside the debate on whether or not they should be considered role models for urban development, Dubai and Singapore’s influence is undeniable when analyzing the evolution of the public sector’s role in new city building. Their urban governance models provide ideas on how new cities can tackle their potential forthcoming challenges.

**Revisiting the Public Sector’s Role in New Cities**

Should new city building be undertaken exclusively by the private sector? Examples from Cityquest reveal that no urban development project can overlook public authorities without risking political blocking. Public sector engagement is particularly essential for new cities. Public stakeholders need to be involved in new city building from the outset. As asserted on various occasions by new city representatives present at Cityquest KAEC – Forum, failure to do so can hamper a project’s viability. At the same time, new city projects cannot fall under a political agenda driven by short electoral cycles: their planning and development require a long-term shared vision among all stakeholders.

In the case of new cities, the respective roles of private and public stakeholders should be defined even before construction and urban life begins. If the biggest lesson from the past is that no new city project should be primarily driven by the public sector, the question becomes: how can new city stakeholders design a governance framework and partnership capable of aligning the interests of developers, public authorities, investors, and future residents?

**Balancing Private and Public Stakeholder Interests**

The interests of private and public stakeholders such as developers, investors, public officials, future residents, and local NGOs might conflict in a number of areas. These conflicting interests must be addressed by designing a functional, clear governance framework and partnership during the early stages of new city building. Some of these conflicts are explored in the following sections.

**Financing Infrastructure versus Providing Public Space**

A strong and dynamic private sector is essential to attracting people to new cities. In new city development, it is the private sector that should trigger the economic machine that leads to job creation, innovation, and the generation and accumulation of capital.

A successful city, however, is one that not only attracts, but also retains people. Creating a sense of ownership allows citizens to thrive: a fundamental aspect of this is the ability to enjoy the experience of public space. However, from a private sector perspective presented at the Forum, “most [real estate developers] don’t want to talk about parks and trees”.

No new city project escapes the tension between the development of land to maximize profits and putting land aside for public space and other non-monetizable uses. Therefore, an essential role for public stakeholders in new city building is to ensure that public space is allocated for future use. While the allocation of public space is primarily the responsibility of public stakeholders, private developers should be involved as well, as illustrated in the Manhattan grid example. The grid that was planned designated only those spaces that should be kept aside for public space, and established the lines along which the city would grow. One hundred years later, the city had grown exponentially, and the same lines prevailed. Preserving public spaces provided the attractiveness and flexibility required for city life to emerge and flourish.

**Diversity and Affordability**

Cities cannot be built for only one category of people. New city projects are as much responses to economic growth as they are to demographic growth and changing societies. Whether they ultimately intend to incentivize the emergence of
The Roles of the Public and Private Sectors in New City Building

high-income workers or a globalized class, new cities must also plan for the fundamental diversity and inclusiveness that create opportunities for all. The goals of diversity and inclusion should fall under the key objectives for any public stakeholder involved in a new city project. This includes, in particular, affordability in housing (see Box 1).

Affordability, as one Forum participant observed, is “the real challenge when building large scale”\(^9\). As cities grow, wealth concentrates and tends to be invested in land, capturing the productivity surplus that the city creates. As demand for housing increases, the price of real estate increases, creating spatial segregation dynamics that, unless regulation and social housing policy are introduced, push people out of the city. “Housing in itself is not a growth element: it’s an end per se (…). If we take housing as an economic sector that generates multiplying effects on growth, we are doomed to fail”\(^10\).

The question of affordability is particularly salient in terms of the value new cities provide their future residents. For whom are new cities being built? Will they draw middle-income citizens who intend to live, work, play and contribute to the overall engine that drives the city? Or are they for the wealthy elite

Housing for All

Housing affordability is one of the biggest challenges of this century. Using a narrow definition,\(^11\) conservative estimates suggest that 440 million households – 1.6 billion people or one-third of all urban dwellers – will face an affordability challenge in the next 10 years.

The story repeats itself regardless of the city. Too often available land is not put up for development. Driven by speculative land holding and existing ownership patterns, it ends up becoming too expensive for all but a small segment of the market. As a consequence, urban planners feel compelled to expand outwards and bring new greenfield areas under development. However, in many cases, social infrastructure such as schools, universities, hospitals, and community housing, does not keep up with housing development, creating stigma and a sense of being part of a low-income ghetto.

