The National Academy of Sciences of Sri Lanka (NASSL) & The Association of Academies and Societies of Sciences in Asia (AASSA)

MANAGING URBANISATION IN ASIA
Proceedings of the Workshop held in Sri Lanka; 25 - 26 June 2019
Acknowledgements:

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1 Presented in absentia.
PART I

Prologue

During the 19th Century, the countries that underwent industrialization experienced economic growth coupled with urbanization. The latter occurred mainly through rural-urban migration. Later, the extensive mechanization of agriculture over the years in some of those countries also provided a further impetus to urbanization in their respective populations. Thus, economic growth has come to be closely associated with urbanization.

Most international and regional development agencies are agreed that the bulk of the global population will be urbanized within the next decade i.e. by 2030. Urbanization and its consequences are most prominently manifest today in the low and middle-income countries (LMICs). The apex international scientific body, the InterAcademy Partnership (IAP - the Global Network of Science Academies) has gone on record stating that population growth coupled with unplanned urbanization is among the ten most serious global concerns. However, the conditions, particularly industrialization, which generated urbanization in 19th Century Europe, are not necessarily the same as those that cause urbanization in the LMICs today. A fundamental difference is that the former countries were not ‘colonized’ territories but all the latter were. And, colonization did cause some urbanization. Furthermore, it cannot be assumed that urbanization by itself is indicative of economic growth. Asian countries are the most populous among the LMICs and also where the problems of urbanization are likely to be most acute.

It was in this backdrop that the National Academy of Science of Sri Lanka (NASSL) organized this workshop with the support of the Association of Academies and Societies of Sciences in Asia (AASSA) and with financial support from the InterAcademy Partnership (IAP).

This report documents the proceedings of that workshop.

The Workshop

The workshop was held on 25 and 26 June 2019 at the Citrus Hotel, Waskaduwa, south of Colombo. About 40 international and national experts, including Young Planners from Sri Lanka, participated (Annex 1). The proceedings commenced with a welcome by Dr Ranjith Mahindapala, President, National Academy of Sciences of Sri Lanka (NASSL).

Professor Yoo Hang Kim, President, Association of Academies and Societies of Science in Asia (AASSA) in his remarks referred to the fact that people living in urban areas will reach 68% of the total population in 2050 compared with 54 % in 2014 and 30 % in 1950. Continuing population growth and urbanization are projected to add 2.5 billion people to the world’s urban population by 2050. Furthermore, this tremendous increase will be concentrated mostly in Asia.

He added that cities just occupy only 2% of the land surface of the earth. This stark disparity between large population and extremely small habitat inevitably generates numerous problems in social infrastructures such as transportation, supply of essential resources to support city life, waste disposal and health-related problems such as air quality and medical
services. Unchecked and haphazard urban growth will also inevitably lead to a divided society between the haves and the have-nots, thus creating social unrest.

Professor Kim added that in recognition of these problems, the United Nations has set ‘Making Cities and human Settlements Inclusive, Safe, Resilient and Sustainable’ as one of its 17 sustainable development goals. To attain this goal, there is a need for trans-disciplinary studies encompassing all sectors including social sciences and humanities as well as strong commitments from policymakers and other major stakeholders. However, it goes without saying that science and technology will play a central role in addressing these problems. Just citing one example, through rapid progress and new breakthroughs science and technology have brought efficient mass transit systems and pollution-free automobiles within range. Coupled with artificial intelligence and big data platform these innovations have a potential to revolutionize public transport systems.

In conclusion, he stated that the national academies of sciences are obligated to do their utmost in catalyzing these transformations by spearheading innovation, closing the knowledge gap, advising policymakers and engaging with all stakeholders including the general public.

Workshop Objectives

Dr Locana Gunaratna, Past President NASSL and Workshop Lead, presented the objectives of the workshop. In the main, the workshop was organized to examine the status of urbanization in Asian countries, and, to prepare a résumé of major problems and their policy implications. The workshop was expected to address a number of questions:

- How does the urbanization process happen? Does it happen due mainly to an urban ‘pull’ factor or a rural ‘push’?
- Is urbanization directed to a particular city or to several urban areas?
- Do some aspects of national policy wittingly or unwittingly encourage urbanization?
- Benefits and adversities of urbanization,
- What theories or strategies are commonly used to deal with urbanization and their relevancy or otherwise.

Based on the information gathered, the workshop is expected to analyse information relating to the current status of urbanization and industrialization – Issues and Opportunities; the impact of urbanization on the rural sector; and policies and strategies for dealing with the adversities of urbanization.

Workshop Structure

The two-day workshop was structured in such a way to learn and understand experiences from Asian countries (Day 1 – 25 June) (Sessions 2-4). Presentations during these sessions included a keynote address, three Guest Speeches, and 10 papers.

Keynote Address: New Provinces Based on River Basins and Urban Futures of Sri Lanka; Professor C M Madduma Bandara
Guest Speakers:

Guest Speech # 1: Western Region Megapolis Master Plan: Evolution of Contemporary Planning in Sri Lanka: Plnr Lakshman Jayasekera, Project Director/Team Leader, Western Region Megapolis Development Project, Ministry of Megapolis & Western Development

Guest Speech # 2: Urbanizing Versus Urbanization: Understanding the ‘Urban’ in Sri Lanka for the National Physical Plan 2050: Dr Jagath Munasinghe, Director General, National Physical Planning Department, Sri Lanka

Guest Speech # 3: The Role of the Green Building Council of Sri Lanka in Creating Green Cities to Support the Management of Urbanization: Engineer Professor Ranjith Dissanayake, President Green Building Council of Sri Lanka & the University of Peradeniya

Country Papers

(a) Nature of Urbanization and Urban Policies in India (Professor R B Bhagat, International Institute for Population Sciences, Mumbai, India)

(b) Colonial Impact on Urbanization of Punjab through the Development of Urban Centres (Dr Amna Jahangir, Trust for History, Art & Architecture, Pakistan)

(c) Managing Urbanization in Nepal: Challenges and Choices (Dr Sunil Babu Shrestha, Vice- Chancellor, Nepal Academy of Science and Technology)

(d) Managing Urbanization in Sri Lanka: The Need for a Science-based Approach (Dr Locana Gunaratna, Past President & Fellow, National Academy of Sciences of Sri Lanka)

(e) Urbanization and Social Sustainability: Policies and Strategies for Achieving Well-being (Dr Felia Srinaga & Dr Finarya Legoh, The Indonesian Academy of Sciences)

(f) Urban Agriculture – Opportunities (Dr Susil Liyanarachchi, Sri Lanka)

(g) Urbanization and Industrialization in Asian Countries (Professor Amitabh Kundu, Jawaharlal Nehru University, New Delhi, India)

(h) Urbanization, Civilization and Globalization (Professor A N Yurdusev, Turkish Academy)

(i) Changing Pattern in Infectious Diseases due to Urbanization (Professor Dato’ Dr Khairul Anuar B Abdullah, Malaysian Academy of Sciences)

(j) Urbanization Policies in Sri Lanka: Are we ignoring health implications? (Professor Saroj Jayasinghe, Faculty of Medicine, University of Colombo), Zhu Yongguan, Jo Ivey Boufford & Franz Gatsweiler)

Sessions 5-7 on 26 June (Day 2) were devoted to group work to analyse issues and develop recommendations and lessons. Participants undertook a field visit to the Colombo Port City in the afternoon of 26 June (Session 8). The Programme of the workshop is at Annex 2.

The keynote presentation, Guest Speeches and the Country Papers are in Part II of this publication.

1 Presented in absentia.
Keynote and Guest Speeches

Keynote Speech: New Provinces Based on River Basins and Urban Futures of Sri Lanka; Professor C M Madduma Bandara

Professor Madduma Bandara recalled the historical setting of Sri Lanka, which, despite its small size, has much geographical diversity. Variations in her topography, climate, history, language, ethnicity and local culture, always engendered regional sentiments and identities. In ancient times, the country had three regional divisions, Ruhunu, Maya and Pihiti. In medieval times, there had been 15 sub-kingdoms at the time of arrival of the Portuguese. The country experienced unwelcome divisions during the Portuguese occupation creating ‘Up-country’ and ‘Low-country’.

During the British colonial rule, Provinces were created arbitrarily for collection of revenue and for reinforcing the oppressive ‘divide and rule’ policies. In 1832, there were five provinces, namely the West, East, North, South and the Central, which was increased to nine Provinces in 1889. This arbitrary division continues to this day, and has cut across major river basins. Four out of nine Provinces are land-locked, and the Eastern Province has 25% of the coastline. The Provinces that were used as administrative divisions at the beginning are now statutory regions constitutionally created for the devolution of power under the 13th Amendment.

Given that Sri Lanka’s river system originate in the South Central part of the country and taking into consideration her reliance on water, development of a river basin strategy seems most apt. Professor Madduma Bandara proposed seven regions based on river basins: Kelani or the Western region, Ruhuna or the Southern Region, Digavapi or the Eastern Region, Mahaweli covering the entire Basin of the Mahaweli Ganga; Rajarata in the North West, Wanni or the Northern region and Dambadeni or the Wayamba Region.

The 13th amendment to the Constitution of Sri Lanka identifies two types of rivers, Provincial Rivers and Inter-Provincial Rivers. Aspects such as the rights over land, tenure, settlement etc, also come under the purview of Provincial Councils. The Constitutional Reforms Committee has recommended in 2016 that the country be divided into five Provinces on the basis of river basins, each with access to sea.

Professor Madduma Bandara observed that the National Physical Plan and Policy was the first long-term national strategic framework for development. The 1st Plan identified Metro Urban Centres as nodal points for development and to address issues of agriculture and develop an agriculture-based regional economy. More recent attempts emphasise creating a major development corridor that runs from Colombo to Trincomalee; other developments include the Colombo Port City. The development corridor proposed in the Millennium Corporation Compact Project of the US Government traverses through several Provincial jurisdictions with an enhanced potential for conflict between the Centre and the Regions. It also has the potential to convert itself into an ‘ethnic divide’ with enclaves of the majority community in settlements and townships, possibly leading to increased tensions. He emphasized the need for careful examination of these proposals, which will have both positive and negative effects on urban development in the country.
Professor Madduma Bandara felt that it would be prudent to retain the city planning work under the National Physical Planning Department, and suggested that it is time to embrace the concept of ‘multiple capital cities’ as witnessed in some countries as in South Africa. In Sri Lanka, Colombo will continue as the Commercial Capital strengthened by the megapolis development efforts while promoting Anuradhapura as the ‘Cultural Capital’ as envisaged by the Urban Development Authority. An ‘Administrative Capital’ may be identified primarily considering the accessibility from all parts of the Country.

In his concluding remarks, Professor Madduma Bandara cautioned that dominance of Colombo as the Primate City will be further strengthened resulting in added polarization. Urban development concepts and processes may need some fundamental modifications, and the proposed developments should be considered cautiously in order to avoid any irrevocable or unwelcome consequences. At the national level, the time had come to consider the suitability of the concept of ‘Multiple Capital Cities’ reflecting the economic, administrative and cultural aspirations of the people.

Guest Speech # 1: Western Region Megapolis Master Plan: Evolution of Contemporary Planning in Sri Lanka: Plnr Lakshman Jayasekera, Project Director/Team Leader, Western Region Megapolis Development Project, Ministry of Megapolis & Western Development

Planner Lakshman Jayasekera provided an overview of the more recent urban planning work done for Colombo in Sri Lanka. These included the Colombo Master Plan completed in 1978, the Colombo Metropolitan Regional Structure Plan of 1996 and the Western Region Megapolis Plan of 2002. He conveyed the unfortunate situation of wasted effort and funds and the adverse urban consequences that resulted in the non-implementation of these plans. He emphasized the fact that successive plans had to be prepared as each became superseded with time. He mentioned a proposal to establish a National Planning Commission under the Constitution to facilitate implementation. He also highlighted the Western Regional Megapolis Master Plan of 2015 where a large number of priority projects had been identified for implementation.

Planner Jayasekera also briefly presented the National Physical Plan (2011-2030) which had been prepared during his tenure as the Director General of the National Physical Planning Department. He noted that although the plan for the most part was still valid, instead of its implementation, revisions had been done and a new plan (2016-2050) was prepared and was now in operation.

Guest Speech # 2: Urbanizing Versus Urbanization: Understanding the ‘Urban’ in Sri Lanka for the National Physical Plan 2050: Dr Jagath Munasinghe, Director General, National Physical Planning Department, Sri Lanka

At the outset, Dr Munasinghe questioned most of the currently accepted definitions of urbanization and upheld the thesis that urban facilities and lifestyles are fast moving into the conventionally defined rural areas. He saw the quantitative definitions of urban areas namely economic, morphological, functional and/or statistical as misleading. He cited the proposal of Wirth (1938) to see urbanism as a way of life and upheld the view (citing Lefebre 1970) that “modern society is ‘urban’…”.
He then discussed recent studies conducted at the National Physical Planning Department (NPPD) for the National Physical Plan 2050 encompassing the proposition that ‘urban’ is more a ‘way of life’ rather than a ‘physical attribute’ and which concluded that, as at 2016, “85% of the population is more than 30% urbanized and settled in about 55% of the island’s land ...”. He also stated that “intense urban development is proposed therein to be confined to four ‘urban development corridors’ the main being the Colombo-Trincomalee axis. The others mentioned were the Northern drawn between Jaffna and Kilinochchi, an Eastern corridor between Chenkaladi and Ampara, and, a Southern corridor between Galle and Tissamaharama including Embilipitiya. Furthermore, two ‘Metro Regions’ Anuradhapura and Kandy, and nine ‘Main Cities’ were also proposed.

**Guest Speech # 3: The Role of the Green Building Council of Sri Lanka in Creating Green Cities to Support the Management of Urbanization:** Engineer Professor Ranjith Dissanayake, President Green Building Council of Sri Lanka & the University of Peradeniya

Professor Dissanayake opened his remarks by presenting some images on the current congestion prevailing in major cities of Sri Lanka. He identified the main reasons for such congestion and consequent pollution as insufficient attention being paid to the need to be in harmony with the natural environment, although attention may have been paid to social and economic parameters. Transforming Sri Lankan urban areas into Green Cities requires inculcating green features in various aspects of the city, which will correlate and support the management of urbanization through vertical settlements and Green Buildings. Moreover, he stated that currently Sri Lanka has a linear economy where manufacturing, usage and disposal are the key drivers. But for Green Cities, there is a need to move to a circular economy where manufacturing, usage, return and recycle are the key parameters. To achieve this, ‘Green Entrepreneurship’ must also be encouraged. He described a Green City Action Plan which consists of three themes and 10 goals where Building Green is an essential component to execute the plan. He also stated that the Green Building Council of Sri Lanka, being the sole local representative of the World Green Building Council, could help the management of urbanization by encouraging Green Cities through Green Building.

**Summaries of Country Presentations**

**India (PART II – Bhagat, Kundu)**

In India, there are many serious problems resulting from the rapid growth of low income populations in urban areas. This is so especially when unhygienic overcrowding happens with the emergence of slums and shanties. Urbanization can be seen to result through natural increase in urban populations and/or the movement of rural migrants into urban areas. While this seems to be a generally accepted view, a stricter definition is where urbanization should be recognized only when population growth is greater in the urban sector than in the rural sector. The level of urbanization, according to this definition, increased noticeably in the post-independence period of India only after the economic reforms in 2001.

It may be that the adverse urban problems experienced in the Asian continent are severe by the sheer weight of numbers, especially in the case of the larger countries such as India and Indonesia. However, the thesis put forward by many international agencies that the

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2 Full papers are in Part II.
epicenter of rapid and accelerated urbanization has now moved from the industrialized countries to the LMICs of Asia, is challenged.

It was also stated that in the Indian context urban development strategy should be broad based to direct urbanization to small and medium towns. Policies aimed specifically at discouraging rural-urban migration are not looked upon with favour by some.

There seems to be a correlation between urbanization and economic growth. Whether the relationship is ‘causal’ or not is not clear. Urbanization, despite adversities should perhaps be seen as a positive factor in development. In India, the urban sector contributes about 65% to the country’s GDP. Therefore, the urban sector is important and a concerted effort is seen as being necessary to make the urban areas more livable. Many lessons may be learnt from the Indian experience of urbanization. Although urban development is a ‘State’ function, funds are channeled to the urban sector through the Central Government along with their guidelines. Consequently, the efforts in urban development are invariably ‘top-down’. It was therefore conveyed that there should be more autonomy and fiscal powers delegated to local bodies. Urban development should be broad based to include small and medium towns.

Indonesia (PART II – Srinaga & Legoh)

Indonesia being a large and populous country experiences rural-urban migration directed especially to its capital city, Jakarta. Urbanization in this country is typical in that it happens both through the inadequacy of social infrastructure in the rural scene as well as the relative attractiveness of the capital city and its job opportunities in the informal sector. The urban pattern that has emerged there is that of low-income settlements (‘Kampungs’) sandwiched between middle and upper income multi-storeyed housing. In the policy issues discussed, there is an emphasis on recognizing the need for the ‘urban Kampung’ to be an integral and rightful part of the city.

Malaysia (PART II – Abdulla)

Migrant labour forms the basis for discussion on urban health concerns in Malaysia. Health issues are discussed in the context of Malaysia’s buoyant economy and the industrialization thrust. There are over 2 million foreign legally resident migrants employed in Malaysia. The emergence of communicable diseases through these workers is a matter of great concern. Health monitoring and medical insurance schemes were discussed.

Nepal (PART II – Shrestha)

The eradication of Malaria in the Southern plains of the Terai region in Nepal during the 1950s led to some migration from the more populated Kathmandu Valley. An urban development plan for the Valley region was prepared in 1969. Nepal presents an interesting example where the re-classification and merging of many rural settlements in the Kathmandu Valley have been designated as urban areas with municipal governance. This has been through a political decision. There has been much rural-urban migration due to poor infrastructure in the rural scene and better job opportunities in the urban areas. There is a considerable demand for better infrastructure in these new urban areas but inadequate
funds to meet that demand. The conversion of fertile rural land in the Valley to urban uses has led to the novel proposal of rooftop hydroponic agriculture.

**Pakistan (PART II – Jahangir)**

Most of the Asian LMICs have in the past also been colonized territories of some European country or other. There has been some form of limited urbanization in these countries in consequence of the imposed colonial economies.

Agricultural colonization has triggered the process of urbanization. In Pakistan, planning of a new town as a major market town at district level influenced the urbanization in this region with the movement of people and agricultural produce between new urban centre and the villages.

**Sri Lanka (PART II – Gunaratna, Liyanarachchi & Jayasinghe)**

Spatial planning approaches required in South Asia need to be science-based and consequently are different to the popular approaches based on those taken earlier in the West. A case has been made for the development of small and medium towns to attract rural-urban migrations away from the Primate City in Sri Lanka.

The case has also been made in the Sri Lankan context for a simplified system of hydroponics for urban agriculture. Its relevance is in situations where land space is limited as in dense urban areas, and provides food for the urban population.

Most institutions dealing with urbanization in Sri Lanka confine their attention to health concerns in their work by the mere provision of access for urban dwellers to health infrastructure facilities. This is seen as being quite inadequate. The urgent need is the active promotion through the urban development effort itself of healthy lifestyles of the inhabitants. This should include in the urban built environment the minimization of pollution, the provision *inter alia* of safe walk-able areas and green and safe open spaces.

**Analysis of Issues**

The Papers presented were from a diversity of geographic, demographic, economic and cultural perspectives. Despite this diversity, the discussion on urbanization, which followed the presentations, indicated much agreement on some of the key issues.

The workshop identified several drivers of urbanization. These included: **economic aspects** (Job opportunities, Investments (on Housing, Local/International, Trade and Commerce), Access to Services; Sectoral development and global trends; Agglomeration – tourism, industry; **social and cultural aspects** (Education, Health, Ethnic Cohesion); Population growth and civil and social conflicts – new city emerge because of the conflicts; Migration (in and out migration because of the health, transportation, education and services demand including job opportunities); **environmental aspects** (Disasters, Recreational facilities); and **Politics and Governance** (State policies, Local Governance, Political conflicts).

The workshop recognized the potential for urbanization to catalyze and facilitate economic growth, human development and wellbeing in a sustainable manner. The adversities
described included **environmental degradation** including loss of biodiversity and green cover, pollution caused by improper or lack of systematic waste disposal, loss of agricultural lands, encroachment, and overloading infrastructure resulting in disasters; **inevitable creation of unhygienic slums from unplanned urbanization** with overcrowding, poor sanitation, waste disposal problems, proximity to crime and drugs, and overloaded physical infrastructure. There is also the depletion of manpower in the social irregularities, segregation and economic inequalities and loss of social networks rural economy.

**Workshop Recommendations**

In the light of these observations, the Workshop made the following recommendations:

(a) Reformulation of state policies, ideally safeguarded by constitutional reforms, to promote planned urbanization rather than *ad hoc* planning, avoiding 'urban-bias' in decision-making, ensuring public access to information (e.g. waste disposal, epidemics, air quality, noise pollution etc.) and improvement of urban governance with a constitutional oversight mechanism;

(b) Efficient urban planning aligned to the Sustainable Development Goals using science-based sustainable approaches to planning (considering the entire ecosystem for optimal use of resources) as an alternative to popular ‘utopian’ models from early 20th Century Europe, including public participation and seeking international views. Furthermore, urban planning must be sensitive to technological innovations;

(c) Improve urban management with effective government intervention (providing the social houses) to manage the forces of urbanization; equally, Governments’ should give priority to implementation of plans, rather than continuous planning;

(d) Encourage compact cities including building of high-rises adopting green environment technologies with recreational centres, interconnected transport, walking tracks and bicycle lanes to promote physical activity, waste management using new technologies, measures to reduce atmospheric pollution, health care; introducing urban agriculture to make urban areas more liveable; and planned development to actively foster healthy lifestyles in the urban inhabitants, improved resilience to disasters and impacts of climate change.

(e) Include promotion of health and wellbeing in urban areas as a central goal in policymaking and urban planning.

(f) Urban development should be broad-based on the concept of ‘multiple capital cities’ to include small and medium towns. The development of such towns should be pursued as “Service Centres” for their hinterlands and the medium towns should also be encouraged as alternative targets for rural-urban migrations. Low income urban settlements should be an integral and rightful part of the city’s economy and social structure. Ethnic mixture in housing and settlements should be promoted to reduce segregation.

(g) Empowering the urban management agencies with better autonomy, fiscal powers, technical and human resources including income-deriving strategies (e.g. composting; recreational parks)
(h) Investment in Research and Development on Urbanization including assessing the feasibility of providing affordable housing (e.g. Indonesian example), and transferable development rights

(i) Development of efficient public transport systems/ICT to encourage work at home

(j) Create public awareness of urbanization issues with special reference to access to reproductive health and contraception for countries with high population growth

(k) Improve social infrastructure in villages to reduce migration and in towns

Visit to the Port City Project, Colombo

The participants visited the Colombo Port City Project in the afternoon of 26 June, 2019.

The Port City Project is a brand new city development effort being built as an extension of the Central Business District of Sri Lanka’s vibrant commercial capital, Colombo. Port City Colombo is intended to be South Asia’s premier residential, retail and business destination, offering unmatched planned city living along the warm waters of the Indian Ocean. The development will comprise five different precincts separated by canals, which include the Financial District, Central Park Living, Island Living, the Marina and the International Island.

When completed, Port City Colombo will have over 5.6 million square meters of built space boasting the best in design and standards. Its lifestyles and business offerings will include world-class facilities in Healthcare, Education, Entertainment, Hotels and Restaurants. Retail and Office with an integrated Resort and Marina will offer the best in living by the sea. Built on the latest sustainable city designs and smart city concepts, Port City will be the most livable city in South Asia. (http://www.portcitycolombo.lk/)

The ‘Living Island’ occupying the largest land extent of 95 ha will include both high-rise living and low-rise beachfront villas while the ‘International Island’ of 85 ha at the northern end of the Port City will contain a world-class hospital, international school, resort and a theme park, upon completion. The ‘Financial District’ with an extent of 40 ha will form a combination of office space and mixed-use (office, residential, and retail) including the proposed Colombo International Financial City while the ‘Marina’ occupying 15 ha will accommodate between 100 - 150 yachts. The ‘Central Park’ is set to occupy 55 ha of open green space and green living quarters.

