

Sustainable Cities - The Path Ahead

NeelakandanPradeesh Kumar

Westford School, Faculty of Management, UAE.

HabibaAmeer

Faulty of Economic, Commercial and Management Sciences University of

BordjBouArreridj

ABSTRACT

The rapidly evolving megatrend of accelerated urbanization, where the population look for opportunity to create a better life so has the importance increased for these cities to become sustainable and self-sufficient as they continue to exert pressure on primary or basic resources such as energy and water. These cities also have to focus on waste disposal systems, emissions, Industries located nearby, level pollution, the quantity of waste, and GHG emissions.

This paper looks into the various aspects to be considered for urban growth, which has been and will happening in developing nations. The actions they have to take to combat the adverse effects of urbanization and industrialization backed by practical solutions. These cities are to be governed and developed with adequate action towards reducing environmental footprint, while addressing increased vulnerability from the effects of a changing the climate, and additionally providing higher quality public services.

Key words:Sustainable cities, technological development, environmental pollution, greenhouse gases.

ملخص:

إن التطور السريع للتطور التكنولوجي أدى الى تسارع الدول للبحث عن فرص لحياة افضل ، لذلك ازدادت أهمية المدن المستدامة لتصبح مستدامة ومكتفية ذاتيا مع متطلبات البيئة الخارجية بعيدا عن استخدامات الملوثة المتواصلة وممارسة الضغط على الموارد الأولية أو الأساسية مثل الطاقة والمياه. وتركز المدن المستدامة تركز على أنظمة التخلص من النفايات، والانبعثات، والصناعات الملوثة، والتلوث الناتج عن انبعاث الغازات الدفينة.

وتتناول هذه الورقة في مختلف الجوانب التي ينبغي النظر فيها من أجل النمو الحضري والمدن المبني على التطور التكنولوجي اي المدن المستدامة ، الذي يحدث في الدول النامية ومنا لإجراءات التي يتعين اتخاذها لمكافحة الآثار السلبية للتحضر والتصنيع المدعومة بحلول عملية. والتحكم في هذه المدن وتطورها باتخاذ إجراءات كافية من أجل الحد من الأثر البيئي، مع التصدي في الوقت ذاته لزيادة الضعف من آثار تغير المناخ، فضلا عن توفير خدمات عامة ذات جودة أعلى.

الكلمات الدالة: المدن المستدامة، التطور التكنولوجي، التلوث البيئي، الغازات الدفينة.

I. INTRODUCTION

Today more than half of the global population currently live in cities, and it is predicted to reach two-thirds by 2050 states UNIDO (2015), and as the world

continues to urbanize rapidly, the importance of developing cities that are both sustainable and smart has begun to receive widespread recognition by national, state and local governments around the world. This is particularly true in developing countries and emerging economies where urban growth is particularly high and the existing systems and infrastructure are not sufficient (Chris Ling, Jim Hamilton and Kathy Thomas, 2006). Some of the key tasks involved in designing and developing a Greener community include:

- a. Design and Define an effective sustainable plan
- b. Identify and Preserve Natural Resources
- c. Develop Economic and reliable housing construction practices
- d. Encourage Healthy Practices
- e. Design and support in construction of Green Buildings
- f. Educate all about Active living
- g. Reduce waste and identify alternate means of recycling or reuse.
- h. Adopt an effective and reliable transportation systems, supported with usage networks
- i. Increase the cooperation and support between the different bodies and authorities (Municipal/water resources/ electricity boards, etc..)
- j. Implement smart systems
- k. Adopt smart growth strategies'
- l. Increase Civic Participation
- m. Reduce GHG emission
- n. Assist the Local food production/Cultivation/Agriculture activities, by both aiding and promoting.

The problem of the study: As mentioned above, we can ask the question: What is the role of technology in establishing cities for sustainability? To answer the problem, **hypotheses should be developed:**

- Technological progress is the foundation of sustainability.