To break the vicious circle, the idea of idle land regulation is becoming increasingly popular among public stakeholders. Idle land regulations are about devising quid pro quo approaches with carrots and sticks; incentives are given to landowners to put up their land for development coupled with financial requirements that policymakers put on land zoned as residential. The financial burden is regulated and directed at specific areas such as employment, housing, and infrastructure.

For example, Ahmedabad in India piloted an interesting model called Town Planning Schemes to create a win-win situation for landowners, citizens, and public authorities. The city aggregated a pool of land parcels, master planned to include social infrastructure. They set aside a certain amount for housing, and retained some land for monetization and financing infrastructure development. When the land was eventually returned to landowners, its value had increased by 4 or 5 times. Thus, the city had been able to think about housing in an integrated manner where mixed income communities could be created and housing infrastructure fostered labor mobility.

BOX 1

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\(^9\) Cityquest KAEC – Forum 2014 session Building for the Future

\(^10\) Cityquest KAEC – Forum 2014 session Connecting New Cities to the World

\(^11\) A narrow definition of affordability assumes that 30% of the income received by those who earn 80% of an area’s median income (the dollar amount where half the population earns less and half earns more) is spent on housing, with a focus on citizens who obtain housing with certain minimum standards (MGI, 2014).
who view the city as a vacation getaway? The value proposition of smart infrastructure, new housing, good schools, ecological features and economic opportunities will only appeal to prospective inhabitants if they can afford the city’s amenities. In turn, these amenities will only generate market demand if offered at the right price. Thus, in addition to asking themselves whom they are building for, the key issue that new city builders must consider is: what is the right price point and who can afford it? The success of new cities rides on this crucial point.

New cities face a paradox: infrastructure is a minimum requirement that has to be paid by all members of society. In the case of new cities, this means that their first residents have to bear part of its high upfront costs. However, middle and low-income citizens, who are much more sensitive to housing market variations, are needed to create the diversity that characterizes thriving cities, creating an affordability challenge. There is no one solution to the paradox. All contemporary new city projects have to tackle the affordability challenge in their own way. Here, too, the public sector must play a key role in ensuring that a city remains open and inclusive to all through regulation of the housing market.

City Operations versus Representation

Contrary to existing cities, operating a new city - including but not limited to water and energy management, traffic regulation, and maintenance - and political representation should not be mixed. The building process of a city, at least in its early stages, cannot be distorted due to political and electoral cycles.

Failure to ensure that a new city remains on track can lead to financial instability and loss of investors. At the same time, an inhabited new city needs strategies to allow its citizens to voice their concerns and make the city their own. Both operations and representation are essential, yet in the early stages of new city building they answer different needs.

To what extent will the operations and management of new cities be corporatized? Answers vary and examples include Rawabi, which already has a mayor though it is not yet inhabited. Or KAEC, which plans to create a separate corporation for city operations, with public financials, and board representatives. Over the next 10-15 years, the idea is for citizens, who own stock in the corporation through the purchase of property, to play a major part in running it as KAEC’s share of the corporation decreases. Time will tell which model works in which context.

Summary of Recommendations

The need for innovation in the relationship between the private and public sectors is immense. The form these public-private partnerships (PPP) currently take is experimental, and no one model dominates the new city landscape. Iskandar Malaysia, for example, introduced intermediate entities - publicly owned companies - to mediate, implement, and conciliate the conflicting interests of the private and public sector. Another example is Clark Green City in the Philippines where in order to transform former US military bases into new urban development, the government created the Bases Conversion and Development Authority, an agency vested with corporate powers. Drawing from past lessons, a governance-design exercise that can contribute to the success of new city projects should consider:

• Involving local, regional, and/or national authorities early in the planning process to ensure sustained support throughout construction and implementation;
• A PPP model that ensures the private and public sectors’ interests are addressed in the development process;
• Taking into account the local context when defining roles for public authorities; what a state can/is expected to provide in an emerging economy is not the same as what it can/is expected to provide in a developed one;
• Ensuring that a vision is clearly laid out;
• Separating operations and city building from matters related to political representation.
For new cities to leverage their potential, the city building process must consider its future residents from the outset. How can new city builders create a local identity and involve residents when the city has yet to attract any? Can urban design and technology facilitate and foster their inclusion?