The USD 1.4 billion project comprising 269 ha of reclaimed land from the sea is expected to draw an overall investment of USD 15 billion with the project’s full completion scheduled for year 2041. The marketing of lands allocated to the government and Project Company will be a coordinated effort to ensure fair valuation. Port City Colombo, South Asia’s premiere residential, retail and business destination and an extension of the existing city’s Central Business District will comprise five new districts or zones namely, the Financial District, the Marina, International Island, Central Park and the Living Island.

The main investor in the Colombo Port City Project, CHEC Port City Colombo (Pvt) Ltd, is a fully owned subsidiary of China Communications Construction Company Limited. The
Port City Master Plan, once approved by the Urban Development Authority of Sri Lanka, can only be changed by mutual consultation and agreement between the Project Company and the GOSL.

Each district will offer a mix of uses which allow for a living, working and recreational environment. Parks and open spaces, waterfront promenades, public plazas and active street edges all along the central boulevard will allow for recreational facilities within walking distances and promote a healthy lifestyle that would appeal to all ages and all people who aspire to live in the heart of the city.

The use of renewable energy solutions, methods to enhance environmental quality, recycling of wastewater and disposal, improved public space and sustainable transport methods etc are integral within the design. It will be a city within a city, sitting on the edge of the Indian Ocean with world class standards that attract the right investors and long term partners who will benefit our nation.

The participants were able to get first-hand knowledge on the Project, and learn aspects of modern city development. The visit was very much appreciated by the participants.

Epilogue

Some of the presentations and discussions at the Workshop related not only to urbanization but also to urban planning, urban development and urban management. This is not surprising considering how these areas are closely interwoven. It is necessary that the presentation of all the issues discussed and recommendations made at the workshop be accurately presented in this report, as has been done. However, it has to be noted firstly that urbanization as opposed to urban planning, development and management in any particular country, should strictly be taken to mean the increased growth of the urban population in relation to the growth of the rural population in that country. Furthermore, it is also useful to identify here and clarify the key issues and recommendations of the workshop. To that end, the key issues are highlighted, as follows:

• The drivers of urbanization are: (a) inadequate household income and inadequacy of ready access to social and economic infrastructure, as is frequently the case in rural areas in most Asian countries; and, (b) the attractiveness to rural communities of urban areas especially ‘primate’ cities for the economic benefits they offer such as job opportunities in the informal sector.

• The adversities of urbanization may be seen to include: (a) the reduction of manpower in agriculture; (b) the inevitable growth of unhygienic slums and shanties in urban areas with their overcrowding, poor sanitation, waste disposal problems; the overloading of available urban infrastructure; and also (c) the segregation and discrimination that rural migrants may experience consequent to the loss of kinship networks as found in their respective rural origins and in consequence, the tendency of alienate youth in migrant families to gravitate to antisocial behaviour with the ready access to illicit alcohol, substance use and crime in their new urban settings.

The key recommendations are highlighted as the provision of substantial encouragement for:
1. the promotion of planned urbanization as opposed to *ad hoc* planning;
2. the use of science-based approaches in urban planning in preference to the use of popular ‘utopian’ visions;
3. the planned development of
   - small towns especially to provide access to social and economic infrastructure for their respective rural hinterlands;
   - medium-sized towns to function *inter alia* as ready target locations for rural migrants as alternatives to primate cities;
   - compact cities which will foster healthy lifestyles through the provision of safe access for walking, cycling and green open spaces; and,
4. Research into the varied problems of the urbanization phenomenon.
Annex 1 – List of Participants

Abdulla, Khairul Anuar B (Prof.), President-Elect, AASSA & Pro Chancellor, MAHSA University, Malaysia

Adhikari, Chapa (Ms), Young Planners’ Forum, Institute of Town Planners of Sri Lanka

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Daluwatta D (Mr), Town Planner & Free-lance Consultant

de Alwis, Kingsley (Dr), Fellow & Council Member, National Academy of Sciences of Sri Lanka

Dharmatilleke, Senaka (Mr), Chief Architect, ORCT

Dias, Priyan (Prof.), Fellow & Vice President, National Academy of Sciences of Sri Lanka & Professor, University of Moratuwa, Sri Lanka

Dissanayake, P B Ranjith (Prof.) Chairman, Green Building Council of Sri Lanka & Senior Professor, Civil Engineering, University of Peradeniya, Sri Lanka

Gunaratna, Locana (Dr), Fellow & Council Member, National Academy of Sciences of Sri Lanka

Jahangir, Amnar (Dr), Associate Professor, School of Architecture, Design, and Urbanism (SADU), Institute for Art and Culture (IAC), Lahore, Pakistan & Honorary Secretary to THAAP

Jayasekera, Lakshman (Mr), Project Director/Team Leader, Western Region Megapolis Development Project, Ministry of Megapolis & Western Development of Sri Lanka

Jayasinghe, Saroj (Prof.) Professor of Medicine, University of Colombo, Sri Lanka

Karunaweera, Nadira D (Prof.), Fellow, National Academy of Sciences of Sri Lanka & Council Members

Katukoliya Gamage, Permila (Ms), Young Planners’ Forum, Institute of Town Planners of Sri Lanka

Kim, Yoo Hang (Prof.), President, Association of Academies and Societies of Sciences in Asia (AASSA), Korea

Kumar, N Savithri (Prof.), Fellow, National Academy of Sciences of Sri Lanka

Kumar, Vijaya (Prof.), Fellow & Treasurer, National Academy of Sciences of Sri Lanka

Lee, Mooha (Dr), Director, AASSA, Korea

Legoh, Finarya (Prof.), Indonesian Academy of Science

Lelwala Guruge, Dilan Sankalpa (Mr), Chairman, Young Planners’ Forum, Institute of Town Planners of Sri Lanka

Lindamullage, Don Charles Hasintha (Mr), Young Planners’ Forum, Institute of Town Planners of Sri Lanka

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Madduma Bandara, C M (Prof.), Fellow, National Academy of Sciences of Sri Lanka & Emeritus Professor, University of Peradeniya, Sri Lanka
Mahindapala, Ranjith (Dr), President, National Academy of Sciences of Sri Lanka
Mapalagamage, Mihran Nidarshana (Mr), Project Manager, Green Building Council of Sri Lanka
Mayuri, K K G P (Ms), Young Planners’ Forum, Institute of Town Planners of Sri Lanka
Munasinghe, Jagath (Dr), Director General, National Physical Planning Department, Sri Lanka& Chairman, Urban Development Authority of Sri Lanka
Navod Kalpana (Ms), Young Planners’ Forum, Institute of Town Planners of Sri Lanka
Nawagamuwa, Lionel (Mr), Director, Green Building Council of Sri Lanka
Olugala, Hasintha (Ms), Young Planners’ Forum, Institute of Town Planners of Sri Lanka
Perera, L S Ranjith (Prof.), Sri Lanka Institute of Information Technology
Silva, Priyal (Mr), Urban Planner, Sri Lanka
Srinaga, Felia (Prof.), University of Pelita Harapan, Indonesia
Weerasoori, Indu (Ms), UN-Habitat, Sri Lanka
Wijerathna, Sithumini Anuradha (Ms), Co-ordinator-Education, Training & Research, Green Building Council of Sri Lanka
Wijesundara, Janaka (Prof.), University of Moratuwa, Sri Lanka
Yurdusev, A Nuri (Prof.), Turkish Academy of Sciences
Annex 2

Agenda

25 June 2019

09 00 – 10 30:  SESSION 1 – Setting the Scene

Chair: Dr Ranjith Mahindapala, President, NASSL

- Address of Welcome (Dr Ranjith Mahindapala, President, National Academy of Sciences of Sri Lanka)
- Introductions
- Opening Remarks (Professor Yoo Hang Kim, President, Association of Academies & Societies of Science in Asia, Korea)
- Objectives of the Workshop (Dr Locana Gunaratna, Workshop Lead and Past President, National Academy of Sciences of Sri Lanka);

Keynote – Spatial Planning based on River-basins (Professor C M Madduma Bandara, Emeritus Professor, University of Peradeniya & Fellow, National Academy of Sciences of Sri Lanka)

10 30 – 11 00:  Refreshments
11 00 – 12 30:  SESSION 2 – Urbanization in South Asia

Chair: Dr Mooha Lee, Director of Secretariat, AASSA

Guest Speaker – Urban & Regional Plan for the Western Province of Sri Lanka (Plnr Lakshman Jayasekera, Chief Planner, Ministry of Megapolis & Western Development, Sri Lanka)

- Nature of Urbanization and Urban Policies in India (Professor R B Bhagat, International Institute for Population Sciences, Mumbai, India)
- Colonial Impact on Urbanization of Punjab through the Development of Urban Centres (Dr Amna Jahangir, Trust for History, Art & Architecture, Pakistan)
- Managing Urbanization in Nepal: Challenges and Choices (Dr Sunil Babu Shrestha, Vice- Chancellor, Nepal Academy of Science and Technology)
- Managing Urbanization in Sri Lanka: The Need for a Science-based Approach (Dr Locana Gunaratna, Past President & Fellow, National Academy of Sciences of Sri Lanka)

12 30 – 14 00:  Lunch
14 00 – 15 30:  SESSION 3 – Urbanization Policies and Strategies
Guest Speaker – Sri Lanka’s National Physical Plan and Policy (Dr Jagath Munasinghe, Director General, National Physical Planning Department, Government of Sri Lanka)

- Urbanization and Social Sustainability: Policies and Strategies for Achieving Well-being (Dr Felia Srinaga & Dr Finarya Legoh, The Indonesian Academy of Sciences)
- Urban Agriculture – Opportunities (Dr Susil Liyanarachchi, Sri Lanka)
- Urbanization and Industrialization in Asian Countries (Professor Amitabh Kundu, Jawaharlal Nehru University, New Delhi, India)
- Urbanization, Civilization and Globalization (Professor A N Yurdusev, Turkish Academy)

15 30 – 16 00: Refreshments
16 00 – 17 30: SESSION 4 – Urbanization and (Human and Ecosystem) Health

Chair: Professor Yoo Hang Kim, President, AASSA

Guest Speaker – Role of Green Building Council of Sri Lanka in Managing Urbanization (Professor Ranjith Dissanayake, Senior Professor in Civil Engineering, University of Peradeniya & Chairman, Green Building Council of Sri Lanka)

- Changing Pattern in Infectious Diseases due to Urbanization (Professor Dato’ Dr Khairul Anuar B Abdullah, Malaysian Academy of Sciences)
- Urbanization Policies in Sri Lanka: Are we ignoring health implications? (Professor Saroj Jayasinghe, Faculty of Medicine, University of Colombo), Zhu Yongguan, Jo Ivey Boufford & Franz Gatsweiler

19 00: Reception

26 June 2019

09 00 – 10 30 Session 5 – Breakout Sessions to develop workshop outputs
11 00 – 12 00 Session 6 – Plenary presentation on workshop outputs and next steps
12 00 – 12 30 Session 7 – Final Reflections and Close
13 30 – 17 00 Session 8 – Visit to the Colombo Port City
<http://www.portcitycolombo.lk/>
PART II

1. **Keynote Address**: New Provinces Based on River Basins and Urban Futures of Sri Lanka; **Professor C M Madduma Bandara** (Fellow, National Academy of Sciences, Sri Lanka & Emeritus Professor, University of Peradeniya)

2. **Guest Speakers**:

   Guest Speech # 2: Urbanizing Versus Urbanization: Understanding the ‘Urban’ in Sri Lanka for the National Physical Plan 2050: **Dr Jagath Munasinghe**, Director General, National Physical Planning Department, Sri Lanka

3. **Country Papers**

   (a) Nature of Urbanization and Urban Policies in India **(Professor R B Bhagat)**, International Institute for Population Sciences, Mumbai, India

   (b) Colonial Impact on Urbanization of Punjab through the Development of Urban Centres **(Dr Amna Jahangir)**, Trust for History, Art & Architecture, Pakistan

   (c) Managing Urbanization in Nepal: Challenges and Choices **(Dr Sunil Babu Shrestha)**, Vice- Chancellor, Nepal Academy of Science and Technology

   (d) Managing Urbanization in Sri Lanka: The Need for a Science-based Approach **(Dr Locana Gunaratna)**, Past President & Fellow, National Academy of Sciences of Sri Lanka

   (e) Urbanization and Social Sustainability: Policies and Strategies for Achieving Well-being **(Dr Felia Srinaga & Dr Finarya Legoh)**, The Indonesian Academy of Sciences

   (f) Urban Agriculture – Opportunities **(Dr Susil Liyanarachchi)**, Sri Lanka

   (g) Urbanization and Industrialization in Asian Countries **(Professor Amitabh Kundu)**, Jawaharlal Nehru University, New Delhi, India

   (h) Changing Pattern in Infectious Diseases due to Urbanization **(Professor Dato’ Dr Khairul Anuar B Abdullah)**, Malaysian Academy of Sciences

   (i) Urbanization Policies in Sri Lanka: Are we ignoring health implications? **(Professor Saroj Jayasinghe)**, Faculty of Medicine, University of Colombo, **Zhu Yongguan**, **Jo Ivey Boufford** & **Franz Gatsweiler**

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1 Presented in absentia.
Keynote Address

New Provinces Based on River Basins and Urban Futures of Sri Lanka

Professor C M Madduma Bandara
Emeritus Professor, University of Peradeniya & Fellow, National Academy of Sciences of Sri Lanka
<madduband@gmail.com>

Historical Setting

Despite its small size, Sri Lanka has much geographical diversity within its limited area. Variations in her topography, climate, history, language, ethnicity and local culture, always engendered regional sentiments and identities. In recognition of the above geographical reality, in ancient Sri Lanka regional divisions of Ruhunu, Maya and Pihiti, came into existence, signifying the tendencies for regional governance. In medieval times, numerous small sub-kingdoms appeared across the country. Queyros (1668) mentions that, there were some 15 sub-kingdoms including Jaffna at the time of arrival of the Portuguese.

After the Portuguese occupation of the maritime provinces, indigenous systems of governance went through drastic change, creating divisions even among the dominant local community of Sinhalese, as ‘Up-country’ and ‘Low-country’ that were non-existent up to that time. During the British colonial rule, Provinces were created arbitrarily for collection of revenue and for reinforcing the ‘divide and rule’ policies. The present structure of the nine provinces was in fact the culmination of a process of restructuring provincial administration by the British colonial government, introduced soon after their conquest of Kandy in 1815, and the establishment of the colonial rule proper. The intentions of the early colonial rulers in creating a provincial system were amply demonstrated by the administrative set-up created in 1832 with five provinces, namely the West, East, North, South and the Central (Fig. 1).

Fig. 1 – Regional Divisions, after the advent of Colonial Rule (1832 and 1889)

(a) Five Provinces Created in 1832 by Colebrook-Cameron
(b) Present 9 Provinces as it was in 1889
The Present Set of Provinces is a Colonial Legacy

By 1889 Colebrooke’s five provinces gradually multiplied into nine, and these arbitrarily demarcated Provincial Divisions continue up to the present day, as though they are inviolable and sacrosanct. They cut across major river basins that formed the main arteries of agrarian life, creating an incongruous geographical setting with several land-locked Provinces in this small Island. Furthermore, they have been used as administrative divisions at the beginning but now are statutory regions constitutionally created for the devolution of power under the 13th Amendment to the Constitution.

As could be seen in Fig. 2 (b). Out of the nine Provinces, four continue to remain land-locked without any opening to the sea and its resources. Some boundaries are obviously straight lines, drawn by the survey draughtsman! The Eastern Province is enormous, extending along the eastern coastal belt and covering nearly 25% of the coastline of the whole Island. So are the Southern and Western Provinces and the Puttalam District.

Why River Basin Based Regions?

Sri Lanka is an island nation with a highland in its south central part rising above 2,000 m from sea level, from where river systems originate and radiate in different directions (Fig. 2). From its early historical past, advancement of the country was heavily dependent on its water resources, creating a ‘hydraulic civilization’ at the zenith of its development. Even after political independence in 1948, the largest national investment was on water-related projects, for irrigation, hydro-power development, water supply and drainage. This reliance on water for development has further increased in recent times due to climate change and its concomitant consequences, making Sri Lanka one of the most vulnerable countries for hydro-climatic disasters. Given this background the country is compelled to accord high priority to devising ways and means of getting the best use from its colossal investments on water resources. In this context, the development of a river-basin strategy is undoubtedly one possible path to addressing such adverse changes effectively.

Fig. 2 – The Natural setting of Sri Lanka (a) Aerial Image (b) Topography and Drainage
Proposed New Provinces Based on River Basins

Under a new re-structuring of Provinces in Sri Lanka, an attempt has been made to divide Sri Lanka into seven or five or even three major regions as in the historical past, based entirely on river basin watershed boundaries. The seven region-set up as proposed by the writer (Madduma Bandara, 1992) which is depicted in Fig. 3, included the following:

*Kelani* or the Western region lying between Kelani Ganga and Bentota Ganga Basins; *Ruhuna* or the Southern Region covering the land area lying between Bentota Ganga and Menik Ganga Basins; *Digavapi* or the Eastern Region covering all river basins from Heda Oya to Maduru Oya; *Mahaweli* covering the entire Basin of the Mahaweli Ganga; *Rajarata* defined by Malvatu Oya and Kala Oya in the North West and Ma Oya and Yan Oya in the East; *Wanni* or the Northern region defined by the northern watersheds of the Malvatu Oya and Ma Oya basins; *Dambadeni* or the Wayamba Region, defined as the land area lying between Malvatu Oya and Deduru Oya Basins (Madduma Bandara, 1992)

![Fig. 3 – River-Basin Based Provinces](image)

**Recent Constitutional Reforms**

Under the present Constitution, as provided for under the its 13th Amendment (1987), two types of rivers have been identified as “Provincial Rivers” and “Inter-Provincial Rivers” the latter denoting the rivers that flow across more than one Province and the former, with sources and courses of streams that come under a single Province. Similarly, “...rights in or over land, land tenure, transfer and alienation of land, land use, land settlement and land improvement ..” except in inter-provincial Irrigation and land Development projects” come under the Provincial Councils. Furthermore, “Planning, designing, Implementation, supervision and maintenance of all Irrigation works, other than schemes relating to rivers
running through more than one Province...” are also brought within the jurisdiction of Provincial Councils [Fig. 3 (a)].

The recent Constitutional Reforms Committee (2016) that probed into the question of the ‘unit of devolution of power’ in earnest, agreed that, future Provincial demarcations be based primarily on neutral criteria such as river basin watersheds. The Committee urged the Government to “Re-demarcate Five Provinces on the basis of river basins, each with access to the sea” (Report of the Public Consultations Committee on Constitutional Reforms 2016, p.48-49). For this purpose creating five regions, the map prepared earlier by the Ministry of Mahaweli Development for water resources management, based on river basin watersheds may be useful [Fig. 3 (c)]. The Constitutional Reforms Committee in arriving at the above recommendation would have also considered the opinions expressed by the minority leadership in the Parliament which proposed, inter alia, that Sri Lanka should consider having ‘three to five regions’ with maximum power devolved to them as in India1.

Implications for National Physical Planning

The National Physical Policy and Plan was the first long-term national strategic framework for future development ever realized in Sri Lanka. It was prepared by the NPPD from 2002 to 2007, and was approved by the National Physical Planning Council in 2011. The plan follows a 10-year revision cycle and is currently being updated. Metro Urban Centres proposed by the plan covered Anuradhapura, Polonnaruwa, Trincomalee and Dambulla, which were considered in that period as the most important nodal points to develop in order to address the issues of agriculture, low income generation and transformation of agriculture based on the regional economy into future-oriented, service and industry based development, in order to facilitate the elevation of the economic status of the regions concerned.

The Urban Futures under the National Physical Plan were envisaged as in Fig. 4, where the present District Capitals and proposed ‘Metro Regions’ are indicated. The urban places identified for development in the original National Physical Plan were approved by the National Physical Planning Council. These futuristic planning efforts that evolved over the years were overtaken by the new planning efforts that are bent on creating a major development corridor that runs from Colombo to Trincomalee [Fig. 4(b)]. More recent developments in the planning circles appear to accord priority to the Colombo Port City and the Urban Corridor between Colombo and Trincomalee (The Millennium Challenge Corporation Project).

These developments will undoubtedly have significant implications, both positive and negative for urban development in the country. In particular, the rapid growth of the urban sprawl enhanced by the Colombo Port City and associated megapolis development efforts will further polarize the social and economic differentiation between the ‘core’ and the ‘periphery’. While Colombo and the wider area around it would flourish as the financial hub of the Country, the rural countryside where still over two-third of the population resides, is bound to experience out-migration, creating agricultural labour deficits, and problems of maintaining rural infrastructure, along with many other adverse impacts, unless adequate remedial measures are adopted.

1 Address to Parliament by the Hon. R Sambandan, MP & Leader of the Opposition (January, 2015)
The envisaged ‘development corridor’ running virtually as a straight line between Colombo and Trincomalee, apart from cutting across several major natural river basins and wild life corridors, may also act as a super highway funneling and channeling rural labour as well as agrarian products towards Colombo with largely negative but also with some limited positive outcomes. The corridor also cuts through several Provincial jurisdictions with an enhanced potential for conflict between the Centre and the Regions. It also has the potential to convert itself into an ‘ethnic divide’ with enclaves of the majority community settlements and townships leading to increased tensions, if not managed with wisdom and foresight.

Fig.4 – Urban Places Under the National Physical Plan: 4 (a) – National Physical Development Plan; 4 (b) – New Corridor-based Development

Proposed New Regions and Urban Futures

In the context of above developments, reconsidering the urban futures in a fresh perspective is likely to assume new significance. It would be perhaps be prudent to retain the City planning work already done under the NPPD wherever possible. In the prevailing evolutionary paths, after the establishment of Provincial Councils, in most of them Provincial Capital cities have emerged with new buildings, and infrastructural developments. Their regional identities have been reinforced with provincial flags and floral symbols. Therefore, despite the emerging development corridors, provincial capitals with their own hinterlands would have to be nurtured and retained. Similarly, at the tertiary level, District Capitals will continue to function, be they under the existing provinces or under the new river basin based provinces. In the latter case if five provinces are demarcated [Fig. 3(c)], Five Provincial Capitals have to be identified and strengthened. These may include Jaffna or Kilinochchi for the North and Batticaloa or Ampara to the South East, and Matara or Galle to the South.
At the national level, the time has come perhaps to embrace the concept of ‘multiple capital cities’ as witnessed in some countries like South Africa. Here in Sri Lanka, Colombo will continue as the Commercial Capital strengthened by the megapolis development efforts, while Anuradhapura could be the ‘Cultural Capital’ as envisaged by the Urban Development Authority. An ‘Administrative Capital’ may be identified primarily considering the accessibility from all parts of the Country. Perhaps Polonnaruwa may present itself as a strong candidate in this regard, with its close proximity to the Trinco-Colombo development corridor and to all District Capitals in the Country in terms of the distances involved.

**Fig. 5 – Capital Cities –Old and New:** 5(a) Migration of Capital Cities since ancient times; 5(b) Metro Cities and District Capitals under the National Physical Plan; 5(c) Distance to District Capitals from the proposed cultural Capital of Anuradhapura

**Concluding Remarks**

The above planned developments, along with the establishment of Colombo Port City, are likely to change the urban future of Sri Lanka in a significant way. The dominance of Colombo as the Primate City will be further strengthened resulting in further polarization. Configuration of urban development as envisaged under the National Physical plan, that were more in consonance with the ecological setting and regional realities of the Island, may need some fundamental modifications. In particular, the development of the Colombo-Trincomalee Urban Corridor is bound to accelerate and perhaps distort the prevailing urban processes in an unprecedented way. It can therefore, be argued that these proposed developments should be considered cautiously in order to avoid any irrevocable or unwelcome consequences. At the national level, the time has come to consider the suitability of the concept of ‘Multiple Capital Cities’ reflecting the economic, administrative and cultural aspirations of the people.
Abstract

The paper questions most of the currently accepted definitions of urbanization and upheld the thesis that urban facilities and lifestyles are fast moving into the conventionally defined rural areas. The quantitative definitions of urban areas namely economic, morphological, functional and/or statistical are misleading.