- Polluted cities are a source of elimination of the human element.
- The role of green and sustainable cities in achieving human development.

The importance of the study: The importance of the study is attributed to the reality of the cities suffering from pollution. In light of the technological development, the search for environmentally friendly technologies in urban cities should be revived to promote a better life away from pollution and enable future generations to live in sustainable cities.

Sustainable Cities Sustainable Cities: A modern term for cities that use clean technology to create environmentally friendly facilities where pollution rates are low and constant.

II. Sustainable Cities –The Dream and Vision

As stated by Masayo Terakado and Holly. K. Williams (2014), the factors to be determined or considered while formulating an effective Sustainable Urban Development Plan are: a. The design should ensure comprehensiveness and incorporate more proactive and incentivizing measures for local authorities to tackle high priority issues, b. Promote stakeholder coordination and participation to ensure integrity of urban development, c. Identify inter links among different and sometimes conflicting needs. Maximize synergies between them where possible, mitigate unintended consequences of a policy and address problems in a sequenced manner, d. encourage “co-benefit” measures that can cater to multiple needs through a single policy intervention and utilize fewer resources, e. Effective regulatory and financial framework to enhance implementation, and d. Built-in mechanisms to monitor and revise strategies to accommodate changing needs.

III. What makes these Cities Liveable?

Implementing a sustainable plan that involves a sequence of tasks makes these cities liveable and they include actions or prime tasks such as:

- Identifying and employing a qualified and eligible sustainability coordinator to run the show

- b. Create a forum that involves authorities and teams involved in construction activities from building to city hall and beyond.
- c. Collect all necessary data and generate a greenhouse gas emissions inventory
- d. Formulate and Define goals that are achievable, measurable and clear
- e. Create a platform for commoners to interact and address what sustainability goals are important to them
- f. Design and develop a feasible and effective implementation plan that works with the vision and mission of the forum
- g. Look forward to public comments and integrate their views or level of satisfaction towards the project plan.
- h. Clearly and effectively keep track of the implementation status and actions
- i. At all-times remind the team and be ready to answer to the public as you are accountable and ensure that you do that.

IV. Global Actions

IV.a. The Swedish example of Malmö City

Malmö City has changed dramatically over the last two to three decades. Older industries such as shipbuilding and textile manufacturing have been replaced by construction, logistics, new technologies and commerce. With 300,000 residents from 170 nationalities, Malmö is an international city. A new university with 15000 students is part of an innovative and entrepreneurial environment. Huge infrastructure investments, including a bridge to Denmark and a re-engineered railway network with an 8 km tunnel, have laid a foundation for local and regional economic development (ICLD, 2011).

IV.b. The Copenhagen Example

The concept for screening of flood risk. It is not possible, neither technically nor financially, to secure Copenhagen completely against climate-related incidents.

Nevertheless, an extended series of measures can be implemented which will either prevent the incident, reduce its extent or reduce the city's vulnerability to it. The trick is to pick the right ones. That is why a unique concept for screening of flood risk has been developed. The unique concept combines information on the topography, the sea level rise, the storm surge, the rainfall/runoff distribution and knowledge of the economic values of property etc. in the area. The idea uses flood risk defined as vulnerability (economic value) times the probability of flooding in a given area. The flood risk was first assessed by screening methods followed by prioritised detailed dynamic modelling of floods and economic consequences over the next 100 years. The flood and risk maps were used to gather all information in a GIS, that had the spatial extent and depth of the flooding can be viewed together with area maps showing economic values of properties, infrastructure etc. The flood risk maps will identify areas which are most important or most beneficial to protect, and these areas should be given highest priority for the most cost-efficient climate change adaptation. Climate adaptation measures are planned to be such as recreational areas, businesses, beaches, landscape and infrastructure. Similarly, the contingency plans were formulated with the help of flood and flood risk maps that gives solid background information for contingency planning and disaster risk management, and can be used during emergency actions to prioritise activities and forecast where flooding will occur if the event continues. A series of contingency plans and adaptation activities have been screened in this manner, and the most effective in economic terms have been identified (Copenhagen Cleantech Cluster, 2014).