Identity, Sense of Community and Inclusion

One observation at Cityquest was that the creation of a local identity and a sense of community depends on the desire of people to opt-in and be part of the vision of a new city. KAEC’s vision, for example, is to embody what the future of Saudi Arabia could be; hence, entrusting part of KAEC’s port operation to women is a symbolic and forward-looking approach to illustrate the city planners’ ambition for the city. It is an invitation for people to choose to live there.

The unique value proposition of new cities is linked to people’s ability to connect with their urban environment at a physical, emotional, and social level – what is commonly referred to as a sense of community. Can identity and a sense of community be constructed? The answer is not black or white.

Creating a sense of community in new cities is complex. People-centered cities require a reconciling of vision and flexible planning. While city planning can - and should - ensure that its built infrastructure reflects its vision and uniqueness (see Box 2), there must also be room for people to spontaneously make a city theirs.

Memorability, Water, and Urban Design

The Memorable City and the Masterclass on Waterfronts were two keynotes presented at Cityquest – KAEC Forum 2014.

Building a city requires mathematical precision. However, much like a musical score, a great city requires room for interpretation. This balance between precision and interpretation is what makes a city memorable.

As one architect at the Forum put it, “cities are poetic entities” that are measured not just in size, but on the scale of the human spirit. The experience of a city is linked to its memorability index, i.e. how much of it we remember. Using memorability as a feature in urban design implies identifying key elements that are stable and eternal, such as latitude, light, and shadow. In the long run, everything else about the city will change. Hence, urban design in new cities should aim for a ‘wow’ effect, as opposed to planning based on statistical averages.

Despite being new, greenfield projects are not being built in places where nothing exists. Whether it’s a desert, a forest, or a river, there is always something that predates construction. Water can be among the most attractive features upon which urban designers can build memorability. “A city’s promise, brand, or identity is often derived from the image we see of it in the water”12.

Whether it’s Washington DC’s Southwest Waterfront, Hanoi in Vietnam, Qingdao in China, or Shanghai’s North Bund, there are a myriad of projects that focus on the local body of water to create an experience that connects people to the natural features of their built environment. Both memorability and water are powerful concepts that city builders should incorporate into their projects to provide an environment to which citizens want to belong.

12 Cityquest – KAEC Forum participant
Inclusivity and Vision

The conversation on urban identity is not new. New cities of the past century are still struggling to create a sense of community. This is particularly visible in new cities close to urban centers where the “dormitory town” image persists despite efforts to change it - examples include Saint-Quentin-en-Yvelines in France, or Almere in the Netherlands.

A first key lesson from their experience is the need to build inclusive and accessible cities. An inclusive approach should consider employment, social services, housing, and other features and services relevant to the local context. As one Cityquest participant suggested, “input from NGOs, universities, local township leaders, etc. and adjusting plans to their needs can be rewarding.”

Inclusivity is the pillar of creating a city where people trust each other and, as economic research has abundantly shown, trust is essential to creating a stable economic environment where innovation can flourish and for people to live happily.

Building a branding strategy that fosters the emergence of a unique identity requires new cities to have a bold vision. Part of the critique of ghost towns and contemporary new cities that seem to struggle with infusing a sense of identity lies in the tendency to imitate existing cities rather than build new identities and brands. By definition, new cities cannot offer an identity based on the past. Hence, their vision should offer a future in line with a society’s aspirations and socio-economic changes - a future accessible to all, not just a few. An inclusive vision is a strategic element in creating a coherent environment where people can develop a strong identity. Failure to capture these elements in a city’s vision jeopardizes its chances of success.

The Role of Technology in Bolstering Identity

Advances in information and communication technology (ICT) are radically changing the way we live in and manage cities. New cities are an ideal ground for experimenting with new technologies to empower people and foster the much sought after identity that defines successful cities. Technology providers and technologies that can be adapted to an urban environment abound. New cities have the opportunity to imagine user-friendly services that facilitate the development of an identity and a sense of community (see Box 3).