The paper presents the recent studies of the National Physical Planning Department (NPPD) of Sri Lanka for the National Physical Plan 2050 encompassing the proposition that ‘urban’ is more a ‘way of life’ rather than a ‘physical attribute’ and which concluded that, as at 2016, “85% of the population is more than 30% urbanized and settled in about 55% of the island’s land ...”. Intense urban development is proposed therein to be confined to four ‘urban development corridors’, the main being the Colombo-Trincomalee axis. The others are the Northern drawn between Jaffna and Kilinochchi, an Eastern corridor between Chenkaladi and Ampara, and a Southern corridor between Galle and Tissamaharama including Embilipitiya. Furthermore, two ‘Metro Regions’ Anuradhapura and Kandy, and nine ‘Main Cities’ are also proposed.

Introduction

Conventional planning literature is mostly coloured with the understanding that ‘urban’ is distinct from ‘rural’ and that they are interdependent. Therefore, the definitions of ‘urban’ have throughout been area-bound and expressed through attributes such as population density, the type of local government and the availability of utilities and amenities. Based on the same, ‘urbanization’ is widely understood as a phenomenon in which populations from ‘rural’ areas migrate to defined ‘urban’ areas, seeking better employment, higher wages and fashionable lifestyles. It is based on this understanding that most ‘developing’ nations, especially in Asia, are viewed as yet largely ‘rural’ and rapidly transforming into ‘urban’.

However, from this perspective the situation in Sri Lanka, it is seen to have deviated from the fast urbanization trends observed in other nations of Asia. For example, the urban share of the population in Sri Lanka had increased from nearly 16% in 1971 to 21.5% in 1981 and then dropped to 14.6% in 2001 and increased to 18.2%, and then slightly increased up to nearly 20% in 2011. Yet, the observations on the ground show that statistics do not reflect the reality. On the other hand, the relatively higher growth and population engagement in
the service sector of the economy, rather than in conventional agricultural and traditional industries, shows that the urban share of the population would have increased more than what has been shown by population statistics.

In that context, the question arises as to what extent the conventional and widely accepted area-bound, migration-based thesis of the ‘urban’ reveals the situation in Sri Lanka. What reflects the ground reality of the urban quest in Sri Lanka over the last five decades? This was an important query in the preparation of the National Physical Planning Policy and the Plan 2050, that the National Physical Planning Department has completed a few weeks back.

Can there be an alternative thesis (if not an anti-thesis) – that is, a situation where, rather than people migrating into urban locations, the urban facilities, urban lifestyles and urban dynamics reach out to the people, spilling over the boundaries of the conventional ‘urban areas’?

It is this alternative thesis that is highlighted in this paper, which attempts to reveal some facts related to ‘urbanizing’, rather than the conventionally known ‘urbanization’ trends in Sri Lanka.

**Current definitions**

The definition of an ‘urban area’ varies in different countries, where single and multiple criteria are employed to define ‘urban’, depending on the context. Many institutions, including Sri Lanka’s Census & Statistics Department, which is the official source of information for planning and development activities, defined ‘urban’ local governments (Municipal Councils and Urban Councils) and thus, urbanization is pictured as the growth of populations in the areas under the jurisdictions of such urban local authorities. According to the United Nations, the Department of Economic & Social Affairs, Population Division (2001), a majority of nations have been using administration unit based qualitative criteria (39% of countries) to define urban areas, while about 20% the countries use the population size based criterion, and only 10% of the countries use multiple criteria for the same.

Most of the quantitative-based definitions on ‘urban’ are based on statistical figures such as the size of the population and population density, and hence, do not capture the complexities within societies, that might have strong implications on defining urban areas. Even though economic, morphological and functional approaches attempt to identify urban and rural characteristics by studying the areas, over and above statistical figures, each approach alone does not adequately capture the characteristics which distinguish between urban and rural. At the same time, the conventional classifications based on the proportions of occupational distribution over agriculture and non-agricultural uses, may mislead the observer as the areas predominantly occupied by agriculture might carry urban characteristics such as a high proportion of built-up areas and upgraded infrastructure, etc., mainly due to development schemes introduced by the government (Weeks, 2010).

The urban/rural dichotomy has long been recognised as an over simplification of the complexity of human settlements. The contradictory urbanization trends in Asia have been studied by many previous studies, among which McGee’s (1991) concept on Desa-Kota and the recent work by Hugo, Champion, and Lattes (2001) should be stated herein. These studies show that contrary to the expectations of planners and development agencies, large
populations, especially in Asian region, live in areas that can be categorized in-between ‘urban’ and ‘rural’. Therefore, the clear distinction between urban and rural areas has become less clear-cut (Beer, et al., 2014). Wirth (1938) argued that the degree to which the contemporary world may be said to be ‘urban’ is not fully or accurately measured by the proportion of the total population living in cities as the influences which cities exert upon the social life of the inhabitants are greater than the ratio of the urban population figures would indicate. He also argued that city is not only the dwelling place and workshop of modern man, but it is the initiating and controlling centre of economic, political and cultural life. Further, since the city is a product of growth rather than of instantaneous creation, the previously dominant modes of human association always may have its influence upon the present modes of life. Therefore, Pahl’s (1966), argument that rural/urban dichotomy needed to be replaced with a rural/urban continuum is worth considering.

In that sense, the Louis Wirth’s (1938) proposal to see ‘urbanism’ as a ‘way of life’ rather than a specific state of an area and Henry Lefèbvre’s (1970) ‘Urban Revolution’ which argues that the modern society is essentially ‘urban’ through a process of ‘complete urbanization’, and the need to emphasize on the social relationships deviating from the city or an urban agglomeration are importantly mentioned in order to see a way out from the current ambiguities in understanding the urban society.

The Research and the Findings

The National Physical Plan 2050 adopted the findings of a recent study which was conducted admitting the proposition that ‘urban’ is more a way of life, rather than a physical attribute, and that the lives of all are in a process of ‘urbanizing’ parallel to the urban-rural continuum.

The urban way of life is indicated by the types of livelihood engagement, the types of utilities and the practices in day to day life, and the modes of operating social relations. The life styles are further studied based on the aspirations reflected with the type of education and the type of institutions where such engagements are associated with. The ‘urban’ way of life is understood as supported by the access to urban infrastructure such as a pipe borne water supply, central sewerage disposal, main grid based electricity, municipal solid waste collection, etc. It is also supported by modern urban facilities such as supermarkets, clothing and fashion outlets.

In that manner, the study has taken into account the following attributes with the household information available from the Population and Housing Census 2012 data (Department of Census & Statistics) (Table 1).

The Census data (2012) available at the Grama Niladhari level was used for the study. The weighted overlay method is adopted in obtaining the composite results.

The output of the analysis is a spectrum of the populations ranging from 0 to 100 per cent in terms of the composite of the values attributed to the indicators mentioned above. In the range, 44 per cent could be observed as the highest level of urban status in Sri Lankan context as explained in Fig. 1.
The values of 0 and 100 can be considered as ideal states in the spectrum. Even though this value may be useful in comparisons with other countries, it was necessary to refer to normalized values in order to identify the urbanization pattern in Sri Lanka. In the normalization process, actual values range of 0-44 is normalized to a scale of 0-100, where 100 in this case referred to 44 in the absolute value. These normalized values are then analysed with the percentile distribution.

The ‘urbanizing’ of populations is continuing and at present (2016), it has been observed that more than eighty-five per cent (85%) of the population is more than 30% urbanized and settled in about fifty-five per cent (55%) of the island’s land area. Within the same cohort, and in a cumulative counting, more than forty per cent (42%) of the population is more than forty per cent (40%) urbanized and are settled in about eight per cent (8%) of the total land area, which can be considered as the ‘sub-urban’ level, while more than a quarter (26%) of the population is already more than half (50%) urbanized and settled in about three per cent (03%) of the land area, which can be considered as the ‘urban’ land area of the island. Broadly, nearly half (50%) of Sri Lanka’s population is more than sixty per cent (60%) urbanized and are concentrated into about one tenth (12%) of the total land area of the island (Figs. 2 & 3). With the prevalent patterns, it can be forecast that about eighty per cent (80%) of the population will reach the level of more than eighty per cent (80%) urban by 2030, and will be scattered throughout the island.

The outcome of the study revealed that the distribution of the ‘Urban’ population in Sri Lanka is rather different to the official figures while the urbanization process is divergent to the conventional understanding of the urbanization process. In terms of numbers, the migration of populations from conventionally known rural areas over the last three decades is insignificant, except for the suburbs of Colombo. Instead, urban facilities have been reaching out into populations at large and urban lifestyles and aspirations are fast embraced by the people, even though they live away from designated urban areas. Accordingly, the urbanization of a population is not an instantaneous phenomenon, but is a continuous transformative process and thus, at a given point in time, varying shares of the population are urbanized at different levels.
### Table 1 – Mandates, Expressions, Sub expressions and Attributes of the study framework

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<thead>
<tr>
<th>Mandates</th>
<th>Expressions</th>
<th>Sub-expression</th>
<th>Attributes</th>
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<tbody>
<tr>
<td>Food Consuming Patterns</td>
<td>Types of food</td>
<td>Percentage area coverage of a GND covered under the 8km buffer from selected globally recognized fast food outlets.</td>
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<td>Daily marketing practices</td>
<td>Percentage area coverage of a GND under 3km buffer from selected supermarket chain outlets.</td>
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<td>Clothing Patterns</td>
<td>Types of clothes</td>
<td>Percentage area coverage of a GND under the 15km buffer from selected fashion stores</td>
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<td>Type of tenure</td>
<td>Percentage of Rent / Lease household units in a GND</td>
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<td>No. of Storeys</td>
<td>Percentage of household units with two or more stories in a GND</td>
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<td>Type of toilet facility</td>
<td>Percentage of household units having toilets inside the household unit in a GND</td>
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<td></td>
<td>Type of toilet</td>
<td>Percentage of household units having water sealed toilets connected to septic tank or a sewer line in a GND</td>
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<td>Type of communication equipment used</td>
<td>Percentage of houses having Fixed line telephones</td>
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<td>Percentage of houses having Mobile telephones</td>
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<td></td>
<td>Percentage of houses having Desktop Computers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percentage of houses having Laptop Computers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Language Proficiency</td>
<td>Percentage of population with English language proficiency in A GND</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to internet</td>
<td>Percentage of population having access to internet at household unit in a GND</td>
<td></td>
</tr>
<tr>
<td>Shelter</td>
<td>Drinking Water Source</td>
<td>Percentage of household units having pipe borne water facility in a GND</td>
<td></td>
</tr>
<tr>
<td>Energy Consumption</td>
<td>Principle type of lighting</td>
<td>Percentage of household units using Electricity from National Grid or Hydro-electricity projects as the principle type of lighting in a GND</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type of cooking fuel</td>
<td>Percentage of household units using L.P. Gas or Electricity as the main source of cooking fuel in a GND</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>Type of service</td>
<td>Percentage of area coverage of a GND under the buffer zone of 25km From selected Private Hospitals</td>
<td></td>
</tr>
<tr>
<td>Solid waste disposal</td>
<td>Solid waste disposal method</td>
<td>Percentage of household units where solid waste being collected by Local Authorities in a GND</td>
<td></td>
</tr>
<tr>
<td>Aspirations</td>
<td>Education attainment</td>
<td>Percentage of Population with a degree or above education qualifications in a GND</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Type of school</td>
<td>Percentage of area coverage of a GND under the buffer zone of 10km From selected International Schools</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 – Percentile categories of different urban levels with % of population, % of land extent and cumulative % of population and land extent

<table>
<thead>
<tr>
<th>Urbanization level (percentile category)</th>
<th>% of the population</th>
<th>Cumulative % population</th>
<th>% of land extent</th>
<th>Cumulative % land extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>91-100</td>
<td>0.54</td>
<td>0.54</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>81-90</td>
<td>1.67</td>
<td>2.21</td>
<td>0.1</td>
<td>0.13</td>
</tr>
<tr>
<td>71-80</td>
<td>5.28</td>
<td>7.49</td>
<td>0.37</td>
<td>0.5</td>
</tr>
<tr>
<td>61-70</td>
<td>6.37</td>
<td>13.86</td>
<td>0.56</td>
<td>1.06</td>
</tr>
<tr>
<td>51-60</td>
<td>12.17</td>
<td>26.03</td>
<td>1.86</td>
<td>2.92</td>
</tr>
<tr>
<td>41-50</td>
<td>16.71</td>
<td>42.74</td>
<td>5.27</td>
<td>8.19</td>
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<tr>
<td>31-40</td>
<td>41.7</td>
<td>84.44</td>
<td>36.91</td>
<td>45.1</td>
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<tr>
<td>21-30</td>
<td>12.57</td>
<td>97.01</td>
<td>32.87</td>
<td>77.97</td>
</tr>
<tr>
<td>11-19.9</td>
<td>2.85</td>
<td>99.86</td>
<td>19.05</td>
<td>97.02</td>
</tr>
<tr>
<td>0-10</td>
<td>0.15</td>
<td>100.01</td>
<td>2.96</td>
<td>99.98</td>
</tr>
</tbody>
</table>

Fig. 2 – Percentile categories of different urban levels with cumulative % of population and land extent

However, the important understanding that results from this study is that urbanization is not a static state, but a continuum. At any point in time, we may find that all populations in the country are urbanized to some level and the share of the Urban Population is a determinant based upon the parameters set for the study purpose. No area can be declared as purely urban or rural. Certain areas contain more urban populations than others. We observed these societies to be the ones which are highly influenced by globalization, modernization and technological advances.

The important point to note is that changing lifestyles into urban from rural, leads to demand for more employment opportunities in non-conventional sectors, more and more urban infrastructure provision into distant areas and the likely destruction of natural settings and
MANAGING URBANISATION IN ASIA

resources in the search for space for modern developments. Unless the ongoing ‘urbanizing’ process is arrested in a healthy manner into a designated area, haphazard physical developments will be the outcome. This was a challenge confronted in the preparation of the National Physical Plan 2050.

Fig. 3 – Comparison between different levels of urban: Present administrative based situation (left) and proposed different levels of urbanization - percentile representation (right)

Implications on the National Physical Plan 2050

The National Physical Plan is thus, based on four mutually exclusive policies:


2. Promotion of the ‘Livability’ for ‘Humans’ Considered the environments most appropriate for human habitation in terms of climate, availability of resources for basic needs and essential services.


4. Exploration of the ‘Potentials’ and the ‘Enhancement’ of the use. Considered the Human Resource locations: where populations with various skills and education levels are located as resource locations: such have potentials for diversified developments.

Future intense urban development activities are proposed to be contained into four ‘Development Corridors’. In order to capitalize upon the advantages of the two major
ports in Colombo and Trincomalee, the transport infrastructure and the favourable living conditions, a reasonably higher share of the future population (approximately 35-40%) of Sri Lanka shall be settled in lands that fall within the proposed East-West Development Corridor. The spatial extent of this corridor is defined approximately as the area within 05-10 kilometers (highest concentration), and 10-20 kilometers (medium concentration) and 20-30 kilometers (moderate concentration). Other Development Corridors are the Northern Development Corridor extending from Jaffna to Kilinochchi, the Eastern Development Corridor extending from Chenkaladi to Ampara, and the Southern Development Corridor that covers the areas of Galle to Tissamaharama including Embilipitiya.

The previously mentioned study showed that around seventy to eighty per cent (70-80%) of the population will be more than 60% ‘Urban’ in terms of the level of accessibility to urban facilities, engagement in livelihoods and lifestyles by 2030. Out of that population, at least sixty per cent (60%) is expected to be concentrated within these Development Corridors. Such concentration is mandatory to meet the thresholds of viability for the investments on specific infrastructure and high-end urban facilities and to have the critical mass required for their sustainability.

Two ‘Metro Regions’ are prosed in Kandy and Anuradhapura, with a relatively larger agglomeration of economic activities, secondary and tertiary sector employment and populations of 500,000 in each, and a gross residential population density of more than 5,000 persons per square kilometre.

Nine ‘Main Cities’ are proposed in Mannar, Mullaitivu, Vauniya, Polonnaruwa, Puttalam, Nuwara Eliya, Rathnapura, Mahiyangana and Wellawaya. These are higher order service centres to their surroundings, and relatively larger concentration of economic activities, urban facilities and residential populations. The scenario proposed for future developments in the Plan assures the optimum utility of already developed and the ongoing large scale infrastructure development projects such as the expressways, highways, railways, water supply and drainage projects and the communication networks. Rather than investing on new infrastructure which is always costly, the available facilities shall be used to the maximum to get the best economic returns.

The potentials that exist with the lands, water resources and the human capital are to be captured within the areas of their availability.
Fig. 3 – Proposed Spatial Structure of the National Physical Plan 2050

References


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Nature of Urbanisation and Urban Policies in India

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Abstract

At present, seventy five per cent of people in the developed countries live in urban areas compared to 45 per cent in the less developed ones. In Asia and Africa, 4 out 10 persons live in urban areas, whereas in India only 3 out 10 persons live in urban areas. Most countries in Asia and Africa have very low levels of per capita income and their pace of urbanization has also been modest in the recent past. This is true for India, but the economic reforms of 1991 aimed at loosening the control of the Government encouraged entrepreneurs to participate actively in India’s economic development and economic growth reached about 8 per cent per annum during the first decade of the new millennium compared to just 3 per cent rate of growth in the early 1980s. This has also led a very spectacular change in the perception of the Central Government about urbanization. In Eleventh Five Year Plan (2007-2012), it is argued that urbanization should be seen as a positive factor in the overall development. This change in the thinking is coincidental with the fact that urban areas presently contributes to about 65 per cent of GDP and a realisation that an ambitious goal of 9 to10 per cent growth in GDP cannot be achieved without vibrant urbanization (Planning Commission 2008). As stated in the 12th Five Year Plan (2012-2017), the urban transition is considered as one of the major challenges which require a massive expansion in urban infrastructure and services. With this backdrop, the results of the 2011 census on urban population growth assume enormous significance in enhancing our understanding about the magnitude, growth and inter-state variations in the levels and tempo of urbanization in the country. This paper presents an assessment of the emerging pattern of urbanization, its spatial pattern and the components of urban growth namely the contribution of natural increase, classification of rural into urban areas and the contribution of rural to urban migration.

Introduction:

The twentieth century witnessed a rapid shift of population from rural to urban areas in most of the countries of the world. A mere 13 per cent of the global population lived in urban areas in 1900, which increased to 29 per cent in 1950 and crossed the 50 per cent mark (50.1 per cent) in 2009 (U.N., 2009). In 2018, 55 per cent of the world’s population has been residing in urban areas. However, the pattern of urbanization is found to be very unequal between the more developed and less developed world. More than 80 per cent of population of North America, Latin America and Caribbean lived in urban areas compared to 74 per cent in Europe and 68 per cent in Oceania. On the other hand, half of the population in Asia lives in urban areas compared to 43 per cent in Africa (U.N., 2018).
In India only one-third of the population lives in urban areas. In the decades after 1991 India has experienced an accelerated economic growth after the Central Government launched economic reforms in the country. The economic reforms aimed at loosening the control of the Government and encouraging entrepreneurs to actively participate in India’s economic development. The economic growth reached to about 8 per cent per annum during the first decade of the new millennium compared to just 3 per cent growth in the early 1980s. This has also led to a very spectacular change in the perception of the Central Government about urbanization. In the Eleventh Five Year Plan (2007-2012), it is argued that urbanization should be seen as a positive factor in overall development. This change in the thinking is coincidental with the fact that urban sector presently contributes to about 65 per cent of the GDP, and is also the product of the realization that an ambitious goal of 9 to 10 per cent growth in GDP fundamentally depends on making Indian cities much more livable, inclusive and competitive (Planning Commission 2008). The urban transition is considered as one of the major challenges which will require a massive expansion in urban infrastructure and services.

Under this backdrop, the results of the 2011 census on urban population growth assumes enormous significance in enhancing our understanding about the magnitude, growth and inter-state variations in the levels and tempo of urbanization in the country. This paper presents an assessment of the emerging pattern of urbanization, its spatial pattern and the components of urban growth namely the contributions of natural increase, rural-urban classification of settlements and the contribution of rural to urban migration. It also throws light on some policy issues.

**Definition of Urban**

Historically, the process of urbanization got intensified in the wake of industrial revolution in the western world which led to the expansion of infrastructure such as transport and communication and propelled increased rural to urban migration. The agglomeration of population, predominance of non-agricultural activities and better provision of social amenities including health and educational infrastructure emerged as distinguishing features of settlements following the industrialization of agrarian economies (Bhagat, 2005). In contemporary times, however, the settlements have become increasingly complex. Thus, in the study of urbanization it is pertinent to know how urban areas are defined because, from the demographic point of view, the level of urbanization is measured in terms of percentage of population living in urban areas (Davis, 1962). An area is classified as rural or urban depending upon various criteria such as population size, density, occupational composition and civic status. There is no thumb rule to divide rural and urban, and the practice is followed diversely across the countries of the world. For example, a UN study shows that 97 out of 228 countries use administrative criteria to make the distinction between urban and rural; in 96 cases the criteria used to characterize urban include population size or population density. Economic characteristics were used to define urban areas only in 25 countries and 15 countries have applied functional criteria like paved streets, water supply systems, sewerage systems and electric lighting etc. Lastly in 22 cases no urban definition was available and in a further 8 the population was considered either urban or rural depending upon the circumstances (Zlotnik, 2002). Thus, in the study of urbanization at the global level, one should not lose sight of the definition of urban followed in each country and the changes therein in order to understand the urban dynamics appropriately.
In India during the British rule, urban area was defined as including every municipality of whatever size, every cantonment, all civil lines not included in municipal limits, and every other collection of houses permanently inhabited by not less than 5000 persons which is of an urban character though not under municipal government. This definition continued until the 1961 census and left it to the state census superintendents to apply their judgments in declaring the settlements as urban. The latter aspect has been considerably reduced since the 1961 census, which defined urban areas on the basis of two important criteria namely: i) statutory administration and ii) economic and demographic aspects. The first one includes civic status of towns such as municipal corporations, municipality, cantonment board, notified area committee, etc., and the second comprises criteria like population size, density of population and percentage of the work force in non-agricultural sectors. The towns identified on the basis of former criteria are known as statutory or municipal towns and the towns defined on the basis of demographic and economic criteria are termed as census or non-municipal towns (Bhagat, 2005).

The more specifically the criteria of defining urban as mentioned in the recent census report are as follows:

i) All places with a municipality, corporation, cantonment board or notified town area committee etc.

ii) All other places which satisfy the following criteria:
   a) Minimum population of 5000
   b) At least 75 % of male working population engaged in non-agricultural pursuits and
   c) A density of population of at least 400 persons per square km.

Besides, the directors of census operations in states/union territories were allowed to include in consultation with the concerned state Governments, union territory administration and the census commissioner of India, some places having distinct urban characteristics as urban even if such places did not strictly satisfy all the criteria. The state governments decide about the civic status, while the Census of India applies the demographic and economic criteria in identifying towns at every ten years. These two criteria are applied independently by the two agencies. Thus in every census several new towns are added as well as declassified if they do not satisfy the above mentioned criteria. However, it is mentioned that India’s urban definition is male biased as it considers only male workforce employed in the non-agricultural sector. But given the very low level of participation of women in the non-agricultural sector, it is done so (Bhagat, 2002). The definition of urban adopted since 1961 census remained fairly constant until the 2011 Census, except that since 1981 economic activities like fishing, livestock, logging, plantations, orchards etc were excluded from the category of non-agricultural pursuits for computing the percentage of the male workforce in non-agricultural sectors (Census of India, 1991). This would have hardly any significant impact while comparing the urbanization trend over time.

It will be worthwhile to mention the criteria of defining urban applied by some of the neighboring countries in order to understand the nature of urbanization in India in a proper perspective. For example, in the neighbouring country of Nepal, only size of population (more than 9000 population) is taken to declare a settlement as urban. Geographically Nepal is situated on mountainous terrain and economically it has a low level of industrialization and development. On the other hand, the neighbours like Bangladesh, Sri Lanka and Pakistan apply administrative criteria to declare a settlement urban. Any settlement with
municipal corporation, municipality, town committee and urban councils etc. are declared as urban (United Nations, 2006). While Bangladesh has a much lower level of urbanization (27.6 per cent), Pakistan stands much higher (35.6 per cent) compared India (29.7 per cent) in 2009. It would be interesting to mention how urban population is defined in the world’s largest populous country-China with urban population of 46.1 per cent in 2009 (U.N., 2009). In China, the urban population lives within the jurisdiction of cities and towns, and the rural population lives in counties. Cities are established with the approval of the central government and towns are classified based on population size as well the size of non-agricultural population under the township government. The non-agricultural population is ascertained based on the household registration system maintained by local resident committees in towns and village committees in townships. There are no uniform rules followed by these committees in making a distinction between non-agricultural and agricultural populations, nor are the rules transparent, as the non-agricultural residents enjoy significant privileges in terms of access to apartments, jobs and subsidized food. In fact, the size of the urban population in China depends very much on how the non-agricultural population is defined (State Statistical Bureau of China 1998), and the rural-urban classification is associated with differential privilege (Zhu, 2001).