IV.c. The Vancouver Example

Vancouver has put-up an ambitious and measurable action plan to brand itself as the greenest city by 2020. Focusing on the agenda they have divided their action plan into 10 smaller plans, each with a long-term goals for the year 2050 and medium-term targets for the year 2020. These plans focus on: a. Green Economy, b. Climate Leadership, c. Green Buildings, d. Green Transportation, e.

Zero Waste, f. Access to Nature, g. Lighter Footprint, h. Clean Water, i. Clean Air, and j. Local Food(City of Vancouver, 2012). It is believed these 10 plans address three overarching areas of focus: carbon, waste, and ecosystems. They have started focusing on the plan by indulging in activities such as increasing composting and gardening helps achieve the green economy, zero waste, access to nature, and local food targets. Improving transit-services supports the climate leadership, green transportation, and clean air targets. Vancouver has been transforming itself by becoming the greenest city inside and out one of the things heard loud and clear during the public engagement process wasthat the city needs to set an example in its own operations.

The four high-priority actions in city operations have been identified in response, and they are: a. Plan and device a broad corporate waste reductionand diversion package for all city services, b. Cultivate a procurement strategy and run-through that provisions the purchase and use of local food in city-run accommodations that include various community centres, parks, restaurants and enterprises, c. Identify opportunities on green community measures that the city initiates, patrons, and certifies and d. Plan and implement a program to significantly reduce greenhouse gas emissions as well as fossil fuel use in city-run buildings and vehicles, and achieve carbon-neutral operations.

IV.d. The San Diego Example

The city of San Diego, California, USA, initiates green activities in two phases, Namely Short Term Projects and Long Term Projects.their prime plan is “The City of San Diego’s Energy Plan”, in which they focus towards developing a Sustainable Future (Plan) with core six objectives, that may result in more sustainable generation and use of energy: a. Energy conservation- all city employees will be aware of and implement energy conservation measures by 2010; b . Energy efficiency- reduce energy use 10% by 2012, using 2000 as a baseline; c. Renewable energy- increase megawatts (MW) of renewable energy used at city facilities to 17 by 2012, and to 25 by 2020; d. Management of SDG&E energy

bills- continue the use of the electronic data interchange (EDI); e. Policy development and implementation- guide city efforts by institutionalizing policies and programs that increase energy conservation, efficiency and the use of renewable energy; and f. Leverage resources- ensure that state and federal funds are leveraged to the extent possible with existing programs such as California energy commission loans and the California public utilities commission partnership funds (City of San Diego, 2009).

V. Value Conception

One of the crucial function of sustainable cities are to not only house citizens/residents, but to offer them better opportunities to develop their personal and entrepreneurial potential. These cities have to offer the right environment, assisted by efficient and reasonable/economic services and set-ups. It is also to be noted that smart cities are to be designed in such ways that they are inclusive and benefit its inhabitants, else they may result vice versa. It is to be remembered that smart solutions or smart systems should not be considered with a cost perspective, it should be considered as an investment.

Developing smart cities is not only a process whereby technology providers offer technical solutions and city authorities procure them. Building up smart cities also requires the development of the right environment for smart solutions to be effectively adopted and used. One of the particularities of smart cities is the need to incentivise citizens to adopt smarter ways of living and interacting within and with the city. Citizens should also no longer be the users of city services, but also the providers and developers of smart city solutions.

The International Electrotechnical Commission (2014), lists four guiding principles for critical infrastructure: 1) Quantify, communicate and manage risks. 2) Employ an integrated systems approach. 3) Exercise sound leadership, management, and stewardship in decision-making processes. And 4) Adapt critical infrastructure in response to dynamic conditions and practice.