Techno-poetry and Art

The ICT revolution succeeded in spurring online content creation and sharing. However, the analog parts of our world lag behind. What happens when technology jumps out of the computer screen and becomes part of the things we wear, the roads we drive on, and the cities we inhabit?

Using technology to create a thin petal-like material that folds when heated, a dome was placed inside a church in Lille, France, attracting over 14,000 visitors in four weeks. Similarly, in Eindhoven, a bike path inspired by Van Gogh’s Starry Night was made out of thousands of twinkling stones.

These examples depict how technology can create a link between the past and the future, and between poetry and pragmatism. Beyond its functional aspects, technology has enormous potential to connect people to reality in emotional ways, thereby creating a sense of identity.

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13 Gaborit (2010). A dormitory town is “a place from which many people travel in order to work in a bigger town or city” (Cambridge Dictionary Online)
14 Cityquest KAEC – Forum 2014 session Breaking Ground: Laying the Foundations for New Cities
15 Algan and Cahuc (2007); Montgomery (2013)
The rise of big data has caught the attention of many urban stakeholders regarding management of urban services. Cities produce immense amounts of information: how can this data be captured to improve the way cities are run? New cities have the opportunity to use ICT to create efficient management systems and integrated networks based on real-time information.

New cities can also leverage ICT to create more effective feedback loops between residents and the city. A number of ways cities can innovate how they are governed include:

- Providing the right infrastructure for citizens to easily access municipal services - an infrastructure that is future-proofed, scalable, part of a master plan, and that matches citizen needs;
- Developing new citizen services that leverage existing ICT infrastructure and emerging connected technologies such as Cisco’s recent pilot of a high-tech cabin for citizens to access basic municipal services in the city of Nice, France;
- Making access to data easy to leverage the creativity of local app developers;
- Creating integrated municipal management networks to maximize their efficiency;
- Using real-time data and sensors to facilitate the planning exercise through visualizations and simulations (see Box 4);

The role of technology in cities is gradually shifting from what it can do to a debate on what it can enable. In other words, new city builders should not focus on the technical limits of technology, but on what technology can help people achieve. Shorter feedback loops offered by apps such as PublicStuff, Colab, or operation centers in Songdo or Tianjin Eco-city offer a unique opportunity to create learning mechanisms and integrate new data as soon as it is available.

### Designing Happy Compact Cities

Urban design can foster happiness among residents; implementing happiness-driven urban

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**Digital Native Cities**

*Digital Native Cities was a keynote presented at Cityquest – KAEC Forum 2014.*

How can we design innovative districts? Can technology facilitate stakeholder alignment and improve planning?

Technology can be used to bring together density, proximity, and diversity into the planning of coherent urban systems, increasing the quality of life and jobs while reducing resource consumption. CityScope, for example, was developed at MIT and is an evidence-based urban transformation simulator tool. It can predict and quantify the potential impact of disruptive technologies within new and existing cities. The tool facilitates non-expert stakeholder collaboration within complex urban environments.

Similarly, mobility-on-demand systems incorporate intelligent Uber-like fleet management through sensor networks, pattern recognition, and dynamic pricing. They leverage smart grid technologies and include intelligent electrical charging, vehicle-to-grid (V2G), and surplus energy storage for renewable power generation and peak sharing for local utilities.

As these two examples illustrate, the various solutions shorten the feedback loops that can improve the planning exercise. New cities can pilot and deploy these solutions on a large scale.

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16 http://www.nicematin.com/video/nice%20mairie (in French) [last visited on Feb 10, 2015]
17 http://www.publicstuff.com/ [last visited on Feb 10, 2015]
18 http://www.colab.re/ [last visited on Feb 10, 2015]
design requires focusing on certain fundamental principles. In *The Happy City*, Charles Montgomery (2013) provides an account of his research on urban design and the science of happiness. His study shows that cities that facilitate social connections are where people are happier on average (see Box 5).