There exists a considerable difference in the way urban areas are defined in different countries. However, India’s definition of urban seems to be more stringent compared to other south Asian countries. It is because of this reason that India’s level of urbanization is much lower than Pakistan and several African countries.

**Trend in Urbanisation**

The Office of the Registrar General and Census Commissioner of India projected the urban population be 358 million for the year 2011, and estimated that urban population growth rate would decline from 2.75 per cent per annum observed during 1991-2001 to 2.23 during 2001-2011 (Office of the Registrar General and Census Commissioner, 2006). The urban experts also believed in the slowing down of India’s urbanization because of its exclusionary nature and its inability to spur rural to urban migration (Kundu, 2007; 2011). However, the 2011 Census shows some unexpected results.

According to 2011 Census, the urban population grew to 377 million showing a growth rate of 2.76 per cent per annum during 2001-2011 and the level of urbanization of the country as a whole increased from 27.7 per cent in 2001 to 31.1 per cent in 2011- an increase of 3.3 percentage points during 2001-2011 compared to an increase of 2.1 percentage points during 1991-2001. This clearly reflects the faster economic growth during 2000s in bringing about speedier urbanization during 2001-2011.

Table 1 shows that India had about 79 million urban population in 1961 which constituted about 18 per cent of the total population. The average growth rate of urban population was 2.32 per cent during 1951-61 which accelerated up to 3.79 per cent during 1971-81 i.e. the highest urban growth since independence. After 1981, the urban growth rate decelerated to 3.09 per cent during 1981-91 and further declined to 2.75 during 1991-2001. However, the declining growth rate was slightly reversed during 2001-2011. The total addition to the urban population was 91 million during 2001-2011- the highest ever, and for the first time the urban population increment was higher than rural population increment (90.5 million) since a uniform definition was followed since 1961.
It is worthwhile to mention that urban population growth alone cannot speed up urbanization but more importantly if urbanization has to occur, urban population growth rate needs to be higher than the rural population growth rate. Thus, it is the urban-rural population growth differential that is critical to the process of urbanization. Table 2 shows that the urban-rural growth differentials increased from about 1 per cent per annum during 1991-2001 to 1.60 per cent per annum during 2001-2011. It is also evident from Table 2 that the rural population growth has declined much faster during 2001-2011 compared to earlier decades. It is worthwhile to mention that the urban-rural population growth differential is the product of the differential in natural increase between rural and urban areas (births-deaths), net rural-urban classification and net rural to urban migration. The urban-rural growth differentials in natural increase remained almost constant (4 per 1000 population) during 1991-2000 to 2001-20010. Therefore, it was the net rural-urban classification and net rural to urban migration that was responsible for higher urban-rural growth differential and speeding up urbanization during 2001-2011. The exact contribution of different components of urban growth is presented in the sections to follow.

### Table 1 – Trends in Urbanisation in India, 1951-2011

<table>
<thead>
<tr>
<th>Census year</th>
<th>Urban population (in million)</th>
<th>Per cent urban</th>
<th>Annual exponential urban growth rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>78.94</td>
<td>17.97</td>
<td>-</td>
</tr>
<tr>
<td>1971</td>
<td>109.11</td>
<td>19.91</td>
<td>3.23</td>
</tr>
<tr>
<td>1981</td>
<td>159.46</td>
<td>23.34</td>
<td>3.79</td>
</tr>
<tr>
<td>1991</td>
<td>217.18</td>
<td>25.72</td>
<td>3.09</td>
</tr>
<tr>
<td>2001</td>
<td>286.12</td>
<td>27.86</td>
<td>2.75</td>
</tr>
<tr>
<td>2011</td>
<td>377.10</td>
<td>31.16</td>
<td>2.76</td>
</tr>
</tbody>
</table>

Source: Census of India respective censuses (www.censusindia.gov.in)

Notes: As the 1981 Census was not conducted in Assam, and 1991 Census was not held in Jammu and Kashmir, the population of India includes their projected figures.

### Table 2 – Urban-Rural Population Growth Differentials, 1971-2011 (annual exponential growth rate in %)

<table>
<thead>
<tr>
<th>Decade</th>
<th>Rural</th>
<th>Urban</th>
<th>Urban-rural growth differentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971-81</td>
<td>1.76</td>
<td>3.79</td>
<td>2.03</td>
</tr>
<tr>
<td>1981-91</td>
<td>1.80</td>
<td>3.09</td>
<td>1.29</td>
</tr>
<tr>
<td>1991-2001</td>
<td>1.69</td>
<td>2.75</td>
<td>1.06</td>
</tr>
<tr>
<td>2001-2001</td>
<td>1.16</td>
<td>2.76</td>
<td>1.60</td>
</tr>
</tbody>
</table>

Source: Same as in Table 1
Components of Urban Growth

In many developing countries, the lack of adequate data on rural to urban migration as well as reliable data on natural increase precludes the disaggregation of urban growth by its various components (Brockerhoff 1999). The natural increase, net rural-urban classification and rural to urban migration are considered as components of urban population growth. An assessment of their relative contribution is very important to understand the dynamics of urban population growth. The trend in the natural increase for the four decades up to the year 2010 is presented in Table 3. The natural increase in urban areas remained at 19.3 per 1000 persons during 1970-1980 which declined to 13.2 during 2001-2010. On the other hand natural increase in rural areas declined from 20 per 1000 population during 1971-1980 to 17.3 during 2001-2010 - a decline of just 3 points compared to the decline of 6 points in urban areas. Due to faster decline of natural increase in urban areas the urban-rural growth differentials has also widened during the last four decades. There was almost no urban-rural differential in natural increase during the 1970s, it increased to 2 per 1000 population during the 1980s but remained constant at 4 per 1000 during the last two decades. In India, fertility has started declining since the early 1970s. The onset of fertility decline was not only early but was even faster in urban areas. In a situation of widening urban-rural growth differentials in natural increase, the other components like net rural-urban classification of settlements and net rural to urban migration need to show faster growth rates in order first to compensate the deficit of population arising due to decline in natural increase in urban areas compared to rural areas and secondly to contribute additionally to push up the level urbanization. Therefore, the combined contribution of net rural to urban classification and net rural to urban classification is decisive in the process of urbanization.

<table>
<thead>
<tr>
<th>Years</th>
<th>Birth rate (per 1000)</th>
<th>Death rate (per 1000)</th>
<th>Rate of natural increase (per 1000)</th>
<th>Urban-rural differentials in natural increase rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971-1980</td>
<td>Rural 35.8</td>
<td>15.8</td>
<td>20.0</td>
<td>-0.7</td>
</tr>
<tr>
<td></td>
<td>Urban 28.5</td>
<td>9.2</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td>1981-1990</td>
<td>Rural 33.9</td>
<td>12.6</td>
<td>21.3</td>
<td>-2.0</td>
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<tr>
<td></td>
<td>Urban 27.0</td>
<td>7.7</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td>1991-2000</td>
<td>Rural 29.4</td>
<td>9.9</td>
<td>19.5</td>
<td>-3.7</td>
</tr>
<tr>
<td></td>
<td>Urban 22.3</td>
<td>6.5</td>
<td>15.8</td>
<td></td>
</tr>
<tr>
<td>2001-2010</td>
<td>Rural 25.7</td>
<td>8.4</td>
<td>17.3</td>
<td>-4.1</td>
</tr>
<tr>
<td></td>
<td>Urban 19.3</td>
<td>6.0</td>
<td>13.2</td>
<td></td>
</tr>
</tbody>
</table>

Source: Sample Registration System, Various Years, Registrar General and Census Commissioner, India (www.censusindia.gov.in).
The decomposition of urban growth into major components namely natural increase, net rural-urban classification and net rural to urban migration is presented in Table 4.

The contribution of natural increase in urban population increment was 43.8 per cent during 2001-2011 compared to 58 per cent in the previous decade. It is worthwhile to mention that the natural increase added a huge population i.e. about 40 million in the urban areas during 2001-2011. In the study of India’s urbanization the contribution of natural increase has not received as much attention as that of the rural to urban migration. This led sometimes to the popular belief that urban population is solely increasing due to migration. On the other hand, the contribution of net reclassification of rural to urban areas, changes in municipal boundaries and out growths have increased very significantly from about 22 per cent during 1991-2001 to about 36 per cent during 2001-2011. This factor has been dominant in influencing the speed of urbanization during 2000s compared to net rural to urban migration. Although net rural to urban migration has increased from 14.2 million to 18.7 million, the net rural to urban classification increased net addition from 14.7 million to 32.3 million during 1991-2001 to 2001-2011. The 2011 Census reported that the number of towns at the national level increased from 5161 to 7935- a net addition of 2774 towns (2532 census towns and 242 statutory towns) in 2011 compared to the net additions of 763 and 693 towns in 1991 and 2001 respectively. A fourfold increase of new towns mostly small towns (less than 20,000) show the overriding importance of spatial changes that reorganized the rural-urban space and produced faster urbanization during the 2000s. Many of these new small towns have emerged as part of urban agglomerations of million plus cities.

### Table 4 – Contribution of the Components of Urban Growth, India, 1971-2011

<table>
<thead>
<tr>
<th>Components</th>
<th>Population in Million</th>
<th>Percentage Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban increment</td>
<td>49.9</td>
<td>56.8</td>
</tr>
<tr>
<td>Natural increase (of initial population plus inter-censal migrants)</td>
<td>24.9</td>
<td>35.4</td>
</tr>
<tr>
<td>Net rural-urban migration</td>
<td>9.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Net reclassification from rural to urban including jurisdictional changes and out growths</td>
<td>15.7</td>
<td>10.8</td>
</tr>
</tbody>
</table>

Source: The figures up to 2001 are taken from Bhagat and Mohanty (2009); The components of 2001-2011 is estimated based on natural increase in urban areas between 2001-2010 and assuming the rate of net rural to urban migration remained constant between 1991-2001 to 2001-2011. The direct data on internal migration by rural to urban streams was yet available at the time of writing this paper. Alternatively, looking at the trend based on migration data of National Sample Survey 2007-08 this assumption is made. The contribution of net rural to urban classification along with changes in municipal boundaries and out growths is estimated residually.
State Level Patterns

At the state level, the pattern of urbanization is very diverse, but economically advanced states show higher levels of urbanization. The emerging regional pattern is evident from Fig. 1 which shows that most of the parts of central, eastern and north-eastern India have a very low level of urbanization. This region is also the economically less developed part of India. On the other hand, all southern states along with states of northern and western India such as Punjab, Haryana, Gujarat, Maharashtra have higher urbanization levels than the national average, but the small states like Goa continues to top the list among states, with 62 per cent urban followed by Mizoram (51.5 per cent). Among major states, Tamil Nadu continues to be ahead of other states with a level of urbanization of 48.4 per cent in 2011. The states which are lagging behind are Himachal Pradesh at the bottom with a level of urbanization 10 per cent followed by Bihar (11.3), Assam (14 per cent) and Orissa (16.6). Other states like UP, Rajasthan, MP, Chhattisgarh and Jharkhand also continued to have lower urbanization than the national level.

![Fig. 1 – Levels of Urbanisation, India, 2011](image)

Although reversal in the declining trend in urban population growth rate at the national level is a major feature of urbanization revealed by 2011 Census, is that there are only 15 states and UTs which show increased urban population growth rate during 2001-2011 compared to 1991-2001. Among them Kerala, Andhra Pradesh, Karnataka, Gujarat, West Bengal, Bihar, Jharkhand, Chhattisgarh and Uttarkhand are the major states. A very high urban population growth has occurred in the states of Kerala and Andhra Pradesh where urban population growth rate has increased to 6.5 per cent per annum in Kerala and 3 per cent per annum in Andhra Pradesh during 2001-11 compared to just about 1 per cent per annum during 1991-2001. In both Kerala and Andhra Pradesh along with West Bengal and Gujarat, a large number of new towns have emerged as a result of the rural-urban classification in 2011.
### Table 5 – Level of Urbanisation and Urban Growth in India and States, 2011

<table>
<thead>
<tr>
<th>State/India</th>
<th>Urban Population (in million)</th>
<th>% Urban</th>
<th>Average annual urban growth Rate*</th>
<th>Average annual rural growth rate*</th>
<th>Urban-rural growth differentials*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>28.35</td>
<td>33.4</td>
<td>3.09</td>
<td>0.19</td>
<td>2.90</td>
</tr>
<tr>
<td>Arunanchal Pradesh</td>
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<td>22.6</td>
<td>3.18</td>
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<td>1.01</td>
</tr>
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<td>Assam</td>
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<td>14.0</td>
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<td>1.41</td>
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<tr>
<td>Bihar</td>
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<td>1.65</td>
<td>2.84</td>
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<td>62.1</td>
<td>3.01</td>
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<td>0.99</td>
<td>2.67</td>
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<td>1.45</td>
<td>1.17</td>
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<tr>
<td>Jammu &amp; Kashmir</td>
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<td>27.2</td>
<td>3.04</td>
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<td>1.16</td>
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<tr>
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<td>2.79</td>
<td>1.79</td>
<td>1.00</td>
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<td>2.72</td>
<td>0.75</td>
<td>1.97</td>
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<td>47.7</td>
<td>6.56</td>
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<td>1.24</td>
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<td>0.76</td>
<td>0.52</td>
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<td>2.56</td>
<td>1.74</td>
<td>0.82</td>
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<td>24.9</td>
<td>9.29</td>
<td>-0.52</td>
<td>9.81</td>
</tr>
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<td>2.4</td>
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<td>1.76</td>
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<td>1.64</td>
<td>0.88</td>
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<tr>
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<td>30.5</td>
<td>3.49</td>
<td>1.07</td>
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<td>1.87</td>
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<td>Andaman &amp; Nicobar Islands</td>
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<td>97.2</td>
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<td>12.85</td>
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<td>Dadra &amp; Nagar Haveli</td>
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<td>10.79</td>
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<tr>
<td>Daman &amp; Diu</td>
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<td>75.1</td>
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<td>16.70</td>
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<tr>
<td>Delhi</td>
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<td>-8.31</td>
<td>10.66</td>
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<td>Lakshadweep</td>
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<td><strong>2.76</strong></td>
<td><strong>1.16</strong></td>
<td><strong>1.60</strong></td>
</tr>
</tbody>
</table>

*Average annual during 2001-2011
Fig. 2 – Relationship between urban growth rate and urban-rural growth differentials at state level, India, 2001-2011

\[ y = 1.292x - 0.919 \]
\[ R^2 = 0.504 \]

Fig. 3 – Per capita income and urban-rural growth differentials at state level, India

\[ y = 5E-05x - 0.539 \]
\[ R^2 = 0.320 \]
As stated earlier, urbanization is the product of urban-rural growth differentials. Table 5 presents urban-rural growth differentials along with urban growth rate and level of urbanization (% urban). There exists a positive relationship between urban population growth rate and urban-rural growth differentials (see Fig. 2) at the state level. Fig. 3 further shows that the level of economic development contributes positively in widening urban-rural growth differentials and thus contributing to the speed of urbanization.

Various studies show that urbanization has been closely related to economic development, and is the single most important factor in the organization of production and access to services. Cities are considered to be engines of economic growth and temples of modern civilization. Thus to know how our cities are growing assumes enormous significance for understanding the problems of economy and society.

Size Class of Cities and Towns:

The size classes of cities and towns are divided into six folds by Census of India namely more than 100,000, 99,999-50,000, 49,999-20,000, 19,999-10,000, 9,999-5,000, and less than 5000. The size class known as cities comprises places having a population of 100,000 and more, and the smallest category consists of tiny towns with a population less than 5000. For a meaningful comparison of the changes in urban population across size class of cities and towns, the towns comprising of populations of less than 20,000 are defined as small towns (Census of India, 1991). Further, cities with population of a million and more deserve a special category in India’s urbanization because of their large size and economic dominance in the country. Such cities are called million plus or metropolitan cities. Table 6 presents the percentage distribution of urban population by size class of cities from 1901 to 2011. It may be seen from Table 6 that about five per cent of the population lived in million plus cities in 1901, with the figure rising close to 20 per cent in 1951 and to nearly 42.6 per cent by 2011 (see Fig. 4 also). The number of million plus cities has also gone up from one in 1901 to 53 in 2011. Kolkata was the only city which fell into the million plus cities category at the beginning of the twentieth century, and then Mumbai joined the rank of million plus cities in 1911. For nearly four decades, there were only two million plus cities, and then Delhi, Chennai and Hyderabad joined the rank of million plus cities in 1951, increasing the total number of million plus cities to five. In 1981, the million plus cities numbered 12. By 1991, 11 more metro cities were added to the list, increasing the total number to 23. During the last decade 1991-2001, 12 more million plus cities have been added, followed by an addition of 18 more during 2001-2011, increasing the total number of million plus cities to 35 in 2001 and 53 in 2011 respectively. As a result, the concentration of urban population in million plus cities increased significantly in the last decade from about one-fourth in the 1970s to 1980s to more than two-fifths in the 2000s. Among the metropolitan cities, six cities that have a population of more than five million, namely Mumbai, Kolkata, Chennai, Delhi, Hyderabad and Bangalore, constitute one-fifth of the total urban population. When we look at all cities or territories with a population of 100,000 and more, one-fourth of the total urban population lived in cities in 1901. This went up to 45 per cent in 1951 and increased to the maximum of 68 per cent in 2001. In 2011, the share of population in cities with population one lakh and more slightly declined from 68 per cent in 2001 to 65 per cent in 2011. Notwithstanding this slight decline, it is worthwhile to point out that the increasing concentration of population in cities, particularly in million plus cities, has been a striking feature of India’s urbanization during the last century. The increasing concentration
of population in cities sometimes gives the impression that cities are growing much faster than small-and medium-sized towns; however, this is not true when the growth rates of population across size-class of cities and towns are considered. In fact, cities and towns are growing at about the same rate across size classes of cities and towns (Bhagat, 2004; Census of India, 1991; Mohan & Pant, 1982; Visaria, 1997). However, results available from the 2011 census are indicative that while urbanization in the country has speeded up, the metropolitan cities like Delhi, Kolkata, Hyderabad, Ahmadabad and Mumbai show decline in their growth rates (Kundu, 2011). It is worthwhile to mention that while core areas (municipal areas) of the city have been showing a declining growth, the peripheral areas adjoining the main city have comparatively grown faster during the last decade surrounding many million plus cities. In this respect, the examples of cities like Navi Mumbai, Thane, Kalyan, Mira Bhayander in the Mumbai metropolitan region are noteworthy. The same is true for Gurgoan, Faridabad, Meerut, NOIDA around the National Capital Territory of Delhi. Thus, the nature of migration in the big metropolitan cities seems to have changed, which needs to be assessed in conjunction with the surrounding areas known as metropolitan region. The metropolitan cities have also very high density of population and it is likely to spill over to adjoining areas as a natural consequence. Thus, one of the important features of India’s urbanization seen from 2011 Census is not only faster urbanization, but also that the faster urbanization has been possible due to the geographical expansion of urbanization and also through the emergence of new towns. On the other hand, vast areas still remain rural and providing urban facilities in rural areas (PURA) as proposed by our former President of India- A.P.J. Abdul Kalam in promoting India’s economic development still remains a challenge (Kalam, 2003). Further, the civic conditions of many newly emerged as well as old small and medium towns are appallingly poor.

Table 6 – Urban population by size class of cities and towns, India, 1901-2011

<table>
<thead>
<tr>
<th>Census year</th>
<th>Million Cities (one million &amp; above)</th>
<th>Cities (100,000 - one million)</th>
<th>Large Towns (50 to 100,000)</th>
<th>Medium Towns (20 to 50,000)</th>
<th>Small Towns (less than 20,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>5.86</td>
<td>20.11</td>
<td>11.29</td>
<td>15.64</td>
<td>47.10</td>
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<tr>
<td>1911</td>
<td>10.89</td>
<td>16.74</td>
<td>10.51</td>
<td>16.40</td>
<td>45.46</td>
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<tr>
<td>1921</td>
<td>11.30</td>
<td>18.40</td>
<td>10.39</td>
<td>15.92</td>
<td>43.99</td>
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<tr>
<td>1931</td>
<td>10.34</td>
<td>20.86</td>
<td>11.65</td>
<td>16.80</td>
<td>40.35</td>
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<td>1941</td>
<td>12.19</td>
<td>26.04</td>
<td>11.42</td>
<td>16.35</td>
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<tr>
<td>1951</td>
<td>19.07</td>
<td>25.57</td>
<td>9.96</td>
<td>15.72</td>
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<tr>
<td>1961</td>
<td>23.34</td>
<td>28.08</td>
<td>11.23</td>
<td>16.94</td>
<td>20.41</td>
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<td>1971</td>
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<td>31.22</td>
<td>10.92</td>
<td>16.01</td>
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<td>1991</td>
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<td>2001</td>
<td>37.80</td>
<td>30.78</td>
<td>9.73</td>
<td>12.29</td>
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<td>2011</td>
<td>42.62</td>
<td>23.09</td>
<td>9.33</td>
<td>12.78</td>
<td>11.75</td>
</tr>
</tbody>
</table>
Access to Basic Amenities by Size Class of Cities/Towns:

According to 2011 Census, 55 per cent households in rural areas and 92 per cent of households in urban areas have access to electricity. So far the toilet facility is concerned, it was abysmally low in rural (30 per cent) compared to urban areas (81 per cent). Whereas about one-fifth of households do not have access to toilet facilities in urban areas; that means about 75 million urban populations have no access to toilet facilities as per 2011 Census. Another aspect of sanitation closely associated with toilet facilities is the wastewater outlet through the provision of drainage. The proportion of households either with open or closed drainage was 81 per cent in urban areas. Compared with toilet and drainage facility, access to drinking water provided either through tap or hand pumps was reported to be 74 per cent in rural areas compared to and 82 per cent households in urban areas as per 2011 Census. Use of clean fuel is very important from the health point of view. In rural areas, about one-tenth of households were found using LPG/PNG compared to three-fifths in the urban areas. This shows that a very high proportion (two-fifth) of households was still using polluting fuels which are not only hazardous for health but also contribute to greenhouse gases and global warming.

India’s urban population is distributed across 8000 odd towns and cities with different size, economic base and ability to generate resources from tax and non-tax sources. Class I cities (100 thousand and more) have higher employment in organized sector compared to
MANAGING URBANISATION IN ASIA

In many small urban centres, a sizeable proportion of the workforce is also dependent on agriculture. Thus, size as a measure of urban centres not only reflects population concentration but also their economic strength as well. It is expected that the provision of basic services is directly related to the size of urban centres. Table 7 presents basic amenities by size class of urban centres. It confirms that except toilet facility all other amenities like electricity, drainage, LPG/PNG etc increases with increasing size class of cities and towns.