VI. The Path Ahead

As we know it well the needs of cities differ strongly but... the main three pillars of development remain the same, namely: a. Economic sustainability, b. Social sustainability, and c. Environmental sustainability. Hence, to facilitate change, the pace and the path of institutional re-configuration and its views of sustainability as a way of running the business, at all levels of management through finance and procurement departments, is obligatory. These actions would shift the various policies and practices unlike the regular business-as-usual approach, which tends to stifle innovation and stunt sustainability (SACN, 2016).

Some of the key steps identified to be initiated and recommended are: a. Develop and embed a sustainable cities framework where capacity exists, b. Ensure concrete measurement of progress in the transition, c. Confront resource efficiency more aggressively, and d. Pursue spatial transformation that encourages compact cities. These steps are to be backed with effective guiding principles and strategic orientation, supported with effective technology and efficient systems, which are wisely initiated by well-trained or educated actors.

VII. Conclusion

It is pretty evident that to formulate a comprehensive framework of integration which is vital for cities to evolve into a sustainable and resource-efficient one. Apart from realising the green urban economic growth trajectories that are equitable and sustainable. It frames the question of urban sustainability in a conceptual foundation and language that places human development objectives at the heart of urban sustainability transitions. It presents a set of policy positions and recommendations within a strategic framework that is derived from this understanding.

In addition to the primary emphasis towards integration, the success factors for transition to sustainable, resource-efficient urban development includes: a. addressing the socio-economics of the urban divide, b. the inclusion of bottom-up

participation clubbed with governance processes, c. the smart urban logistics (practical and probable) and spatial planning (landscaping), d. smart design, finance, technology and skills transfer and development and e. innovation.

The integration and coordination across different city sectors and scales is critical to achieving city-level sustainability also depends on the political vision and how it is focused with regards to the social need and the level inter-institutional and organisational participation. A city's sustainability visions and agendas can best be derived from considering the role of cross-cutting thematic backed by proposed infrastructure themes, iconic projects and programmes including the public transport overhauls followed by the strategic sector and institutional intermediaries.

Reference:

Chris Ling, Jim Hamilton and Kathy Thomas (2006), *What makes a city liveable?* Published: December 19, 2006 Viewed at file:///E:/Papers/Sustainable/What%20makes%20a%20city%20liveable_%20_%20CRC%20Research.html

City of San Diego (2009), *Energy Strategy for a sustainable Future*, June, 2009, viewed at:

City of Vancouver (2012), *Greenest City -2020 Action Plan*, by City of Vancouver, viewed at: www.vancouver.ca

Copenhagen Cleantech Cluster (2014), *Copenhagen: Solutions for Sustainable Cities*, Copenhagen Cleantech Cluster and State of Green, viewed at: www.cphcleantech.com

International Electrotechnical Commission (2014), *Orchestrating infrastructure for sustainable Smart Cities*, International Electrotechnical Commission (IEC) WP Smart Cities: 2014-11(en), viewed at www.iec.ch

Masayo Terakado and Holly. K. Williams (2014), *Investing in Sustainable Cities: Challenges and Opportunities*, International Development Finance Club, Special Interest Group on Sustainable Urban Development, October, 2014.

SACN. (2016). *State of South African Cities Report 2016*. Johannesburg: SACN, ISBN No. 978-0-620-71463-1

Swedish International Centre for Democracy - ICLD (2011), *MALMO: from crisis to a successful model for sustainable development*, Developing Sustainable Cities in Sweden, viewed at: <http://www.symbiocity.org/PublicDownloads/Developing%20Sustainable%20Cities%20in%20Sweden/Dev.%20Sustainable%20Cities%20in%20Sweden.pdf>

UNIDO (2015), *Sustainable Cities: Hubs of Innovation, Jobs, Industrialization, and Climate Action*, Inclusive and sustainable industrial development report, United Nations Industrial Development Organization, Viewed at https://www.unido.org/fileadmin/user.../13._Sustainable_Cities_Brochure.pdf