The principles of a happy city echo the Organisation for Economic Co-operation and Development’s (OECD) recent research on compact cities. Drawing from the OECD’s findings, the following elements are recommended for new city builders to adapt to their local contexts:

1. Explicitly set and include compact city goals as part of an inclusive vision;
2. Encourage density and proximity-oriented development through effective regulatory tools, appropriate locations, and synchronization of urban and rural land-use;
3. Enhance diversity and quality of life by promoting mixed land use, attracting residents and local services to urban centers, and promoting a walking and cycling environment;

**The Happy City**

Strong evidence reveals how the places and systems we build affect the way people move, live, and feel - and, by extension, the way they treat each other. Urban design principles can reinforce happiness.

Whether it is the OECD’s Better Life Index, or the Sustainable Development Solutions Network’s World Happiness Report, research shows that happiness matters and that there are objective ways to measure how people feel. The question that institutional actors are exploring is how to incorporate happiness into policies. Can the following principles of happiness be incorporated into urban design?

1. It is important to feel more joy than pain
2. It is important to feel secure
3. It is important to feel healthy
4. It is important to thrive - wealth matters, but it does not suffice
5. It is important to feel as though one belongs to a community
6. It is important to have a sense of meaning in life
7. Above all, it is important to have social connections

Socially connected people live up to 15 years longer and are less likely to suffer from cancer or heart disease. They are also more productive. Implementing these principles in urban design means finding ways for the environment to evoke happiness. Hence, a happy city is one where:

- Neighborhoods are dense and connected;
- Mixed-use environments create diversity;
- Short blocks and mobility options foster walking;
- Streets allow for interaction and face-to-face contact;
- Streets have activities taking place.

Happy cities are characterized by citizens who trust each other. The level of trust directly impacts people’s productivity and an economy’s overall dynamism. New cities can learn from these principles to reinforce the connection among their citizens and create thriving environments.

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21 "Spatial urban form characterised by “compactness” (…): i) dense and proximate development patterns; ii) urban areas linked by public transport systems; and iii) accessibility to local services and jobs" (OECD, 2012).


23 [Helliwell et al. (2014)]
• Minimize adverse negative effects such as congestion, unaffordable housing, and loss of public space, while encouraging the creation of a sense of place and the greening of built-up areas.

Planning for Flexibility

Perhaps the most important lesson highlighted throughout Cityquest is that new cities cannot be fully planned before being built – either from a technology standpoint, or a socioeconomic one. No matter how cutting-edge current technology might be, “[d]isruptive innovation can come at any moment and throw all past technologies to the garbage bin”24. From a socioeconomic standpoint, societies worldwide are experiencing major changes in culture and identity that no planner could forecast. Citizens will shape the city in which they live, and planners must allow them to do so. This is precisely the reason why, to some extent, cities must be unplanned.

Planning for flexibility is one of new city builders’ biggest challenges. Flexibility means building today what is needed today, and building tomorrow what is needed tomorrow. This sort of just-in-time approach to city building can facilitate the financing of new infrastructure by capitalizing on growing land value and using taxing mechanisms to capture revenue.

Manhattan is, again, a good example to illustrate the latter. At the time its grid system was conceived, planners lived in a world where people moved on horses. One hundred years later, the city had the same grid, but people were moving in cars and trams, illustrating the flexibility of New York City’s original design in adapting to significant societal changes. People had settled along the grid, without hampering public space, and started increasing the value of land. Additionally, connections to New York’s water network were only made once there was a demand for it as people moved into the city. By demanding additional facilities and services, their land became even more valuable. This gave the city an opportunity to create tax mechanisms and complement financing of the city’s water network.

When it comes to new cities, there is no one-size-fits-all model: each has their own particularities and degrees of freedom to explore. Combining what makes cities happy and the findings on compact cities can provide the toolkit for new city builders to create unique urban environments where people thrive.

Summary of Recommendations

Designing people-centered cities means:

• Using nature and unique features, such as architectural tradition, culture, light, water, and so on, to make a place memorable;
• Ensuring that the city’s vision builds on its pioneering elements and offers individuals the possibility to be part of an inspiring project;
• Providing a sense of purpose and ensuring that the vision includes all citizens, not just the elite;
• Leveraging technology to facilitate citizen participation in decision-making and city management;
• Focusing on how technology can empower citizens by implementing open data policies, developing citizen services, and building accessible IT infrastructure;
• Creating dense, diverse and mixed-use neighborhoods that include rather than separate;
• Ensuring cities are walkable and aim for happiness.