Table 7 – Percentage of households with access to selected basic amenities by size class of urban centers, 2001 and 2011

<table>
<thead>
<tr>
<th></th>
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<td>Class-I</td>
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<tr>
<td>More than 5 million</td>
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<td>97.5</td>
<td>63.0</td>
<td>97.0</td>
<td>98.3</td>
<td>82.8</td>
<td>79.5</td>
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<tr>
<td>1 million-5 million</td>
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<td>78.4</td>
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<td>89.7</td>
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<td>100 thousand-1 million</td>
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<td>83.5</td>
<td>72.9</td>
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<td>89.1</td>
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<td>50-100 thousand</td>
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<td>66.4</td>
<td>71.7</td>
<td>53.8</td>
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<td>20-50 thousand</td>
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<td>75.4</td>
<td>62.5</td>
<td>75.4</td>
<td>53.8</td>
<td>67.3</td>
<td>88.5</td>
<td>77.6</td>
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<tr>
<td>10-20 thousand</td>
<td>78.3</td>
<td>77.6</td>
<td>57.4</td>
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<td>5-10 thousand</td>
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<td>79.4</td>
<td>53.9</td>
<td>77.9</td>
<td>52.0</td>
<td>57.9</td>
<td>87.9</td>
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<td>Class-VI</td>
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<tr>
<td>Less than 5 thousand</td>
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<td>75.9</td>
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<td>50.8</td>
<td>88.6</td>
<td>81.0</td>
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</table>

Source: Census of India 2001 and 2011

About three-fourth of the households possess a toilet facility among small towns (20 thousand and less) which even declines to 64 per cent among mega cities with population more than 5 million. In mega cities a high proportion of population living in slum areas that have either no access to a toilet facility or have community toilets. The coverage of electricity varies from 88 per cent among small towns to 98 per cent among mega cities in 2011. The coverage of drinking water varied from about 80 per cent among small urban centres to 90 per cent among mega cities. While about one-fourth households are denied access to electricity, the same is about one-fifth for drinking water which rises to one-fourth in respect to toilet facility among small towns. Except tiny towns (population 10000 and
below), the coverage of drinking water access has declined across the size class of cities and
towns during 2001-2011. So far the access to LPG/PNG is concerned, the highest use of 80
per cent is found in mega cities compared to half of households in the small urban centres.
While it is obvious that bigger cities in general have an advantage in the use of clean fuel
as LPG, a significant proportion of residents across size class cities and towns also depend
on kerosene, and the rest on other sources of fuel like coal, charcoal and wood as their
source of fuel, which are sources of indoor pollution and ill health among a substantial
urban population living in small and medium urban centres. There has been a substantial
increase (10 per cent more) in most of the basic services across size classes of cities and
towns except drinking water during 2001-2011. It appears that supply of drinking water is
the most challenging in the urban areas. At the state level, the situation remains unchanged
with regard to bigger cities, which show higher provision of the basic services compared
to smaller urban centers. But the cities (1 lakh and more) of poorer states like Bihar, Orissa,
Jharkhand and Uttar Pradesh show much lower provision of basic services compared to
cities of Punjab, Maharashtra, Gujarat and Karnataka. Thus, within the same size class, inter-
state disparities continue to manifest. On the other hand, while the households of the small
cities and towns have low access to basic amenities, the poor households living in them are
most severely denied the access to basic amenities (Bhagat, 2013).

Conclusions and Policy Suggestions:

The declining trend in the urban population growth rate observed during 1980s and 1990s
was reversed at the national level, and the level of urbanization increased faster during
2001-2011. The urban population grew from 286 million in 2001 to 377 million in 2011-
an increment of 91 million which is larger than the rural population increment of 90.5
million for the first time since independence. This paper presents an assessment of the
emerging pattern of urbanization, its spatial pattern and the components of urban growth
namely the contribution of natural increase, re-classification of rural into urban areas and
the contribution of rural to urban migration. A substantial increase in urban population is
contributed by net rural-urban classification and rural to urban migration. A huge number
of new towns emerged during the last decade contributing significantly to the speeding up
of urbanization which shows that the emerging form of urbanization is spatially distributed
in the form of large numbers of medium and small urban centres. On the other hand,
although the contribution of natural increase in urban growth has declined in terms of
proportions, its share in absolute numbers (about 40 million) continues to be huge due to
the large base of the urban population. This has implications not only for providing the
increased urban infrastructure and civic amenities, but also of the reproductive and child
health services in urban areas.

Urban areas face acute shortage of civic amenities. In order to deal with the rapid increase
in urban population and faster urbanization, India has had to push through several
urban reforms and policy changes that have been initiated in the early 1990s. In India,
urban development is a state subject; however the Central Government used to provide
guidelines and also promise increased funds through centrally initiated urban development
programmes like Jawaharlal Nehru National Urban Renewal Mission (JNNURM) currently
replaced by Smart Cities Mission and AMRUT (Atal Mission for Rejuvenation and Urban
Transformation). Ironically, India has top down and project driven urban planning and
development without regard for the local needs and short of integration in the urban and
rural sectors. As urban development is a state subject, an integrated urban development strategy will be helpful in developing medium and small urban centres. A synergy between the emerging pattern of urbanization and the constitutional mandate as embodied in 74th Amendment to the Constitution is the need of the hour.

Further, there are multiple agencies responsible for the planning and governance in the metropolitan areas. For example, in Mumbai, there are a host of parastatal bodies like Mumbai Metropolitan Region Development Authority (MMRDA), Maharashtra Housing and Area Development Authority (MHADA), Slum Rehabilitation Authority (SRA), City and Industrial Development Corporation (CIDCO) which are responsible for various activities in the city apart from Municipal Corporation of Greater Mumbai (MCGM). Further, the Mayor and elected councilors are not the decisive bodies in the civic administration compared to the role of the Municipal Commissioner. Further in most cases, the state governments have not yet constituted the Metropolitan Planning Committee as envisaged in the 74th Amendment to the Constitution effected in 1992. There is also a lack of local democracy and empowerment of urban local bodies both politically and fiscally. Due to lack of local democracy, the city planning and development is left to the urban development authorities and parastatal bodies which mostly serve the business interest of builders, bankers, industrial houses and the politicians and elites. On the other hand, in the event of failures, migrants are blamed for the woes of the big cities. On the other hand, in small and medium towns, the conditions are even more deplorable in terms of access to basic amenities. A large number of small and medium towns lack capacity in planning and governance and many are still under the ambit of rural local bodies. A revamping of the municipal governance and their empowerment as per the 74th amendment to the constitution is seriously needed to face the demographic challenges unleashed by faster urbanization. The state governments are not willing to grant autonomy to the urban local bodies. On the other hand, any autonomy to the urban local bodies must also be accompanied by fiscal empowerment and technical and human resources support to those particularly falling under the category of small and medium size towns.

References


Colonial Impact on Urbanization of the Punjab through Development of New Urban Centres: The Case of Lyallpur

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Abstract

With the agricultural colonisation of the western doabs (interfluvial lands) of the Punjab, the British restructured the space in the region for imperial purposes. This triggered the process of urbanization with the development of new urban centres and extension of the old Punjabi towns. Focusing its inquiry on the growth of an entirely new town, Lyallpur, this paper will explore how the development of a colonial town as a district headquarter was linked to the overall regional development through canal colonies and railways during the British period in the West Punjab. The historical evolution of the urban form of Lyallpur will be analysed with reference to the role of a colonial town as an important urban centre of imperial power and economy. The discussion will be based on analysis of various archival resources including district and town maps as well as architectural and urban documentation collected through fieldwork. While the Lower Rechna Doab was hitherto barren and sparsely populated with no major urban centre up until the British period, the paper concludes that the planning of the new town of Lyallpur as a major mandi/market town at district level influenced the urbanization in this region with the movement of people and agricultural produce between the villages and the new urban centre.

Introduction

Today, Lyallpur, renamed as Faisalabad, is the third largest city of Pakistan in terms of its population; the town’s history, however, informs us about its recent origin during the British Times when a new town was laid out in 1896 in Sandal Bar of Lower Rechna Doab of the Punjab, presently in Pakistan. Why was this town planned on virgin grounds of Sandal Bar, and how did the making of this new town influence the urbanization of this region, is the focus of discussion in this paper. The historical evolution of the town’s form is viewed in the overall regional development of the Punjab during the British rule, analysed in relation with the town’s roles as a headquarters and middle centre of imperial power and economy at district level, through photographic surveys, historical maps, and archival research.

Agricultural Colonisation & Urbanization of West Punjab

The Punjab, land of five rivers, was a major region of North India, the possession of which was deemed necessary by the British in order to control not only North India but also North Western Frontiers Region and Afghanistan, (see Fig. 1 for Map of British Empire). This was the result of recognition of strategic importance of the Punjab as a frontier region.
between the Russian army in the Central Asia and the British Army in India, coupled with the region’s economic potential, (see Fig. 2). These factors significantly dictated the British policy of maintaining peace and order, and increasing the agricultural production and revenue capacity of the Punjab through the development of the region’s infrastructure and economy. (Talbot, 2011, pp. 3-5) Remaining under the Empire Rule from its annexation in 1849, up until its end upon independence 1947, the Punjab was transformed altogether in a span of almost a century through infrastructural development, and later through agricultural colonisation in its western doabs (interfluvial lands).

Fig. 1 – Map of the Indian Empire, showing the Punjab with its surrounding regions and provinces.

(Source: Imperial Gazetteer of India 1909)
The early phase of British rule was characterised by the provision of order and stability to the region, resulting in development of transportation and communication networks i.e. railways, roads and telegraph systems, together with military cantonments, (see Fig. 3). In later decades of nineteenth century, however, the interventionist forces dominated colonial policy, resulting in development of the Punjab as India’s model agricultural province. (Talbot, 2011, pp. 3-5) This was achieved mainly by agricultural colonisation (also referred as canal colonisation) through nine major canal projects, namely, in chronological order, the Sidhnai, Sohag Para, Chunian, (Lower) Chenab, (Lower) Jhelum, Lower Bari Doab, Upper Chenab, Upper Jhelum and Nili Bar. These canal projects were later referred as canal colonies and were located in the Punjab’s western doabs of Bari, Rachna and Jech, respectively, (see Fig. 4). These canal colonies were mainly launched in an area that was officially declared as Crown Wasteland, sanctioned by the Government of India in 1885, thus, legitimising the state control over the Punjab’s wasteland. These colonies were amalgamated in districts as soon as most of the land was allotted, and by 1940, all became part of the districts, forming 10 canal colony districts, namely, Multan, Montgomery, Lyallpur, Jhang, Lahore, Sheikhupura, Shahpur, Gujranwala, Gujrat, and Sialkot, (see Fig. 5).
Fig. 3 – Railways and inland navigation, in the Punjab.

(Source: Imperial Gazetteer Atlas of India 1909)
Fig. 4 – Map showing canal colonies and western doabs.

Fig. 5 – Map showing Canal Colonies in their respective districts of the Punjab. Also Red line shows the partition of Punjab in 1947 into East Punjab (on right) and West Punjab (on left), located in India and Pakistan, respectively. Author’s own illustration.
The multi-fold effects of agricultural colonisation included demographic increase, tremendous increase in agricultural produce as well as trading activity, and transformation of physical and social environment, ultimately affecting the urbanization of the Punjab. (Ali, 2003, p. 5) The early population counts recorded 17.6 million in 1855 and 19.7 million in 1868, while the first regular census in 1881 recorded 20.8 million population in the Punjab. The population of the Punjab in the last census (1941), during the British rule, was 34.3 million. Canal Colonisation is considered to be major reason for increasing the population in western districts of the Punjab in particular. (Krishan, 2004, pp. 79, 84-85)

In pre-colonial times, land use, land rights, agricultural activity, economy and living style were in accordance with natural resources and climate of various regions of the Punjab. (Banga, no date) With the advent of British rule, the urbanization of the western *doabs* was, however, affected in an unprecedented way. The nine major canal projects were developed in western *doabs* that were hitherto sparsely populated. Less rainfall resulted in little cultivation, relying mainly on irrigation through wells or occasional rainfall. Settlements were, thus, small and isolated, grouped in villages along water sources. (Ali, 1987). The *bars* (the uplands), in particular, had been widely spaced out with scarcely populated rural settlements. (Grewal, no date) This area was largely occupied by indigenous pastoral tribes, referred as *Janglis* by the British, for whom this area acted as pasture. The rights of these indigenous people were unrecognised by the Government, compensating some of them through limited land grants in later canal colonies. In settling new canal colonies, the British, however, preferred the populace of eastern and central districts of the Punjab. This was due to their policy of relieving the overcrowded districts and also because of their perception of considering the people of those districts the most skilled agriculturalists. Thus, the land grants in almost every canal colony resulted in migration of the people from eastern and central districts to western districts. Overall the major consequence was tremendous increase in the population of canal colony districts. The dramatic increase of population was witnessed, for instance, in Lyallpur, probably because of the very low population in this district prior to canal colonisation. Here, the largest (Lower) Chenab Colony, was settled between 1892 and 1905 with extensions in late 1900s and mid-1930. (Zafar, 1981) Situated and spread in southern tract of Rechna Doab, known as Sandal Bar, this canal network had three branches: Jhang, Rakh, and Gugera. The last British rule census of Lyallpur District in 1941 recorded a population of 1,396 thousand people. (Krishan, 2004, p. 87) while the population of town of Lyallpur, in 1911, was around 19,008. (Alimuddin et al., 1999, p.2) Before independence in 1947, the population of this town grew to 69,930 in 1941. Today, the last census in 2017, recorded the population of 3,238,841 in Faisalabad City Tehsil and 1,465,411 in Faisalabad Sadar Tehsil, making it the third most populated city of Pakistan. (District and Tehsil Level Population Summary with Region Breakup, 2017) While the town developed during the British times still forms the core, the urban sprawl of Faisalabad, today, has spread well beyond its original colonial town, (see Fig. 6).
Agricultural Colonisation restructuring the regional space

Acting as an experimental ground, space in the Punjab was, at the discretion of its rulers, continually reorganised for imperial purposes. The administration was improved by breaking the regional space into divisions with five major capitals at Ambala, Jullundur, Lahore, Multan and Rawalpindi, (see Fig. 7, and Fig. 8). To disseminate the imperial authority and control, however, smaller manageable units became a necessity. The divisional units were partitioned into districts with the headquarter towns established in each district. These districts were sub-divided into tahsil (sub-divisions) and circles of villages, respectively, (see Fig. 9).

A new bureaucratic system was established with the Lieutenant Governor of the Punjab under whom the Judicial, Executive and Revenue administrators worked from provincial to tahsil levels. At every administrative level, the imperial authority and control over the Punjab’s population and economic production was exerted through an urban centre, a town of relative size and facility. The major towns were connected through rail lines, roads, post and telegraph systems. These infrastructural networks, and administrative systems played significant roles in influencing the region’s economy and governance once its western doabs were transformed through agricultural colonisation.
Fig. 7 – Map of British Punjab, 1920s, showing its main divisions and districts, as well as its princely states.

(Source: Gandhi, 2013)

Fig. 8 – Map of Punjab, 1947, showing main divisions and districts of the Punjab.

(Source: Ali, 2003)
During the process of settling canal colonies, the landscape was surveyed, measured, and divided into measurable units, for the purpose of extracting revenue and production of the land. This was done first by Square System which, following the alignment of water resources, divided the land into mauzas (a colony estate or village). The Square System, however, proved to be confusing and inaccurate in practice. To eliminate these errors, in the new Killabandi System, land was surveyed and drawn in maps first, and then allotments were laid out in accordance with them, which considerably reduced the error produced by earlier system. This new and more accurate system was first employed in 1894 by Captain Popham Young, colonial officer in Districts of Jhang and Lyallpur. Each square in mauza was divided into 25 plots of equal sizes, called killas. Each killa was also a square of an area, 8 kanals 18 marlas, with its each side measuring 220 feet, and was numbered. Killabandi is a permanent survey system that eased the processes of crop inspection and assessment, and distribution of canal water within the holdings. It also reduced boundary disputes, each zamindar (land owner) now easily knows and acclaims number of killas he owns. (see Fig. 10). (Dobson, 1915, p.1)

Moreover, during the British rule, space at district level was continually reorganised for creating manageable administrative units in order to achieve better political and economic control. With more and more of land developed and made suitable to the perennial canal system being settled with land grants, the assessment circles of districts were continually adjusted accordingly to extract revenue and production more efficiently. This was achieved by re-appropriation of the Punjabi landscape on a widespread scale at discretion of the
British rulers through various means including shifting and re-shifting of district boundaries, transference of *tahsils* and estates within and between districts, and making of new administrative units of *tahsils* and districts. Each district usually had a district headquarter with three to five *tahsils*. Each *tahsil* then had a tahsil headquarter with several small towns, and circles of villages. One such district was created out of Chenab Colony, with a new headquarter town, Lyallpur. During this process of settling Chenab Colony, the space in the former two districts of Jhang and Montgomery in Multan Division, and in the two former districts of Lahore and Gujranwala in Lahore Division, underwent through tremendous reorganisation with continual transfer and retransfer of estates within *tahsils* of these districts. (Gazetteer of Chenab Colony, 1905). Initially, a new *tahsil* of Lyallpur was formed as a part of Jhang District in 1896. Other new *tahsils* of Samundari and Toba Tek Singh were formulated in 1900. Finally, this, however, resulted in a new district of Lyallpur, constituted on 1 December 1904, named after Sir James Lyall, a former Lieutenant-Governor of the Punjab. (Penny, 1925, pp. 1-3) At first, the new district had three *tahsils* of Lyallpur, Toba Tek Singh, and Samundri, however, the fourth *tahsil* of Jaranwala was created later, (see Fig. 11, and Fig. 12). (Dobson, 1915, p.12)

**Fig. 11 – Map of Lyallpur, showing tahsils of Lyallpur, Toba Tek Singh and Samundari.**

(Source: Gazetteer of Chenab Colony, 1905)
Planning and Urban Form of Lyallpur as a District Headquarter

The establishment of colonial towns, either through extension of old towns with new cantonments and civil stations or by laying out a completely new town or a settlement on virgin or old grounds, was mainly the effort and working of military and civil engineers, together with colonial officers serving in British India at administrative positions. The new town of Lyallpur laid out in Sandal Bar of Lower Rechna Doab was no exception to this rule. Lyallpur was laid out by Captain Popham Young in 1896 and was named after Sir James Broadwood Lyall, Lieutenant Governor of the Punjab. It reflected more of administrative, military and engineering pursuits of serving officers, and engineers of the Punjab Works Department than designed or planned ventures.

Captain Popham Young was colonial officer in the bar region during settlement of Chenab Colony, later becoming Deputy Commissioner of Jhang District. He was said to have dreamt about a new town at a place of Paccamari, on his way from Jhang to Lahore. Paccamari was the most ancient mound of civilization in Sandal Bar. The Sial tribe used to rule over Jhang District, and Raju-a-Sayedon were rulers from Chiniot to Paccamari. (Bokhari, 2003, pp. 78, 192, 80-82). Paccamari is located about 20 to 21 miles on the north-east of the current place of the town of Lyallpur, (see no. 19 in Fig. 13).
Fig. 13 – Map of Lyallpur District, showing the new town of Lyallpur. Author’s own illustration.

1. Rail Bazar
2. Karkhana Bazar
3. Montgomery Bazar
4. Jhang Bazar
5. Bhawana Bazar
6. Aminpur Bazar
7. Chiniot Bazar
8. Katchery Bazar
9. Ghanta Ghar/Clock Tower
10. Ghumbdi and Qaiser Gate
11. Zilla Kutchery/Civil Station
12. Police Station
13. Railway Station
14. dak Bungalow (Canal Irrigation Department)
15. dak Bungalow (Agricultural Department)
16. Chenab Club and Company Bagh
17. District Jail
18. Punjab/Lyallpur Agricultural College
19. Paccamari, Chak no. 207
20. Rajbah Canal (Major), Rakh Branch
21. Rajbah Canal (Minor), Rakh Branch
22. St. Paul Church
23. Saints Peter and Paul Cathedral
24. Saitla Mandir
25. Railway Workshop

(Source of Base Map: Map of Lyallpur District 1910-11)
Lyallpur was laid out along south western side of North Western railway line, Wazirabad–Khanewal Section, and Rajbah Canal of Rakh Branch of Chenab Colony, near an old mound of Paccamari, (see no. 19, 20 and 21 in Fig. 13). In planning of Lyallpur, the system of land division into measurable squares became the basis. (Alimuddin, Hasan, and Sadiq, 1999, p.1) All the agricultural land around Lyallpur was divided into measurable squares, and were numbered, following the Killabandi System, (see Fig. 13). Within the town, main division of land into squares determined the main layout, its road and street pattern, land plots and their sizes, and hence the urban fabric, and continued to influence the town growth along these lines over the course of town’s history, (see Fig. 14). The majority of roads and streets followed main lines of these squares, only exception being Rajbah Road that followed the canal existing beyond bazaar square with its clock tower.

Lyallpur was a small town, laid out within a reachable walking limit, spread in an area of about 975 acres around the town’s famous Ghanta Ghar (Clock Tower). The new town has a Railway Station at one end, and Lyallpur Agricultural College at its other extreme end, all located on west of main Rajbah Canal, and railway tracks of Wazirabad-Khanewal line of North Western Railways. The main road connecting these two extreme ends was a
wide tree-lined avenue, the Mall Road. The Mall Road starting from in front of Railway Station, bifurcates into two branches on reaching in front of Chenab Club, (see Fig. 15). The wide tree-lined Circular Road, from Jail Road on one end to Railway Road on the other, is the main artery of the town. Housing the town’s civil station, this road occupied the central location in Lyallpur, (see Fig. 16, and Fig. 17). It was primary connection between the extreme ends of the town from Lyallpur Agricultural College to Railway Station on the other. It also provided major links with the Bazaar Square, with three direct approaches and views from Katchery Bazaar, Chiniot Bazaar and Rail Bazaar.

**Fig. 15 – View of original building of Chenab Club, Lyallpur. Photograph by Author.**

**Fig. 16 – View of District Courts, Lyallpur, from Circular Road. Photograph by Author.**
In addition, eight bazaars with clock tower in the central position of the town adjacent to the civil station, depicted the significance of rising economic imperatives of the British rulers. The importance of commerce and trade was depicted in the town form as a representation of the British world in the Punjabi landscape. This can be studied in the town map, wherein the bazaar square is laid out like a Britain’s Union Jack Flag, contributing to unique identity of this town in the whole region. This flag of Great Britain was made up of three crosses of Saints George, Andrew and Patrick, representing England, Scotland, and Ireland. The eight bazars of Lyallpur are depicted around the central Clock Tower, while Ghumbdi located at upper end of Rail Bazar represents the top of flag’s stand and Circular Road emerges from it as a flag’s stand, (see Fig. 18, and Fig. 19).
The bazar square around a centralized Clock Tower gave a unique identity to Lyallpur in this region as a major market town. On 14 November 1903, Sir Charles Montgomery Rivaz, Lieutenant Governor of the Punjab, inaugurated the construction of the Clock Tower, completed by 1905. (see Fig. 20). This clock tower in middle of Bazar Square soon became the centre of life of the town dwellers. Acting as a symbol of British power and disciplined lifestyle in contrast to native Punjabi lifestyle, the chimes of this clock tower raised awareness of time and British cultural values among the natives every day. The location of these bazars in this prominent and centralized location, adjacent to Civil Station, further enhanced their importance in contributing to functioning and identity of the town as a major market town in the region.

The new town of Lyallpur offered the biggest market in the district with its iconic bazar square, for collection and distribution of the district’s produce and its onward despatching for export within and outside British India through railways and roads. The major cash crops of this district were cotton and wheat. With the development of new canals and railways, the crops produced in the Bar and their demand had been increased in the outer world. The fields on the south eastern side of the Railway Station of Lyallpur had warehouses for storage of wheat. From here, the wheat of Sandal Bar was transported to coastal city of Karachi via Wazirabad-Khanewal Rail line in cargo trains. The wheat was then exported to the Great Britain via marine ships. Similarly, cotton was also exported to Japan and to other parts of the world via Port of Bombay. (Bokhari, 2003, pp. 133-134)
Industry started emerging out of successful agricultural production of this district in the decade of 1930s. The industries of this town and district were mainly related to cotton cloth and cotton oil trade. The first larger industrial unit of Lyallpur Cotton Mills was completed in 1934. Further, three more units were established in the same decade. By the end of imperial rule in 1947, Lyallpur had twenty big and small industrial units. (Alimuddin, Hasan, and Sadiq, 1999, pp. 2, 14) This industry was further developed, promoted and enhanced during post-independence times, making this town a major industrial centre of Pakistan. The earlier industrial units were located in southern side of Bazaar Square. This factory area was adjacent to railway workshops, and on the outer corner of Karkhana Bazar, Montgomery Bazar, and Jhang Bazar. This area became industrial hub or Factory area, and developed as the down town of Lyallpur, (see Fig. 21).
The new rail lines brought this town in direct and rapid connection with the region’s divisional and district headquarters. The work to connect Lyallpur with divisional headquarter of Multan via Shorkot and Jhang began in 1896. Ultimately, Lyallpur was well connected to headquarter towns of Lahore, Multan, Rawalpindi, Jhang, Montgomery, Sargodha, and other important market towns in the region, including Chiniot, Waziarabad, Shorkot, and Toba Tek Singh. It was also connected to the Port of Karachi through a network of rail roads by 1910. Performing as efficient machinery of the British Raj, the Railway Station acted as a symbol, both physical and tangible, of imperial power and economy by imparting control and order over the distribution of district’s production and people, (see Fig. 22, and Fig. 23).
Furthermore, one of the most prominent and renowned educational institutions established in this new town was Punjab Agricultural College, also referred as Lyallpur Agricultural College. It was the largest agricultural college developed during the British times in the whole of Asia. With its own experimental farms, the college provided education, research and development in agricultural sciences. Together with engineering works of railways, revenue administration, and canal networks, this college boosted the agricultural production
of this district and of the region at large. The college was developed in land plots located in front of Police Lines and adjacent to Central Jail along Jail Road, where Circular Road touches Jail Road perpendicularly, (see no. 18 in Fig. 13). It is spread over a vast area, and was initially started from a 50-acre experimental farm for agriculture between 1901 and 1903, (see plot 26 and 27 in Fig. 14). Today, the college campus occupies an area of more than 2,500 acres, and has acquired the status of a University of Agriculture, Faisalabad. In 1906, the construction of the main building of the college and research institution was started along with its main hostel, (see Fig. 24).