“It’s always been the failure of governments and decision makers to leave the people at the tail-end of things.”

Cityquest – KAEC Forum 2014

24 Cityquest KAEC – Forum 2014 session Connecting Through Technology
Building New Cities: Challenges, Opportunities and Recommendations

CONCLUSION

Thriving urban environments are dense, diverse, and offer a multitude of opportunities to their citizens. They have roads, ICT infrastructure, ports, airports, and public transportation that help citizens move around seamlessly. They are connected and competitive because they convey a strong desire to be bold, ambitious, and forward-looking to their citizens.

New cities of the 1960s were designed for a modern person who seminal urban planners such as Le Corbusier extensively described. Whether it is homo economicus, the sustainable man, or the global villager, 21st century new city projects are being built based on assumptions about human nature that will be reflected in their architecture and urban design.

Does the world need new cities? The challenges of the century of cities are large enough for bold experiments to be conducted. None, however, should underestimate the importance of understanding the person that it is being built for. In planning for their ideal resident, what might be new city builders’ blind spots and how can they discover them?

The conversations during Cityquest – KAEC Forum 2014 revealed as many interesting ideas as it did questions that need further exploration and analysis. How should infrastructure building be sequenced? How will this influence the city’s development? When should citizen participation be sequenced into the city building process? To what extent can citizen demands change a city’s master plan and timeline? Should new cities have a branding strategy? How will their brand affect the type of people they attract? Will new cities be affordable for its future residents? How can massive upfront real estate investments be offset by reasonably priced options that attract a representative demographic mix to the new city?

New cities have the potential to inspire urban stakeholders for generations to come. Their achievements will become references and may foster urban innovation around the world.

Contrary to their predecessors, new cities today are playing on a global stage from the outset. As urban competition grows, they need to address the challenges of climate change, designing flexible urban form and policy, and creating innovative environments. Every choice new city builders make can either become a cutting-edge innovation or a source of future conflict. Despite common challenges, each new city is unique and needs to adjust priorities and set targets according to its own local context. If city science teaches us anything, it is that no two cities are the same.

This report covers a broad range of strategies, ideas, initiatives, and principles. The questions presented here as well as the recommendations disseminated throughout the report should provide fertile ground for future discussions, which we hope will help new cities fulfill their promise to the world.
Clark Green City, Philippines

Located within the Clark Special Economic Zone (CSEZ) in the Central Luzon Region, 100 kilometers north of Manila in the Philippines, the 9,450-hectare Clark Green City aims to create a destination where nature, lifestyle, business, education and industry converge into a global city, based on principles of sustainability, that aim to protect and enhance the delicate balance between nature and built environment. The Bases Conversion Development Authority (BCDA) oversees its development. BCDA is a government instrumentality vested with corporate powers.

Clark Green City is expected to be a catalyst for economic development of surrounding local government units and the country in general. It will see the interweaving of green assets to create a holistic, vibrant and sustainable development over the next five decades. It is also expected to mitigate the adverse effects of climate change through disaster-resilient urban design and technology. Special incentives for investors (tax and duty-free importation of equipment and materials, possibility for companies to be 100% foreign-owned in selected industries) aim to encourage business investment in the area.

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2014 – 2064</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>94.5 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>1,120,000</td>
</tr>
<tr>
<td>Cost</td>
<td>n/d</td>
</tr>
<tr>
<td>Financing</td>
<td>BCDA and private investors.</td>
</tr>
</tbody>
</table>
Colombo Port City, Sri Lanka

The Colombo Port City project is an extension of Colombo City’s CBD, built on reclaimed land. It aims to create a sustainable and attractive urban district, well connected to and integrated with the existing city.

The new Colombo Port City will be built on 276 hectares of reclaimed land (source: PPT presentation at Cityquest – KAEC Forum 2014)

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2014 – 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>2.33 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>n/d</td>
</tr>
<tr>
<td>Cost</td>
<td>$15-20 billion</td>
</tr>
<tr>
<td>Financing</td>
<td>Joint venture between the Sri Lanka Ports Authority and the China Communications Construction Company Ltd.</td>
</tr>
</tbody>
</table>
GIFT aims to become a global financial and IT services hub by offering global firms world-class infrastructure and facilities. Its development site is located 12 km from the Ahmedabad International Airport, between Gandhinagar and Ahmedabad, in the state of Gujarat. By developing local economic activity, it hopes to feed the economic drivers of the surrounding urban centers and provide half a million jobs directly, and another half a million indirectly.