Fig. 24 – Main building, Punjab Agricultural College, Lyallpur. Photograph by Author.

Conclusion

The agricultural colonisation triggered the widespread process of reordering of the landscape in the western doabs of the Punjab. The land was at discretion of imperial rulers who claimed it as Crown Wastelands, and divided it into squares that could be lent, sold or gifted to anyone through land grants of canal colonies. For managing increased revenue, agricultural production, and population, the Punjabi landscape was restructured to achieve imperial goals of better political control and economic efficiency. Agricultural colonisation played a vital role in taming, restructuring and re-organisation of the land in the Punjab, alongside the new towns laid out in canal colony districts, bringing forth the influence of the British rulers on urbanization of this region. In the case of Lyallpur, a new town was laid out to serve as the headquarter town of the newly established district with a profound plan for economic activity. Though it was an administrative effort, this town was laid out with the desire among the officials to establish an exemplary market town as a district headquarter. Lyallpur depicted the order and discipline, political and economic control and efficiency, and new lifestyle of the British rulers, in its unique planning with bazar square and clock tower, rectangular urban pattern with wide roads, bungalow-styled residences planned in rectangular blocks of land, civil core of executive, revenue and judicial administration, transportation and communication facilities, and Chenab Club for its officers. In addition,
the town also housed the Agricultural College with its own experimental farms developed for agricultural research and education in the region. Laid out as an exemplary mandi or market town with its iconic bazars around the Clock Tower, Lyallpur emerged not only as a major market town but also as the industrial centre, influencing the urbanization of Lower Rachna Doab of the Punjab.

References


Managing Urbanization in Nepal: Challenges and Choices

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Abstract:

Urbanization in Nepal is happening at a fast rate. Recently, the Government of Nepal declared 293 local government units as municipalities among 753 such units. Considering the municipalities as urban areas, the urban population has reached more than 60 per cent of Nepal’s total population.

The major issues for urban management in Nepal include the maintenance of sufficient open and green spaces and the preservation of agricultural production.

The causes of rapid urbanization in Nepal are the high rural to urban migration and the creation of municipalities by merging a number of rural areas by the government. One of the successful urban development tools used in Nepal is the Land Pooling Project. Some Integrated Urban Development Projects have been implemented for emerging municipalities. Eighteen cities are planned to develop under a One City-One Identity concept that brands cities based on their socio-economic activities. Recently, a large number of municipalities have been preparing their Integrated Urban Development Plans. One of the chief consequences of urbanization is the loss of productive lands resulting in a decrease in food self-sufficiency and green spaces in the cities. To tackle this urban issue, Fourteen National Development plan has emphasized the concept of Food Green City (FGC) for integrating urban agriculture with urban planning. Research findings have revealed that there are huge opportunities for applying hydroponic technology on roof-tops.

This paper recommends an approach to managing some urbanization issues in Nepal through the concept of Food Green City using the hydroponic technology for producing food and providing green spaces on roof-tops in urban areas.

Key Words: Nepal, Urbanization, Food Green City, Urban Agriculture, Hydroponics

Background

Nepal is small but beautiful country surrounded by land in between two huge countries, India in three directions (East, West and South) and China in the North (Shrestha, 2017). The population of Nepal is ~ 26.5 Million (National Census, CBS, 2011) and population density 180.01 persons per square kilometer. Its population growth rate is just 1.35% (CBS, 2015). The area of Nepal is 147181 sq. km, which is approximately 0.03% of world’s total area and 0.3% of Asia (CBS, 2015). A naturally and culturally rich country Nepal is also famous globally as the country of Mount Everest and the Birthplace of Lord Buddha. Its length is
885 km from East to West and its width is 193 km from North to South. It has become the Federal Democratic Republic of Nepal since 2008 with seven provinces. Now it has Seventy-Seven Districts and 753 local units (293 Municipalities and 460 Rural Municipalities). Nepal has adopted a new Constitution that protects the democratic and fundamental rights of its people. The country has been emphasizing the empowerment of the people and ensuring higher, sustainable and equitable growth. Nepal is a least developed country (LDC) with characteristics of slow economic growth and low level of human development. The country has put the goal of graduating from LDC status to developing country by 2022 and achieving middle income country status by 2030 (NPC, 2016).

Rapid urbanization happening in Nepal is due to the high rural to urban migration and declaration by the government giving the status of municipalities to units created by merging a number of rural areas. As the country continues to urbanize, it has become a great challenge for sustainable development, particularly in the urban areas where the pace of urbanization is fastest. Therefore, Nepal has started to respond to the issue of urbanization with the planning and development of Kathmandu Valley. A comprehensive Kathmandu Valley Development Plan was prepared in 1969. After that Nepal has taken many actions in the form of policies, strategies and projects to address the urbanization issues.

Urbanization in Nepal

Nepal was politically integrated around the 18th century. The Hill roads were developed east to west and north to south, which was taken as the basis for urbanization in the past. After eradication of Malaria in the Terai in the late fifties and early sixties, people got fascinated to dwell in Terai, migrating from hills and mountains because of fertile lands and closeness to the India. As shown in Table 1, the urban population increased from 2.9% in 1954 to 13.9% in 2001. The number of municipalities increased from 10 to 58 in 2001. Only 17.1% of the total population was found to be residing in the total of 58 municipalities as per the census 2011. The level of urbanization in Nepal was low but the pace of urbanization was rapid. The key “Push” factors for urbanization through migration from rural areas to urban areas were: insecurity, lack of job opportunity, lack of basic infrastructure including educational institutions and health facilities, etc. in rural areas. On the other hand, the important “Pull” factors for migration to urban areas are relatively more secure place for improved living and better job opportunities in urban areas compared to rural areas.

Table 1 – Urbanization Trend in Nepal

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Census Year</th>
<th>Number of municipalities</th>
<th>Urban Population (in millions)</th>
<th>Percentage of Urban Population</th>
<th>Constant annual growth rate in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1954</td>
<td>10</td>
<td>0.238</td>
<td>2.9</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>1961</td>
<td>16</td>
<td>0.336</td>
<td>3.6</td>
<td>5.9</td>
</tr>
<tr>
<td>3</td>
<td>1971</td>
<td>16</td>
<td>0.462</td>
<td>4.1</td>
<td>3.6</td>
</tr>
<tr>
<td>4</td>
<td>1981</td>
<td>23</td>
<td>0.957</td>
<td>6.3</td>
<td>8.4</td>
</tr>
<tr>
<td>5</td>
<td>1991</td>
<td>33</td>
<td>1.696</td>
<td>9.2</td>
<td>6.6</td>
</tr>
<tr>
<td>6</td>
<td>2001</td>
<td>58</td>
<td>3.28</td>
<td>13.9</td>
<td>7.4</td>
</tr>
<tr>
<td>7</td>
<td>2011</td>
<td>58</td>
<td>4.53</td>
<td>17.1</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Source: CBS 2011
The government had started to declare new municipalities since 2014. Seventy-two new municipalities were announced on May 8, 2014, after which the number of municipalities had reached 130 from 58. Again, the government declared 61 settlements in 37 districts out of the then 75 districts as new municipalities through its cabinet decision on December 2, 2014. Then, the number of municipalities reached 191. The government has given 293 local units the status of municipalities in the process of federal structuring in 2015. Since then, there are 293 municipalities in Nepal among which 6 are metropolitan cities, 11 are sub-metropolitan cities and 276 are municipalities. Now, considering the population of municipalities as urban population, the urban population has reached to 63.35% out of the total population of the country. The average family size in a household in urban areas is 4.76. But the number of municipalities and the urban population distribution in the country are unmatched and urbanization is unbalanced which can be clearly seen through statistics showing province-wide distribution of municipalities as given below in Table 2.

Table 2 – Municipalities Status at Province level

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Capital</th>
<th>No. of Metropolitan cities</th>
<th>No. of Sub Metropolitan cities</th>
<th>No. of Municipalities</th>
<th>No. of Rural Municipality</th>
<th>Area (km²)</th>
<th>Population (2011)</th>
<th>Density (people/km²)</th>
<th>No. of Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province 1</td>
<td>Biratnagar</td>
<td>1</td>
<td>2</td>
<td>46</td>
<td>88</td>
<td>25,905</td>
<td>45,34,943</td>
<td>175</td>
<td>14</td>
</tr>
<tr>
<td>Province 2</td>
<td>Janakpur</td>
<td>1</td>
<td>3</td>
<td>73</td>
<td>59</td>
<td>9,661</td>
<td>54,04,145</td>
<td>559</td>
<td>18</td>
</tr>
<tr>
<td>Province 3</td>
<td>Hetauda</td>
<td>3</td>
<td>1</td>
<td>41</td>
<td>74</td>
<td>20,300</td>
<td>55,29,452</td>
<td>272</td>
<td>13</td>
</tr>
<tr>
<td>Province 4 (Gandaki)</td>
<td>Pokahara</td>
<td>1</td>
<td>26</td>
<td>58</td>
<td>21,504</td>
<td>34,13,907</td>
<td>112</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Province 5</td>
<td>Butwal</td>
<td>4</td>
<td>32</td>
<td>73</td>
<td>22,288</td>
<td>48,91,025</td>
<td>219</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Province 6 (Karnali)</td>
<td>Surkhet</td>
<td>25</td>
<td>54</td>
<td>27,984</td>
<td>11,68,515</td>
<td>14,7181</td>
<td>26,494,504</td>
<td>180</td>
<td>77</td>
</tr>
<tr>
<td>Province 7 (Sudur Pachhim)</td>
<td>Dhangadi</td>
<td>1</td>
<td>33</td>
<td>54</td>
<td>19,539</td>
<td>25,52,517</td>
<td>130</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td>Kathmandu</td>
<td>6</td>
<td>11</td>
<td>276</td>
<td>460</td>
<td>14,7181</td>
<td>26,494,504</td>
<td>180</td>
<td>77</td>
</tr>
</tbody>
</table>


This portrays the unequal distribution of the municipalities with unbalanced urban development of Nepal. Karnali Pradesh (Province No. 6) is weak in urbanization while Province No. 3 has comparatively high urbanization status with 3 Metropolitan cities and 1 Sub-metropolitan city and the total number of municipalities is 74. The Human Development Index HDI values for the Provinces 1, 3, 4 and 5 are relatively higher than the national average and that for Province 6 is least followed by Province 2 and Province 7 (Dhungel, 2018). In other words, the urbanization level at different provinces is also an indicator for the overall province-wise development of the country.
Urban Issues and Challenges

Providing access to housing and other basic infrastructure and services to its entire population is the big issue for Nepal. There is a need of heavy investment for higher order urban infrastructure for city dwellers. It is estimated that the investment needed to fulfill the existing infrastructure deficit in 58 municipalities (municipalities during census in 2011) is about US $ 4.425 billion (@ 1 US $ = NPR. 84) over 15 years. The investment need had been considered for the infrastructure shortage based on existing and desirable state of infrastructure of the municipalities (TDF, 2015). The human resources and institutional setup are not found efficient and effective enough to meet the urban development needs of the country. At present, there is insufficient investment for urban development so the urban infrastructure and services are poor. The rapid urbanization has raised serious environmental problems creating an imbalanced urban ecosystem. The cities have developed as centers for the secondary (industry) and tertiary (service oriented) economic activities without proper care for primary (basically agriculture) economic activities. The rapid conversion of fertile agricultural land into residential buildings, commercial complexes, industrial blocks and many urban infrastructures has greatly influenced the built-up to open space ratio affecting the urban ecosystem badly. The agriculture area in the Kathmandu valley is reported to have declined from 58.4% to 47.4% between 1990 to 2012, i.e. an average loss of 0.5% or 400ha in terms of area of the valley annually (Genesis, 2013 adopted from NUDS, 2015). Today’s cities have difficulty in finding open spaces for healthy breathing and emergency spaces during disasters like earthquakes and fires. ‘In Kathmandu and Lalitpur 0.48% and 0.06% of municipal area can be categorized as open space. World Health Organization (WHO) and Food and Agriculture Organization (FAO) suggested a minimum accessibility of 9m$^2$ per person of green open space for the city residents. Based on the periodic plan of municipalities, the availability of area in Kathmandu is 0.25m$^2$ per person and 4.34m$^2$ per person in Dharan’ (NUDS, 2015). Air quality and living environments are greatly polluted, impacting negatively on quality of life. According to WHO standards, the level of Total Suspension Particulate (TSP) and Particulate matters less than 10 micrometer (PM$_{10}$) for ambient air quality is up to 230 µg/m$^3$ and 70 µg/m$^3$, respectively. ‘However, statistics show that level of TSP in Nepalgunj is 2222.5 µg/m$^3$ followed by Janakpur with 2019 µg/m$^3$. Similarly, the level of PM$_{10}$ for Janakpur, Biratnagar, and Pokhara are 1820.9 µg/m$^3$, 961.4 µg/m$^3$, and 90.2 µg/m$^3$, respectively’ (NUDS, 2015). Most of the surfaces of urban areas are generally covered with concrete and asphalt. This process of surface sealing has greatly influenced the ground water table and it will have serious consequences in long run. The sharp decrease of food sufficiency rate of the city year by year has created a situation of increasing rate of food imports to meet the food demand of city dwellers. It is supposed that the average transport distance from farm to dining table of people is hundreds of kilometers. The high energy involved in importing food for the city dwellers from distant places will consequently increase the cost. This is also becoming an emerging issue of affordability, particularly for the urban poor. The expanding urbanized society is continuously consuming more and more resources and use the rural lands and rivers as its waste sinks. Cities are thus responsible for environmental degradation including climate change with more than two-thirds of global energy use and greenhouse gas emissions although they cover just about 2% of the earth’s surface. In a context of limited resources, a concept was formulated that looks towards a green approach for functional as well as aesthetic purposes, shifting green to productive green (green with food) and integrating the number of planning norms to decrease mobility and increasing the utilization of limited resources that we have, which is designated as Food Green Concept (Shrestha, 2011).
What is Food Green City?

A Food Green City (FGC) is a kind of Eco-city that enables its residents to have a good quality of life with minimum consumption of resources, in harmony with nature, culture and the future. It is also a process of “restructuring the cities” and its ultimate goal is to establish spatial equity, low mobility and perfection in the urban ecosystem for sustainable development with coexistence of man in a natural system. The following are the eight guiding PLEASURE principles of FGC.

- Plenty of Food Green Space (Urban Productive Greening)
- Living and Working Together
- Ensuring minimum consumption of resources
- Attaining sustainable neighborhood
- System of 3 B’s (Boot, Bike, and Bus)
- Use of energy efficiency and eco-friendly technologies
- Restructuring the cities through Community Participation
- Efforts for Zero Waste Emission

The logic behind FGC is gaining “Something from nothing” by harnessing light energy (free of cost) for converting it to food energy by means of plants in the city.

Chlorophyll

\[ 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{Light Energy} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \]
(Carbon dioxide) \quad \rightarrow \quad \text{(Carbohydrate)}

Thus, this concept helps in converting Carbon dioxide city to Carbohydrate city. (Shrestha, 2011)

Fig. 1 – Good Green

The importance of productive green (Food Green) can be realized from the illustration of Fig. 1.
The roles of Urban Agriculture in Food Green city are: rebuilding the city to provide food and greenery to the city dwellers utilizing unused and vacant lands; providing affordable food to the city dwellers in an energy efficient manner; providing green jobs to unskilled people and jobless people as well; rehabilitating the physical, social and ecological condition of the city and improving the quality of urban life; revitalizing the culture and community; utilizing organic waste produced in the city by converting it into compost thus supporting waste management and soil nutrient recycling; reinforcing the relationship between Man and Nature; increasing $O_2$ and reducing $CO_2$ accumulation; improving microclimate; and helping to decrease air pollution, maintaining ground water table and keeping bio-diversity. FGC has successful answers to the three questions: Where to do?, How to do? and Who will do?. The answers are: FGC can be executed in Private space, Community space or in Vacant Land, etc., it can be done by Middle Natural Farming, and City dwellers can do privately at their leisure whereas Private sector organizations can be involved through the Public- Private Partnership (PPP) modality and community people can do collaboratively. (Shrestha, 2011)

Choices for managing Urban Development


Urban expansion in Nepal has mostly been unplanned and uncoordinated. It has become a common practice to erect buildings even where basic urban infrastructure is absent or severely inadequate (Habitat III Report, MoUD, 2016). As an urban land management tool, Land Pooling has been popular in Nepal. Land pooling technique produces residential plots of proper shape and size prepared with essential infrastructure such as roads, piped water supply and sewerage systems, electricity, open spaces and green spaces. The concept of Land Pooling was introduced in Nepal in 1975 with the initiation of Chipledhunga Land Pooling Project with 13.5 Hectares of Land in Pokhara and successfully implemented in various places within and outside the Kathamandu Valley. It took a decade to complete the official country’s first land pooling project- Gongabu Land Pooling Project with 14.3 Hectares of land that was initiated in 1988 as a pilot project. So far 12 land pooling projects (total area: 260 hectares, housing plots- 12160) have been implemented within Kathmandu Valley and 11 Projects (total area: 405 hectares; housing plots 10,000) are coming up (Habitat III Report, MoUD, 2016).
Nepal has a big issue regarding access to housing and other basic infrastructure and services in the population below the poverty line (about 17.5% of total population), especially in Dalit and Disadvantaged groups spread all over the country, mainly in Terai districts. The constitution of Nepal -2015, guarantees the right to housing to all citizens. In National Shelter Policy 2012, housing is regarded as a basic need and it emphasizes the concept of housing for all. In order to fulfill this objective, the Government of Nepal, through its Department of Urban Development and Building Construction (DUDBC), implemented the Janata Awas Karyakram (People’s Housing Program) from the Fiscal Year 2009/2010 in three districts of Terai viz. Siraha, Saptari and Kapilvastu, to provide housing by constructing cost-effective modern houses for deprived sections of people. Through this program 17,000 housing units have already been completed and 38 thousands housing units are under construction (NPC, 2019).

For developing cities in a planned way, government has been developing 27 New Towns, 13 Smart cities and 4 Mega Cities. Similarly, a study has been conducted for 18 cities to develop cities based on the concept of One City - One Identity for branding cities based on comparative economic advantages and potentiality of the city for growth (Shrestha, 2011). Similarly, Fourteenth Development Plan has emphasized for development of Himali Sahar (Environment-friendly Cities at Himalayan areas or mountains), Food Green Cities and Smart Villages. Integrated Urban Development Master plan and DPR for implementation in 185 municipalities with investment of 370 billion USD have been initiated to prepare in 185 municipalities to enter into the project bank. National Planning Commission has prepared the concept of Smart City in 2016, the Directives and Working guidelines of Smart Village in 2017, and Food Green City in 2017. Consulting work for the preparation of 4 smart cities of Kathmandu Valley is going on.

A major infrastructure improvement project called Urban Environment Improvement Project (UEIP) in the urban sector supported by ADB was initiated in 2003 to address the deteriorating urban environment and institutional failures. The major objective of it was to improve the environments of the 8 towns located in the periphery of the Kathmandu Valley through the improvement of urban infrastructure. Kathmandu Sustainable Urban Transport Project (KSUTP), another ADB supported project was launched in Kathmandu to improve the overall quality of urban life in Kathmandu by improving the urban transportation system.

The World Bank- Global Partnership for Output Based Aid (GPOBA) assisted project, the ‘Output-Based Aid for Municipal Solid Waste Management in Nepal has been supporting its participating municipalities (Tansen, Lalitpur, Ghorahi, Dhankuta, and Lekhnath-Pokhara) to incentivize and enable gradual development of beneficiary charging to improve the financial viability and enable the expansion of solid waste management (SWM) services.

The urban governance and development program in Emerging Town Projects (UGDP-ETP), a World Bank supported project was introduced to support Nepal in its decentralization and urbanization transitions in 6 participating municipalities namely, Mechinagar, Dhankuta, Itahari, Tansen, Lekhnath and Baglung.

The Asian Development Bank (ADB) provided loan assistance for the Integrated Urban Development Project (IUDP) implemented in the areas of Water Supply, Solid Waste Management Improvement, Storm Water Drainage and Lane Road improvement Works in Nepalgunj, Siddarthanagar, Dharan and Janakpur municipalities.
Secondary Towns Integrated Urban Environment Improvement Program (STIUEIP) is an urban environment project being implemented by loan assistance from the Asian Development Bank (ADB). This project is aimed to provide basic utility infrastructure of municipalities to improve the quality of life of people and environmental improvement through drainage, sewers, waste water treatment, integrated solid waste management with affordable and sustainable operation and management (Annual Report of TDF, 2018).

Nepal has a strong commitment to achieve Sustainable Development Goals (SDG) by 2030. SDG -11 is related to making cities and human settlements inclusive, safe, resilient and sustainable. The targets under this goal include, achieving by 2030 i) access for all to adequate, safe and affordable housing and basic services and upgrade slums, ii) access to safe affordable, accessible and sustainable transport systems for all, improving road safety and expanding public transport iii) inclusive and sustainable urbanization iv) safeguarding the world’s cultural and natural heritage, v) significantly reducing the economic losses relative to GDP caused by disasters iv) providing universal access to safe, inclusive and accessible green and public spaces for all’ (NPC, 2017).

One of the chief consequences of urbanization is the loss of productive lands and the resulting decrease in food self-sufficiency and green spaces in the cities. To tackle this urban issue, Fourteen National Development plan has emphasized the concept of Food Green City for integrating urban agriculture with urban planning (NPC, 2016). With the advancement of technology, various techniques have been in practice to grow more food with less use of space and water. Hydroponic and Perma-culture methods have been in recent practice. These have made it easier to practice urban agriculture as proposed in FGC. In this context, the result of the study conducted on the topic “Roof Top Hydroponics: Opportunity for Urban Agriculture to realize the Concept of Food Green City (FGC)” reveals that there is huge opportunity for doing urban agriculture using roof top hydroponics. The opportunity scores calculated, based on a sample household survey carried out in Godavari Municipality Ward No. 14 taking eight parameters (Space available in their houses, Knowledge about urban agriculture / hydroponics, people’s willingness to do, Time availability for doing this, Manpower availability, Financial capacity, Technology availability and Incentives from local and central government indirectly in terms of policy or directly in terms of subsidy), showed that 45 houses among 64 houses surveyed receives a pass score 5 or more out of total score 8 (Shrestha, 2019).

Conclusion

Nepal has become one of the urbanized countries in the South Asia due to the political decision of designating a large number of settlements as municipalities. But the existing urban forms and functions do not have sufficient technical rationale in declaring municipal status. The declared municipalities when analyzed in depth have many urban issues and problems. Deficit of basic infrastructure and services, housing problems, unplanned physical growth, environmental concerns, unbalanced urban growth, weak financial and institutional capacity are some of the issues and problems existing in urban development program of Nepal. But the declaration of municipalities can be taken as an opportunity to develop in planned way. Master planning of municipalities, investment in urban infrastructure and services, building efficient institutional set ups and coordination for urban development, capacity development for human resources and commitment of policy makers and urban
administrators are key components identified as being needed to grasp this opportunity to create inclusive, resilient and sustainable urban areas as envisioned in the SDG-11. The Government has taken decisions to manage rapid urbanization by formulating and implementing various policies, programs and projects. Land Pooling Project, integrated urban development projects, People’s housing and various city development approaches have been practiced in Nepal as choices for planned way of urban development. Eighteen cities are planned to develop under One City -One Identity concept that helps for branding the city based on the comparative socio-economic activities. Recently a large number of municipalities have been preparing their Integrated Urban Development Plan to develop adopting the integrated development approach. One of the chief consequences of urbanization is the loss of productive lands and the resulting decrease in food self-sufficiency and green spaces in the cities. To tackle this urban issue, the ongoing Fourteenth National Development plan has emphasized the concept of Food Green City for integrating urban agriculture with urban planning. In this context, the research findings have revealed the fact that there are huge opportunities of applying emerging hydroponic technology suitable for the application of urban agriculture at roof top for contributing vacant spaces as productive green spaces, as advocated in Food Green City (FGC) could have ecological and economic benefits. Therefore, it recommends to take a choice for managing urbanization of Nepal by realizing concept of Food Green City using the hydroponics technology for producing food and providing green spaces on the rooftop of the urban areas.