### Gujarat International Finance Tec-City (GIFT), India

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2007 – 2027</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>3.99 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>50,000</td>
</tr>
<tr>
<td>Cost</td>
<td>$11 billion</td>
</tr>
<tr>
<td>Financing</td>
<td>The primary investors are Gujarat International Finance Tec-City Company Limited (GIFTCL), Infrastructure Leasing &amp; Financial Services, and Gujarat Urban Development Co. Ltd (GUDC). GIFTCL plans to develop, finance, and implement all infrastructure in and around GIFT on a turnkey basis to ensure that all services relating to connectivity, communication, technology, security, and quality of life are established and sustained.</td>
</tr>
</tbody>
</table>
Iskandar Malaysia, Malaysia

Launched in 2006, Iskandar Malaysia is the single largest special economic region ever to be developed in the region. Strategically located in Southern Johor, at the tip of the peninsula of Malaysia, Iskandar Malaysia aims to be a strong and sustainable metropolis of international standing by 2025. Its location in the heart of South East Asia and adjacent to Singapore is well positioned to leverage on the fast growing economic powerhouses of India and China as well as the ASEAN region.

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2006 – 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>2.2 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Cost</td>
<td>Over $100 billion</td>
</tr>
<tr>
<td>Financing</td>
<td>Local and foreign investors</td>
</tr>
</tbody>
</table>
Jazan Economic City, Saudi Arabia

Jazan Economic City (JEC) will be wholly dedicated to pioneering further development of Saudi Arabia’s economy and people. JEC will be located along the Red Sea, 60 km northwest of Jizan City, at the confluence of available raw materials and an abundant labor source, and sitting along the main Red Sea shipping route. Facilitating JEC’s high connectivity and accessibility will be its proximity to the new international airport located 60 km south of the city; a new proposed road running east; as well as the future rail connection to Jeddah, situated 600 km northwest.

The industrial strategy focuses on creating value chains through carefully selected sectors that will see a clustering of industries. JEC focuses on three areas: Industrial, Human Capital, and Lifestyle. The proposed city will provide the following: a high-quality environment for key industries, technology exchanges, commerce and trade, employment opportunities, education and training, housing, and a broad spectrum of socio-economic activities. The primary anchors of a port, power plant, oil, steel and titanium industries, together provide strong downstream opportunities with industries as diverse as electromechanical, food processing and high value agricultural products, all within a growing regional environment.

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2006 – 2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>103 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>300,000</td>
</tr>
<tr>
<td>Cost</td>
<td>Over $100 billion</td>
</tr>
<tr>
<td>Financing</td>
<td>n/d</td>
</tr>
</tbody>
</table>
Kabul New City, Afghanistan

The Afghan Government initiated the project for Kabul New City in 2006 as a solution to increasing urban, socio and economic challenges in the existing capital, Kabul. Twice the size of the capital, Kabul New City is located in the platabuttes of Dehsabz and Barikab areas towards the north of the existing Afghanistan capital. Its preliminary concept master plan was prepared in cooperation with French and German companies. The final master plan was prepared in cooperation with the Government of Japan and endorsed by the Afghan Cabinet in 2009. The project for Kabul New City aims to solve the urban housing crisis resulting from rapid population growth, and to generate temporary and permanent employment opportunities. Its creation should attract private investment as well.

The planning phases are complete. The Dehsabz - Barikab City Development Authority (DCDA) has facilitated about $6.5 billion dollars worth of contracts between the Afghan Government and the private sector. These should lead to the development of five parcels within the first phase of Kabul New City. Similarly the development of infrastructure works for water resources, roads, electricity and rural development projects have begun and mostly are completed. Private sector developers in close cooperation with the DCDA are in the process of preparing detailed plans for the respective parcels. Once approved, on-sire development will begin.

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2006 – 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>740 km² (440 km² developable area)</td>
</tr>
<tr>
<td>Intended population</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Cost</td>
<td>$80 billion</td>
</tr>
</tbody>
</table>
King Abdullah Economic City, Saudi Arabia

Located on the coast of the Red Sea, 100 km north of Jeddah, King Abdullah Economic City (KAEC) is one of four new cities being created in Saudi Arabia to promote industrial expansion, diversify its economy from oil, and to provide housing and job opportunities for a young population, 65% of which are under the age of 30. Centered on a new port, the goal of KAEC is to become a global logistics and manufacturing hub. Through its ‘industrial valley’, KAEC seeks to develop sectors including logistics, fast moving consumer goods (FMCG), plastics, automotive, building materials, and pharmaceuticals.

**Table: King Abdullah Economic City**

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2005 – 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>181 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Cost</td>
<td>Over $100 billion</td>
</tr>
<tr>
<td>Financing</td>
<td>Emaar, The Economic City (EEC), and a Tadawul-listed real estate development and management company. When KAEC offered its first successful public offering in July 2006, EEC made history: more than half of the Saudi population bought stock in it. EEC is headed by Emaar Properties PJSC, and a number of high-profile investors from Saudi Arabia.</td>
</tr>
</tbody>
</table>
Lavasa, India

Lavasa is a private city located 50 kilometers west of India’s eighth largest metro area, Pune, and near the richest band of economic activity in the country—the Pune-Mumbai corridor. As India’s first post-independence planned hill city, Lavasa follows the principles of new urbanism to prioritize walkable and accessible neighborhoods with a sustainable focus. Seventy per cent of the land is designated as open space and natural landscape, and 80% of the population will live and work in 20% of the land. The city is being built one section at a time so that potential residents and investors can get a feel for the completed city, even while other sections are under construction. Lavasa seeks to become a replicable model that will serve as a template for the construction of other cities of this scale within India.

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2004 – after 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>100 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>300,000</td>
</tr>
<tr>
<td>Cost</td>
<td>$7 billion (est.)</td>
</tr>
<tr>
<td>Financing</td>
<td>The Lavasa Corporation, the Hindustan Construction Company.</td>
</tr>
</tbody>
</table>
Rawabi, Palestine

Rawabi, the first planned Palestinian city, is located 9km North of Ramallah. The largest private-sector project in the history of Palestine, it is mainly borne by Palestinian multi-millionaire Bashar Masri. Rawabi’s economic growth strategy is designed to generate sustainable employment opportunities in different sectors including ICT, media, entertainment, and services. It also aims at becoming a new destination for Palestinians, and Palestine’s first modern green and smart city. In October 2012, Rawabi was accepted as the first Palestinian member of the U.S. Green Building Council (USGBC).

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2015 completion of phase 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>6.3 km² (Municipal Boundary)</td>
</tr>
<tr>
<td>Intended population</td>
<td>40,000</td>
</tr>
<tr>
<td>Cost</td>
<td>Over $1 billion</td>
</tr>
<tr>
<td>Financing</td>
<td>Partnership between Qatar Diar and Massar International, Bashar Masri.</td>
</tr>
</tbody>
</table>

Numerous Palestinian villages surround Rawabi, nine of which are immediately adjacent (source: http://www.rawabi.ps/maps.php)
Sino-Singapore Tianjin Eco-City, China

The Sino-Singapore Tianjin Eco-City (the Eco-City) was launched in 2008 by the Chinese and Singaporean authorities against the backdrop of rapid urbanization in the region. Located 45 km from Tianjin’s city center and 150 km from Beijing’s city center, the Eco-City is located within the Tianjin Binhai New Area (Bohai Bay region). The latter has been identified as one of the fastest growing regions in China.

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>2008 – 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>30 km²</td>
</tr>
<tr>
<td>Intended population</td>
<td>350,000</td>
</tr>
<tr>
<td>Cost</td>
<td>n/d</td>
</tr>
<tr>
<td>Financing</td>
<td>Joint venture between a Chinese consortium (led by Tianjin TEDA Investment Holding Co., Ltd and China Development Bank) and a Singapore Consortium (led by the Keppel Group).</td>
</tr>
</tbody>
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