References


Shrestha, S B (2019) Roof Top Hydroponics: Opportunity for Urban Agriculture to realize Concept of Food Green City (FGC) (Draft)


Managing Urbanization in Sri Lanka:  
The Need for a Science-based Approach

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Abstract

Urbanization through rural-urban migration was associated with industrialization in 19th Century Europe and those countries did experience economic growth. Later, the prolonged mechanization of agriculture in some of those countries also provided a further impetus to urbanization in their respective populations. Thus, economic growth has come to be closely associated with urbanization in the West with urbanization. However, the conditions that generated urbanization in the West were not necessarily the same as those that are causing urbanization in the low and middle income countries (LMICs) today. Furthermore, the colonial impact did cause some urbanization in the LMICs but the prosperity it generated was inequitable.

There was a spatial planning approach that arose in the late 19th century to deal with urbanization in England during their industrialization - a visionary ‘utopian’ concept that gained credence and popularity in the West. That is almost the only approach in current use in South Asia. While appropriate in earlier Western contexts, its relevance to the LMICs today needs to be questioned. The scale of urbanization in South Asia today is much greater in magnitude than its manifestation earlier in the West. Furthermore, the impacts upon LMICs of on-going globalization, scientific developments and technological innovations including those of ICT need also to be taken into account now. Thus, the spatial planning approaches required in South Asia and discussed in the paper, strive to be science-based and consequently are different to the popular approaches based on those taken earlier in the West.

Introduction

The last quarter of the Twentieth Century brought into prominence three important global realities. The first was about the severity and worsening state of the earth’s bio-physical environment. The second concerned a process which is now generally referred to as “globalization”. The third reality had to do with the rapidity of urbanization currently taking place with particular intensity in the Low and Middle Income Countries (LMICs). Thus it has come about that current and future development work in these countries should take cognizance of these realities. Most of the LMICs have little control over the first two realities.
MANAGING URBANISATION IN ASIA

The scale and pace of current urbanization is recognized as being unprecedented in human history. Urbanization and its consequences are most prominently manifest today in the LMICs. The Global Network of Science Academies (IAP) recently placed population growth coupled with unplanned urbanization among the ten most serious global concerns. That important apex body of worldwide scientific institutions identified the necessity to develop and implement urban planning policies that internalize consumption needs and demographic trends to reap the benefits of sustainable urban living (IAP, 2012).

The gravity of urbanization and its impact on human habitat in the LMICs had been anticipated even in the 1960s by a few eminent scholars and a landmark book was published on the subject (Abrams, 1964). A UN agency predicted that during the period 1990-2020 the bulk of the world’s population will be urbanized; that Asian cities alone will contain more than half that population; and that this will mean 1.5 billion people will be added to the urban centers of Asia (ESCAP, 1993). Despite considerable efforts to confront the adversities of urbanization, the LMICs have seen no breakthroughs.

This paper is based on a review of the planning literature covering the origins, the growth and the development of those concepts and theories which have already had, or could have an influence in dealing with urbanization in the LMICs (Gunaratna, 2014).

The Nature of the Problem

The rapid growth of urban populations in the LMICs is the result of natural increase and also, importantly, rural migrations to cities. These migrations are a consequence of extreme rural poverty coupled with the very poor access that most of these rural folk have to basic needs and social infrastructure in most LMICs. The entire urbanization process is seen by some scholars as one that helps the emancipation of under-privileged rural migrants and also supports economic growth through the provision of labor for industrial production. The migratory targets of urbanization in these countries are usually those larger urban areas which already are, or likely to become, ‘megacities’. The fact however is that rural migrants also face serious problems even in their eventual urban destinations. These include the inadequacy of shelter, access to basic services and appropriate unskilled employment opportunities. They, by their increasingly large urban presence, cause severe and unabated stresses on the limited infrastructure facilities available to other city dwellers. Consequent to this type of urbanization, substantial and seemingly insoluble problems must be anticipated within these cities, if not already present in considerable measure.

Many planners grappling with urbanization issues in the LMICs do not confront the subject directly and in its entirety. They focus their attention only on its resultant urban impacts which are within the affected cities themselves. Some of the typical theoretical writings which support such limited actions tend to lay stress upon the urgent need for “radical planning” to support participation by often large, disenfranchised segments of urban and urbanizing populations. This focus was seen, for example, in the discussions: on squatter settlements in Latin America (Turner & Fichter, 1972); more recently; on anti-eviction campaigns within the Western Cape in South Africa (Miraftab, 2009); and, still more recently on the “stubborn realities” of informal settlements in the global south (Watson, 2012).

Even when dealing directly with urbanization, reliance is invariably placed on intra-urban interventions through the various professional disciplines concerned with urban planning.
The solutions are consequently and inevitably based upon guiding the expansion of impacted cities in one way or other, often involving the planning and building of satellite towns in the vicinity of those cities. The predominant intellectual material which underpins the attempts to manage urbanization in this particular manner originated in the West more than a century ago.

Rural out-migration impacts not only upon cities that receive the migrants but also upon the rural hinterlands they left behind. It does so quite adversely in that agriculture is increasingly deprived of manpower and thus subject to continuing neglect. There are also studies which strive to predict the consequences of horizontal urban expansions due to rapid urbanization and their likely spatial impact on rural land. The main prediction in one such recent study which was based on the assumption of continuing current trends, suggests the tripling of urban land cover worldwide within the next three decades with a notably adverse impact upon biodiversity (Seto et al., 2012). That study also indicated that the main biodiversity ‘hotspots’ likely to be affected by these trends are in the LMICs with many being in South Asia.

**Urbanization and South Asia**

There were 23 very large cities worldwide in 2011, each with more than 10 million people. Asia had 12 with South Asia alone having 5 of these ‘megacities’. Three of them were in India, one in Pakistan and one in Bangladesh. The South Asian total is predicted to increase from 5 to 8 megacities by 2025 (UN, 2012). The urban populations and urbanization rates are given in Table 1.

<table>
<thead>
<tr>
<th>Country</th>
<th>Urban Population</th>
<th>Rate of Urbanization (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>44,685,923 (28.4% of total)</td>
<td>2.96</td>
</tr>
<tr>
<td>India</td>
<td>391,535,019 (31.3% of total)</td>
<td>2.47</td>
</tr>
<tr>
<td>Nepal</td>
<td>4,762,848 (16.2% of total)</td>
<td>3.62</td>
</tr>
<tr>
<td>Pakistan</td>
<td>65,481,587 (36.2% of total)</td>
<td>2.68</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>3,092,255 (15.1% of total)</td>
<td>1.36</td>
</tr>
</tbody>
</table>


According to these estimates, Sri Lanka and Nepal have low proportions of urban populations, these being respectively 15.1% and 16.2%, as compared to 31.3% in India. There is however a real possibility that Sri Lanka’s and Nepal’s urban populations have been underestimated due to the earlier official geographic delineation of urban areas in the two countries. Nevertheless, urbanization within these two countries could indeed become a pressing problem in the near future.

Indigenous South Asian coverage of urbanization in its demographic aspects and urban socioeconomic impacts is extensive and very competent. These studies reveal that the larger urban areas receive far more rural migrants, with the largest cities gaining the bulk. The South Asian megacities experience immense difficulties. Many scholars are seriously concerned that the often illiterate and unskilled rural families who gravitate to large cities to escape rural poverty, eventually become trapped in squalid and insanitary urban environments of
deprivation, malnutrition and endemic disease; that their sheer numbers cause un-relievable stresses on scarce urban infrastructure and services; and, that those cities cannot generate employment opportunities to sustain the massive and continuing influx of migrants. Thus, these megacities with their inevitable slums are becoming increasingly unmanageable and unsustainable.

In discussing a paper presented by an invited participant (Ul Haque, 2014) at an important symposium, the editor of the published proceedings states that: “Pakistani cities have long been a story of sprawl. A precedent was set in the 1960s, when the new city of Islamabad was built with a “garden city” approach—one that emphasizes low-rise suburbs and large residential housing facilities. It is a model that discourages downtown development, high-rise buildings, services (from retail stores to libraries), and even office facilities—and it remains the prevailing paradigm of urban planning today” (Kugelman, 2014).

**Urbanization and Sri Lanka**

With low urbanization in the past, most scholars in Sri Lanka have hitherto not seen the subject as worthy of much attention in our context. There are also some important misconceptions found in the media, both favorable and unfavorable to urbanization. It seems necessary therefore to clarify at least one important misconception. It concerns the relationship between urbanization and economic growth. Although high growth in per capita GDP is associated with high urbanization in the West and in some LMICs, it is incorrect to assume a very direct causal relationship between them. For it is far more likely that the comparatively high levels of poverty, inadequate access to social infrastructure facilities and prevalent realities in the rural sectors of most LMICs, are perhaps the real causes of rural-urban migration. Urbanization needs to be seen as the result of sharp differentials in living standards, income levels and the availability of opportunities for the youth that often exist between the rural and urban sectors. The view that urbanization can become a driver of growth has to be clarified and contradicted. The blinkered pursuit of economic growth by increasing GDP per capita without at least an equal concern for inclusive growth, equity and distributive social justice, may be seen as one of the main drivers of high urbanization.

**Urbanization and Colombo**

The statistics indicate that in most LMICs urbanization is directed mainly to the larger urban centers. In each of the smaller LMICs, only one city, usually the commercial capital city is impacted by urbanization. Historically, it is Colombo that has grown by urbanization although for many decades that growth has been slow. Nevertheless, Colombo already has its share of slums. With the military victory over the separatist terrorists in mid-2009 which brought to an end a 30-year war, the circumstances have begun to change. The more recent investments in Colombo’s infrastructure, the beautification of the city and recent ongoing concerns to prepare and implement a comprehensive plan for the city are indeed welcome. These and the proposal to make a massive investment on a plan to extend the central business district of Colombo into the sea will, if successfully implemented, bring about higher economic growth. However, these efforts could cause the city of Colombo to be impacted by urbanization on a scale hitherto unknown.
The Theories

The study being presented below is based upon an earlier review of planning literature about the origins and development of the concepts and theories which have influenced or are relevant to urbanization in the LMICs (Gunaratna, 2014). It will not be within the scope of this paper to discuss in detail these theories except to briefly mention those that are irrelevant to us and those that are likely to be more relevant.

The earlier review revealed that there are basically two very different sets of theories: the first being a set of utopian concepts from late 19th century Britain and early 20th century Continental Europe which form the basis of most current planning approaches adopted in South Asia; and the second, a set of more scientifically rigorous theories, some of which could underlie a far more relevant approach to the problems of urbanization in the LMICs. The latter theories, also of Western origin, are an integral part of the sub-discipline generally known as Spatial Economics.

The Utopian Concepts

The particular solutions based on utopian concepts were intended to guide the expansion of impacted cities. The intellectual underpinnings are British from a century ago. The resulting models which involve ‘satellite towns’ are still being used to deal with urbanization in the South Asian region. There is an obvious question of their relevance. The scale of current urbanization in the Indian sub-continent is of a different order of magnitude from its manifestation in Britain where this particular utopian concept was first envisioned. This is clear when one notes that the total urban population of England and Wales in 1901 was 25.1 million (Hicks and Allen, 1999). The current urban population of India grows by double that figure every 5 years.

A well-known Indian researcher discussing the development of Navi Mumbai (“New Bombay”) which is the latest of Mumbai’s satellite towns, observed that:

“In the 1960s and 1970s, Asian urban development policies centered on slowing down the rate of urbanization…. Satellite towns…have been among the most widely adopted means to achieve this. However,…(they) have proved to be ineffectual…The development of New Bombay is a reflection of many of the problems that have beset satellite-town building in Asia.” (Shaw, 1995)

Theories from Spatial Economics

Growth Centre Models

Again, it is not possible to discuss these theories in detail here except to say that some are more relevant to development work in the LMICs than others. The intrusion of Economic Growth Theory took place immediately following World War II, intended to help rebuild war ravaged Europe. With this effort underway, the theory was adopted and applied to the LMICs beginning around 1951. It influenced spatial planning through several ‘growth centre’ models which became popular. These models proposed that capital investment for economic growth of a lagging region should be made in large concentrations at a few pre-
selected geographic points. The assumption was that development would then result and spread from these points. A 'Growth Corridor' is an extension of this approach where a series of so-called 'growth centres' are linked together by transport facilities.

Unfavorable scholarly reactions based on strong evidence against such Growth Centre models of the 1950s began to appear in the late 1970s and early 1980s. Consequently, an important Indian research project (Roy, Patil, 1977: 6) rejected the concept as being irrelevant to rural and regional development in India, favouring instead what was a very different concept called the 'service centre'. In this concept the centre would be endowed with social and economic infrastructure to serve its rural hinterland.

A school of thought traceable to Boake (1953) saw a LMIC's economy as being a duality consisting of: a backward, tradition-bound agriculture sector on the one hand where capitalism is not indigenous and therefore retarded; and, on the other hand, a small, urban industrial sector, where capitalism has been imported full-blown from the West. A fundamental belief behind this theory was that urbanization is essentially a beneficent process; and, that migration to cities is an appropriate and satisfactory process of emancipation from poverty and ignorance for rural folk in the LMICs. The roots of this belief are to be found in the cultural alienation of Western scholars and Westernized urban elites from indigenous culture among rural populations. This theory should not be considered with favour today.

A set of Different Theories

Another but very different set of theories which arise from Spatial Economics can be considered in a much better light today. They have a lineage beginning with the work of Von Thunen (1823), which can be seen now as the origin of a scientifically rigorous German school of thought.

A few other scholars have studied the relationship between the ‘rank’ and ‘size’ of towns within any country, where rank refers to hierarchical order in the size of towns and is determined by the numbers of urban residents. These studies have a lineage starting from the work published by Jefferson in 1936 and have originated in and been developed within the US. They suggest two very distinct patterns where rank and size are closely correlated in a very regular and predictable manner. In the other pattern, the largest city predominates very substantially in size over the next in rank. The latter pattern is said to display ‘primacy’ and the first ranking urban place is called a ‘primate city’. The usefulness of these studies is two-fold: they focused more light on the existence of the pattern of primacy within many LMICs; and suggested a causal relationship between primacy and the economic conditions residual from a history of colonial subjugation.

A Latin American scholar, Frank (1969) also sought to establish a causal link between colonialism and the condition of underdevelopment. He explained the process by which the urban configurations of most LMICs became highly skewed structures. The skewing process he attributed to the military and economic agencies of the respective colonial periods of those countries. His views are well recognized today. A UN publication states: “...many developing countries are characterized by a so-called dendritic market system, which is the legacy of a colonial past and/or of persisting international dependency relations...” (UN/ESCAP, 1979:58)
There are now many Western scholars (starting with Johnson in 1970) who have understood: that a national urban system with a skewed dendritic market structure left behind as a colonial legacy in an LMICs has little utility for national development; that market forces alone cannot be expected to alter a skewed national urban system; and, that some intervention at the national policy level is needed to free an LMIC from this particular colonially derived structural constraint.

**Small and Mid-sized Towns**

A well-founded approach originating in South Asia from a Seminar held in Kathmandu in 1978 bearing a strong spatial content has since begun to gain much support. Thereafter two subsequent papers appeared in the West. In the first, the author, Rondinelli (1986) states: that colonial economic policies reinforced by post-colonial economic growth strategies of the 1950s and 1960s were major causes of the rapid growth of a few primate cities to extraordinary size in most Asian countries; that the emphasis was on developing urban industry over rural development; that the distributional effects and the spatial implications of investment allocation were largely ignored; that although the effort was to modernize the metropolitan economy, rural regions were neglected and left poor and underdeveloped; and also, that in countries with dominant primate cities, few secondary mid-sized cities could grow large enough and have sufficiently diversified economies to attract rural migrants, stimulate agricultural economies and promote regional development.

The second paper also justifies the development of small and intermediate urban places. The authors, Hardoy and Satterthwaite (1988) have based their recommendations on reviews of over 100 empirical studies across the LMICs and a large number of national programs for small and intermediate towns. According to them, spatial programs “...can be a crucial component in attaining social and economic objectives such as increasing the...populations reached by basic services; increasing and diversifying agricultural production; and increasing the influence of citizens living in sub-national and sub-regional political and administration units...”

A UN publication (ESCAP, 1979: 87) provides some valuable observations and general conclusions for the Asia Pacific regional context. It proceeds to state: that urban-rural inequality is a major problem in the region; that the disparities in respect of services, income earning opportunities and wage rates have caused concern; that many governments in the region should pay more attention to rural development to achieve a more balanced growth spatially and between rural and urban areas and a more equitable distribution of the benefits of national development and economic growth.

Even assuming a committed approach to rural development, out-migration from rural areas for non-farm occupations may be expected to continue, though on a reduced scale. Rather than have rural migrants target the larger cities, the more manageable and preferred scenario would be where they move to the small and mid-sized towns. Then, movements to the large cities would be confined to migrants from mid-sized towns. This pattern of internal migration is sometimes referred to as “decentralized urbanization” (Sharma, 2003, 10.6, 410). It has to be noted that urban-based services in small and mid-sized towns not only require built urban-type infrastructure but also that people with special urban-type
skills are available and resident. As such skills are not readily available, a proactive planned urban settlement program to provide these skills from major urban areas to the S&M towns is a clear need (Gunaratna, 2000).

Conclusions

Inter-urban configurations, especially in many of the smaller LMICs, were formed in response to the needs of their respective colonial economies. They are seen today as being peculiar in two ways: the predominance of a single ‘Primate City’ over all other urban places; and, the highly skewed pattern of their respective inter-urban configurations. In these respects, Sri Lanka is typical of such LMICs. Post-colonial development efforts, even if effective in generating high economic growth, but made within the framework of such colonially derived spatial structures, will benefit mainly the urban elites based in the respective Primate Cities. They will surely accentuate income inequalities across the respective countries.

Readjusting a distorted inter-urban spatial structure towards current development needs, involves mainly the creation of small and mid-sized towns in carefully selected locations relevant to post-colonial development strategies. If the old inter-urban spatial structures are not re-adjusted to respond to the new development thrusts and those efforts are focused only on the respective Primate Cities, rural-urban migration will be exacerbated. Thus, already prevalent income disparities across these countries will be accentuated and the formation and consolidation of slums and shanties will inevitably result. They will become an increasing part of the built environment of Primate Cities. Such happenings are clearly evident in most LMICs. Continued growth in this manner with mounting adverse environmental consequences can then give rise to diseconomies of scale resulting even in the flight of investments needed to drive further growth.

In the past seven decades, we in Sri Lanka have had three comprehensive plans prepared for the Colombo Region. The Gal Oya project took precedence over the first. The Mahaweli Project over-shadowed and pre-empted investment in the second. General Elections and a change of government intervened in the case of the third. Thus all three planning efforts were each superseded, one by one, with the passage of time. A new plan for the Colombo Region especially with political will behind it, as appears to be the case today, is most welcome. However, it has to be recognized that all megacities in the LMICs have very high rural-urban migrations. They consequently become infested with massive, unhygienic slums and shanties giving rise to unmanageable social and environmental problems.

An important conclusion to be drawn is that the impact upon LMICs of the on-going globalization and popularization of scientific developments and technological innovations particularly in ICT needs to be recognized. These are surely altering the prevalent spatial landscapes of industrialization in the West. Thus, it must be expected that the spatial landscapes of most LMICs and certainly those of the South Asian countries will need to be very different from those that emerged with 19th Century industrialization and urbanization in the West.

There may be better chances of success with urbanization in Sri Lanka because we have so far been insulated to a great extent from the adverse consequences of high rural-urban migration. For this, we must thank the wisdom of our political leadership of the 1930s. The impetus they gave to irrigation and re-settlement of the dry zone which forms two-thirds of
the total land mass of the island, domestic food production, and rural development through
free education and an emphasis on preventive health care. Despite this initial advantage,
a megacity in Sri Lanka created by high rural-urban migration could still suffer the same
fate as elsewhere unless special precautions are taken. The precautions are that planning
and implementation work should be based on practices backed by scientific knowledge.
This work should carefully avoid concepts and theories found to be irrelevant or faulty.
Finally for ultimate success, it is necessary that we ourselves should deliberate, define and
decide upon an urbanization policy framework. It must also be done within the ambit
of an environmentally predicated national spatial policy, which we already have through
certained professional efforts made over more than a decade.

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Urbanization and Social Sustainability: Policies and Strategies for Achieving Well-being

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Abstract

Urbanization is caused by various pull and push factors from cities and rural areas. The urbanization in Indonesia increases due to lack of infrastructure and facilities in rural areas and demand pull from trade and industrial sector in urban areas. The momentum of large urbanization to big cities is triggered during and after Eid Al-Fitr, when workers with relatively low–levels of education seek a better challenge in the informal sectors such as street vendors, opening stalls, hawker and the like.

Large concentrations of population as a result of urbanization has an impact on environmental, social, cultural, economic and political problems. In Indonesia, there is an opportunity to provide special characteristics or identities for cities with unique community life and work opportunities as they develop. This paper aims to look at socio-cultural and psychological problems which challenge the realization of people’s well-being in cities and rural areas. The methodology used is from both literature and review of precedents.

Urbanization should be well controlled in order to bring many benefits to the development of the city, especially for its economic development. However, the socio-cultural and psychological problems that characterize the life of migrants need special attention, as well as for urban governance. This paper therefore recommends policies and coping strategies in the physical and economic fields in order to achieve well-being and to improve quality of life of urban populations, through social sustainability studies.

Key word: Urbanization, Social sustainability, Well-being

Background

Urbanization refers to the movement of population from rural to urban areas. It is a pattern that cannot be avoided in a country, especially for the Lower and Middle Income Countries (LMIC). It generally creates worldwide problems, regarding the number of problems posed in the urban areas. Many large cities in developing countries, including in Indonesia, have experienced rapid urbanization. According to the World Bank’s key findings, the annual rate of urbanization growth in Indonesia reaches 4.2%. Jakarta, which is the capital city of the country, has the largest urbanization rate in Indonesia. By 2025 Indonesia may have 68% of its population living in cities (UN-Habitat, undated).
The urbanization in Indonesia, especially in Jakarta, has occurred due to the attractiveness of Jakarta as the capital city with all its facilities as a metropolitan city, as well as the driving factors from the rural areas. Inequality in the development of infrastructure and facilities has encouraged villagers to attempt to try their luck in big cities to improve their economy. As for other cities in Indonesia, the demand pull from the cities is from industrial and trade sectors.

The uneven distribution of population between cities and villages creates various gaps. This is quite alarming and becomes one of the serious social problems in Indonesia. On one hand, urbanization with a large population concentration area in a city will eventually have an impact on its problems. These aspects are related to the adequacy of public services with the larger populations and settlements related to their space and environment, work force, and well-being in urban areas. On the other hand, the reduced population, especially younger generation, in the rural areas also affects to the economic, social and cultural problems (World Health Organization, 2007).

The momentum of the migration to big cities in Indonesia is especially great during the Eid-ul-Fitr holiday. The intention to come and settle in the city is generally due to the invitation of friends / family who have come to the city first, to seek better opportunities. This urbanization faces other challenges since those workers have relatively low levels of education and they commonly work in the informal sector, such as street vendors or setting up stalls, hawkers / peddlers and the like. Their hope of changing to better destiny sometimes turns out to be a disappointment with their inability to cope with harsh urban life. Thus, urbanization may create negative impacts, such as the development of slums and unhealthy settlements in urban villages, as well as crime and violence. Thus, urbanization in Indonesia faces some serious challenges, such as socio-economic inequities, unhealthy slums and housing, environmental and ecological degradation, etc. Despite problems and challenges faced by urbanization, urbanization can have a positive impact if it is well managed and controlled. So, there is an opportunity for city growth, especially for economic development, as well as to raise the economic status of the people from the lower class to the middle class.

The positive impact of urbanization in improving the economic life of the people, also has the potential to create a unique urban identity. It has the opportunity to provide a special identity to the city with the unique social community that they have developed. Such distinct identities are found in the indigenous and migrant communities. Residence that joins with small business place is one of the special characteristics of dense settlements in Jakarta as well as other big cities.

The policy for urban growth needs to consider the negative and positive impacts of urbanization. Possible policies, actions and interventions between central and local governments in facing challenges and opportunities caused by urbanization have to be contemplated. The city development is not merely for the economic needs, but it also pays attention to the specificity of socio-cultural life of the individual and community formed. In some places, social segregation between residents and migrants, life style that only focuses on their own community, economic inequality and cultural diversity of migrants occurs (which should be a developed uniqueness). The emerging of industrial and trade sectors in the cities leads to different life styles of residents and migrants than before. As a result, the physical and economic development of the city is not merged with social and cultural
development. For this reason, this paper discusses the issues and challenges of urbanization in Indonesia especially in Jakarta. Strategies and solutions of urban growth design are put forward in creating sustainability in social development and providing social well-being for large spaces for the urban community in the form of public spaces (World Health Organization, 2016, Lennard, 2012).

**Problems and Challenges of Urbanization in Indonesia**

The migrants are generally friends or relatives of previous urban residents who have came and lived in the city over a longer period. The new arrivals commonly seek settlement close to the previous residents. The density of urban villages in Jakarta continues to increase particularly, while the urban land space does not increase. Settlements created by urban villages - where immigrant communities are generally located in Jakarta - are located behind or sandwiched among the high-rise buildings. These dense settlement growths may create a slum impression among the city skyscraper buildings, although some handling strategies in the physical sectors have been provided, such as: infrastructure and housing development and access to public transportation.

The development of education, economic and health facilities, is also being pursued. With the balance of developments occurring in cities as well as in rural areas, it will be considered that urbanization can hardly be prevented deliberately, since the gradual balance will run naturally by solving the right problems. However, the socio-cultural and psychological problems that characterize the lives of migrants need special attention. This can be seen from the schematic location of settlements in Jakarta in Figs. 1 and 2. It can be seen that the transition area between the city center and urban villages is a crucial area that needs to be developed. In this place, there are many inequalities found that cause socio-cultural problems, in addition to the physical problems of the city (Srinaga, 2013, 2014).

**Fig. 1 – Schematic representation of the three neighbourhood settings**

![Schematic representation of the three neighbourhood settings](image)

*Source: modification drawing from Rapoport (1997)*
Fig. 2 – Urban Kampung zone in some area of Jakarta.

Picture taken by Sutrisno and google map

“Urban Kampong” behind the high-rise buildings.
Some urban areas in Jakarta are as follows:
   A. Urban “Kampung”/ Low income settlement
   B. Medium and high income residential area / Real-estate and high rise apartment + Shopping area
   C. Center of the City

The development of cities with high rise buildings mixed with the conditions of displaced villages or the loss of local geniuses has created the interest of handling the urbanization problems, physically, socially, culturally and economically integrated in a more creative way. The approach to social sustainability is needed in dealing with more comprehensive problems. Colantio and Dixon (2011) explained the importance of developing and regenerating cities in solving city problems. The policy launched was to develop cities on the basis of the needs of their communities to achieve social sustainability which could bring well-being to their communities. This is also in line with Nan’s (2013) thinking which explains that the achievement of the prosperity of the city is based on the needs and problems that exist in the community of that city.

Fig. 3 is the implementation of indicators of success in achieving social sustainability, proposed by Colantio and Dixon (2011).

**Fig. 3 – The Social sustainability assessment frame work.**

![Social sustainability assessment frame work](image)

*Source: Colantio (2011,p.216), see also Colantio and Dixon (2009)*

**Existing and Implemented Policies**

In facing the problems and challenges of urbanization, various policies have been implemented by developing and developed countries to overcome the problems of the city. According to Colantonio and Dixon (2011, p. 218), in reviewing the developments in the
1990s-2000s, research and policies developed specifically in Europe are more focused on social capital promotion, participation and empowerment. Whereas, starting in the 2000s, research in the field of well-being (personal, social, and economic well-being) and quality of life have been implemented to create city liveability (Gehl, 2010, Setha, 2017).

The policy has become the theme of development in both research and practice. The policy is based on the development in overcoming problems that exist in a particular era. For example, the development of social sustainability policy in the 1940s-2000s (traditional) was on the theme / field of fulfillment of basic needs (including housing and environmental education, education and skills, employment, equity, human rights and gender issues, poverty and social justice). In 2000s were more policies were developed to create sustainable practices that could improve the well-being of the community, such as: themes of demographic change development, social mixing and cohesion, identity, sense of place and culture, health and safety, social capital, well-being and quality of life (Colantio and Dixon, 2011).

Some of the themes developed into policy issues and success indicators of social sustainability are in Table 1.

In the case of Indonesia, many development policies have been launched during the last five decades, especially in the scope of policy and implementation to improve infrastructure, settlements and housing, and the development of public spaces. Some developments in the housing providing were the construction of flats that accommodate urban communities whose live improperly on the banks of rivers, or less habitable housing (Srinaga, 2014 & Srinaga, Martin and Hidayat, 2015).

The implementation of the existing policies has produced good results. However, the micro problems in individuals, communities, lifestyle characteristics of Jakarta community and migrants, need a more appropriate strategy in dealing with social, cultural and economic problems. The people are already accustomed to work in and around the house. The activities in the micro space of the city need to be handled in three focuses of development, namely:

1. Activities and culture (culture heritage) which is a legacy that lives continuously, such as areas / communities with selling / market activities and traditional public spaces, such as roads, parks and fields.
2. The development of popular public spaces, with large-scale economies such as malls that remain in a city.
3. The development of alternative public spaces, such as maintaining local traditions that characterize a city in Indonesia, including Jakarta as a metropolitan city.
### Table 1 – Theme of development as outlined in policy.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Key policy issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health, happiness and well-being</td>
<td>Supporting healthy living, such as: healthy internal and external microclimate, access to health facilities, to leisure routes and recreation spaces etc.</td>
</tr>
<tr>
<td></td>
<td>Creating opportunities for community, such as: Creating sociable space networks, public realm vibrancy and intensity, “third” places and city’s living rooms, communal &amp; non-consumptive spaces etc.</td>
</tr>
<tr>
<td></td>
<td>Changing lives and realising potential, such as: focus on five key “well-being” themes (aspirations, environmental quality, access to employment, housing standards, and public services).</td>
</tr>
<tr>
<td>Regeneration</td>
<td>Location and Connectivity</td>
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<tr>
<td></td>
<td>Contextual analysis</td>
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<td></td>
<td>Engagement process</td>
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<tr>
<td></td>
<td>Neighbourhood and livability</td>
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<tr>
<td></td>
<td>Community and Stewardship</td>
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<tr>
<td></td>
<td>Economic diversity and independence</td>
</tr>
<tr>
<td>Environmental sustainability</td>
<td>Energy systems</td>
</tr>
<tr>
<td></td>
<td>Car Dependency, such as: low carbon transport strategy, living and flexible working patterns, etc.</td>
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<tr>
<td></td>
<td>Waste minimization</td>
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<td></td>
<td>Food supply</td>
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<td></td>
<td>Construction process/materials</td>
</tr>
<tr>
<td></td>
<td>Water cycle (management of water resources)</td>
</tr>
<tr>
<td>Urban design (Personal, Social, Economic and Material well-being)</td>
<td>Permeability street network</td>
</tr>
<tr>
<td></td>
<td>Public realm and enclosure of space</td>
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<tr>
<td></td>
<td>Density and mix of uses</td>
</tr>
<tr>
<td></td>
<td>Quality, diversity and distinctiveness</td>
</tr>
<tr>
<td></td>
<td>Biodiversity by Design</td>
</tr>
</tbody>
</table>

**Sources:** Colantio and Dixon (2011, P.270)

**Some areas/Kampung before and after renovation**

(Photos taken by: Felia.S)
Fig. 4 – Flats Kampung and Row Houses or Row Kampung in Jakarta
Scenery of Flats or Row Kampung with some facilities such as: Public/community park, toilet, children playground, mosque etc

From plan to reality through socialization to the community (persuasive approach):

(Photo from flats and row kampong’s images: Worldpress.com, Kompas news, Tribune news, Detik.com, Antara.com, Jakarta okezone.com, Metrotvnews.com, News Bisnis.com)

Strategic Planning Solution and Development

The needs and geographical locations/urban settlements in Jakarta require handling transitional space such as the improvement of urban public space (Srinaga, 2012). The use of city public space in Jakarta needs to create alternative public spaces, such as culinary areas and special trade areas that are closely intertwined with other urban public spaces, provided with adequate pedestrian and city transportation.

Designed activities need to be adapted to the needs of the community and becomes the mirror of the community. Several strategies which can be performed to solve the problems of city spaces in Jakarta and its surrounding areas are as follows (Paul, 1993, Srinaga, 2013):
<table>
<thead>
<tr>
<th>Problems/themes</th>
<th>Strategies/suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access and Permeability</td>
<td>Raising permeability by creating access and close relation / interaction with the surrounding environment</td>
</tr>
<tr>
<td>Socio-cultural</td>
<td>Creating joint activities and public spaces /inter-spaces</td>
</tr>
<tr>
<td></td>
<td>Providing joint activities like joint sports activities, traditional and modern food, etc</td>
</tr>
<tr>
<td>History</td>
<td>Returning collective memory, in the forms of food and beverages, goods selling, etc</td>
</tr>
<tr>
<td>Time and activity</td>
<td>Creating activities with longer operational time, in line with Jakarta’s community lifestyle which often gather outside their houses after dinner time</td>
</tr>
<tr>
<td>“Design”</td>
<td>Combining new design without leaving its local genius</td>
</tr>
<tr>
<td>Type and Form</td>
<td>Utilizing existing typology in the old areas and making public spaces adapted to the character and lifestyle of its community</td>
</tr>
<tr>
<td>Experiencing</td>
<td>Old locations need some repairs, new ones need additional activities</td>
</tr>
<tr>
<td>Representative meaning</td>
<td>Be renovated and socialized with the support of the government and community.</td>
</tr>
<tr>
<td>Dialogue and interaction</td>
<td>Need attempts to create various joint activities in public spaces</td>
</tr>
</tbody>
</table>

Whereas to address the needs of residential areas which can be joined with business place, the development of live-work housing needs to be developed. Some types of live-work are as follows (Dolan, 2012):

- Home Occupation
- Work/live
- Live/work: Live-with, live-near, live-nearby

**Fig. 5 – Type of Live/work housing, Dolan (2012)**

- Type Live-with sources: Dolan (2012,22)
- Type Live-near, sources: Dolan (2012,25)
Type live-nearby, sources: Dolan (2012,30)

Some macro and micro strategies need to be developed jointly in overcoming urban problems especially due to the high level of urbanization. Macro strategy in the form of infrastructure improvement and development and improvement of economy and social sustainability, as well as micro development in the form of the creation of urban public spaces (Donovan, 2018 & Srinaga, 2012). They can improve well-being and settlement arrangements that provide freedom of work by maintaining characterized local genius. However, they must be accompanied by strict government policy. The macro policies need to be developed include: even distribution of urban development in accordance with special characteristics of local community, improvement of identified special facilities and policies with regard to the development of physical, economic and social needs (Nan, 2013). Whereas the micro policy needs to focus on handling the social-cultural sustainability by increasing the empowerment of local communities.

Conclusion

In conclusion, there are at least five important strategies to note:

- Well controlled urbanization to bring benefits to urban development, especially for its economic development. However, the socio-cultural and psychological problems that characterize the life of migrants need special attention, as well as for urban governance (e.g. integrated working and housing area, open public space).
- Show a structural transition from a country which was initially dominated by the agricultural economy and rural areas, to an urban economy driven by manufacturing and service sectors, so that the residential areas have to be accommodated in accordance with their life style in achieving well-being.
- Improve the quality of human resources by providing skilled workers to prepare the city community to be able to play an active role to enter the labour market in urban growth and ultimately reduce poverty in urban areas.
- Create competition and economic growth in an area. In spite of negative impressions and problems, urbanization can be regarded as an advantage for socio culture. It could make significant contributions to urban societies and environment.
• Put forward the policies and strategic planning in the physical and economic fields in order to achieve well-being and to improve quality of life.

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Simplified hydroponics for urban agriculture – opportunities and challenges

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Abstract

A simplified hydroponics system has been proved to be an appropriate technology for urban agriculture as well as to produce vegetables for household consumption and is most suited for communities with limited space. Efficient use of water, nutrients, time and labour are distinct advantages of this technology, which will suit busy professionals, women, elderly people and also people with disabilities. Results of the socio-economic assessment and market feasibility conducted involving community groups and institutions revealed that for the successful adoption of the technology and for scaling up it are important to make all three components of the simplified hydroponics system to be available on a commercial basis.

Introduction

Urban agriculture practices include an array of livelihoods systems ranging from subsistence production and processing at the household level to commercialized agriculture (Ngumbi, 2017), and globally, it is estimated that 800 million urban residents produce food for the urban markets providing 15-20 per cent of the world food (Amar-Klemesu, 2000). Urban agriculture can also contribute towards actual and potential urban challenges such as growing urban poverty and social exclusion, food insecurity and malnutrition in cities. It could also enhance the resilience of cities, reduce climate change/disaster risks, and mitigate the growing waste management problems, while also meeting the growing need for green space and recreational services for the urban population. (Sivaperuman, 2018; Ranasinghe, 2006)

Agricultural practices in urban areas require intensive use of space, water, nutrients and labour. Technological innovations can play a leading role in promoting urban agriculture as it can be adapted to a wide range of urban situations, and to the needs of diverse stakeholders.

Simplified Hydroponics

Hydroponics, which comes from Greek words *hudor*- meaning water, and *ponos*- meaning working refers to growing plants without soil. In hydroponics plants are provided with a constant supply of water and mineral nutrients. Hydroponics crop production systems are high in water use efficiency due to minimized run off, drainage and evaporation. The system
also utilizes nutrients efficiently compared to soil grown systems, thereby drastically reducing
the pollution caused by fertilizer run off. There are hundreds of methods growing plants
hydroponically, ranging from highly capital intensive fully automated computerized systems
under greenhouse conditions to very simple units consisting of a bucket or nursery pot filled
with hydroponics growing medium and hand watered with a hydroponics nutrient.

Simplified hydroponics was developed in Colombia in the early 1980s and is a low-cost
vegetable production system that utilizes modern day hydroponics principles adapted for
areas with limited resources. Simplified hydroponics is practiced under natural climatic
conditions, utilizes space efficiently and conserves nutrients and water by a simple
mechanism (Bradely, 2000). This technology is based on minimal inputs, requiring no green
houses, pumps, commercial energy sources or expensive equipment. Simplified hydroponics
gardens are built with recycled or discarded wooden or plastic containers, hand watered
once a day with a commercial hydroponics nutrient.

The benefits that small-scale farmers could realize by adopting simplified hydroponics
technologies are as follows.

- Minimal inputs requiring no pumps, external energy sources or expensive
equipment
- Water required for simplified hydroponics is comparatively less and therefore, an
alternative to cultivation carried out by farmers, particularly in the dry-zone areas
of the country with seasonal rains. On average, simplified hydroponics saves up
to 60% of water per unit area compared to soil-based cultivation.
- Efficient and recycled use of water and fertilizer in hydroponics minimizes possible
adverse effects on soil degradation and environment pollution due to fertilizer run
off.
- Simplified hydroponics production system is well suited for women, people with
disabilities and elderly people. Women can easily manage such a system with
minimum labour and can be coupled easily with household chores.

**Simplified hydroponics system**

The system consists of three components – grow boxes, inert medium and the nutrient
solution.

1. **Grow Boxes (Fig.1)**

The type of grow boxes used were commercially available rigifoam boxes of 15cmX
17cmX6cm size. The retail price of a box is Rs.300. There had been no major issues related
to the durability and the utility of the rigifoam box for growing plants. Rigifoam boxes were
covered with black polythene covers for preventing algal growth by restricting the diffusion
of sunlight inside the box. Participants requested to have a choice of boxes of varying sizes
having preference for 12 inches width. The unique feature of the box is the plastic flexible
tubing which is 1.5 cm above the inner bottom of the box protruding from one side. When

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1 It is reported that about 290,000 families were affected by the drought annually during the period 1987-1997.
The government of Sri Lanka has spent during this period nearly Rs.125 million for drought relief measures. The
severe drought that prevailed in the country in 1995/96 has resulted in the drop of paddy production by 27%.
the water level reaches the level of the tubing, water drops come out indicating that water inside is sufficient for the day. The drops can be collected and added again on the next day preventing environmental pollution and also the waste of nutrients.

Fig. 1 – Grow boxes

2. Grow medium

The inert medium used for growing plants was a mixture of rice hull soaked and washed for five days and coarse river sand at 3:2 (v/v) ratio (Fig.2). The medium was to be prepared by the participants themselves according to the instructions given. Cost of river sand per box was about Rs. 450 excluding the transport cost and the cost of rice hull was about Rs. 20 per box. The amount of grow medium sufficient for one rigifoam box is on average five four-litre buckets.

3. Nutrient Solution

We have developed a low-cost nutrient pack for this system and after conducting numerous field investigations, it has been patented nationally. The nutrient pack comprised two components to be dissolved in 50 litres of water to prepare 50 litres of the nutrient solution. They are pack A and pack B (BG for growing period and BF for bloom & fruiting periods). Recommended dose of the nutrient solution was one yoghurt cup (100 ml) of nutrient solution per plant per day at the grow stages and two yoghurt cups per plant after flowering. Ten nutrient packs (10 packs, 4 packs of BG and 6 packs of BF) were sufficient for a period of 5 months for 10 boxes (1/5 of a pack- 10 L/ box/month). The cost of one grow pack was Rs. 250/= and one bloom and fruiting pack was Rs. 280/=.
Findings of field investigations

Numerous field investigations supported by the National Science Foundation and non-governmental organizations were conducted to investigate the feasibility of growing a vast array of vegetable species under this system. Field surveys were conducted in urban settings in participating senior citizens living in housing schemes and interested in home gardening, schools and public institutions where urban agriculture was practiced.

The system

The survey conducted asked participants to rate alternative materials that could potentially be used for grow boxes instead of rigifoam. Of the four alternative materials presented; low cost wood, plastic, cement and clay pots, most respondents preferred plastic due primarily to easy handling. The main issue for wood was its low durability while for cement the limiting factor was the weight. However, cost is the main determining factor and Rs.200-400 has been identified as the most feasible price range for a box. Therefore, a major consideration in commercializing the system and its popularization is the cost of the grow box. Another recommendation is to have boxes having sufficient space to grow a single plant. This will also to make the cost of boxes more affordable.

Most of the respondents were of the view that the process of medium preparation is cumbersome and it should be commercially available. A major impediment in preparing the medium was difficulty in soaking for a period of 5 days. Those who were selected from housing schemes and the elderly participants mentioned that they find it difficult to access and transport the rice hull in addition to lack of a proper place for soaking and mixing. Those who preferred preparing the medium on their own were limited. In addition to commercially available rice hull and sand mixture, the need for commercially available packeted rice hull alone has also been mentioned, to replenish decomposed rice hull after about 10-12 months of use.
**Performance**

**Table 1 – Average yields obtained for different crops**

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of plants/box</th>
<th>Yield/box (kg)</th>
<th>Crop area (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veraniya Chilies</td>
<td>2</td>
<td>1.5</td>
<td>3.6</td>
</tr>
<tr>
<td>Cabbage</td>
<td>2</td>
<td>3.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Chilies</td>
<td>2</td>
<td>1.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Turnip</td>
<td>2</td>
<td>2.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Okra</td>
<td>2</td>
<td>2.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Capsicum</td>
<td>2</td>
<td>1.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Kochchi chillies</td>
<td>2</td>
<td>1.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>2</td>
<td>0.5</td>
<td>3.6</td>
</tr>
<tr>
<td>Chinese Kale</td>
<td>2</td>
<td>0.6</td>
<td>3.6</td>
</tr>
</tbody>
</table>

**Fig. 3 – Crop yield under simplified hydroponics system**

![Crop yield under simplified hydroponics system](image-url)
Table 2 – Comparison of average yield obtained with water and nutrient usage– Okra

<table>
<thead>
<tr>
<th>Crop</th>
<th>No. of Beds</th>
<th>No. of Plants/Total</th>
<th>Total Yield (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Okra</td>
<td>4</td>
<td>8</td>
<td>3; (375g/plant)</td>
</tr>
</tbody>
</table>

- Total Nutrients Used - 96 Liters for 4-month Crop Cycle
- Total amount of water used – 130 litres
- Total cost of nutrients – LKR 500
- Total cost for the boxes and medium (can be used for five years) – LKR 3,200/5 = LKR 640
- Cost per kg – LKR 1140/3 = 380/
Table 3 – Cost estimate to supply the vegetable needs for a family of four members for one month

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Vegetable requirement</th>
<th>No. of plants required</th>
<th>No. of beds</th>
<th>Total nutrient requirement.</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 g/day / vegetable</td>
<td>5 varieties – yield of 2/3 plant /variety/day</td>
<td>For 30 days- 20 plants/variety</td>
<td>10/variety</td>
<td>10 l x 10 boxes x 4 months =400 l= 8 packs/variety</td>
</tr>
</tbody>
</table>

Total Nutrients Used for 4- month Crop Cycle – 8 packs x 5 = 40 packs

Total cost of nutrients – Rs.10,000

Total cost for the boxes and medium (can be used for five years)- Rs. 12,000

Total cost for the boxes and medium for four months - Rs. 800

Total expenditure for four months = 10,800

Total cost /day = Rs. 360 (for five vegetables for four persons)

Socio-Economic and Market Assessment

This section consolidates the findings of the monitoring visits, individual interviews with growers and the focus group discussions that were held under different topics.

1. Simplified hydroponics system is most appropriate for households with limited space. However, others who participated in the project having enough land for home gardening activities were of the opinion that due to less labour, less water, less time required for maintenance, absence of weed control, less soil borne diseases in simplified hydroponics system made it attractive to anyone who is interested in vegetable production for home consumption.

2. It is recommended that all three components of the simplified hydroponics system need to be commercialized, preferably along with high quality planting material so that, not only those who are interested in home gardening, but also those who are inclined but not fully committed could be attracted by easily finding all essential inputs to own an appropriate, affordable and accessible home garden which could be maintained without much hassle, even by those who are busy with other work. All of the respondents were of the view that once the simplified hydroponics garden is set up, the time required for daily maintenance which is primarily for applying the nutrients take no more than 15-20 minutes. In return the owner gets fresh vegetables free of pesticides and other harmful elements.

3. It is important to maintain demonstration gardens in appropriate and relevant places for the public to view the operations, maintenance and the crop performance of simplified hydroponics systems.

4. The success of simplified hydroponics gardens mainly depends on the interest, commitment and the attitude of the grower or the practitioner in home gardening. This may seem obvious. We found that targeting and working with those who are keen and interested in home gardening in the initial stages of technology dissemination and adoption to make them convinced of the distinct advantages of the simplified
hydroponics system would be an important first step towards popularization and facilitating wider adoption of this technology among the wider public. As we observed in the pilot study, those who are passionate about home gardening can act as catalysts to encourage those who get easily demotivated due to various problems one would face in crop growing in an open environment. Those who are already accustomed to the vagaries of nature and the effect of numerous climate variables on crop production know how to deal with those variables and find ways to overcome those obstacles through experience. This tacit knowledge and its sharing is essential for the promotion of new technologies such as simplified hydroponics.

5. Setting up of demonstration gardens in different agro-ecological zones would help in generating interest in this technology and to see the advantages and also the limitations of the system. This will help communities to get a better understanding of the requirements and necessary adaptations to be made in respect to contextual specificities. This will also enable them to identify specific crop varieties that are most suited to different climatic zones and to plan the garden accordingly. Findings of the pilot study clearly showed the importance of holding an individual accountable system for setting up and managing the demonstrations gardens. One of the main reasons for failures of simplified hydroponics gardens set up at institutional levels is that there was no one designated to manage the project and there were management issues in regard to the maintenance.

6. Good quality planting material is a prerequisite for the success of hydroponics gardens. We found that seedlings are more appropriate compared to seeds. For simplified hydroponics gardens mature seedlings are more suited.

7. The most preferred material for grow boxes are those made out of plastics. It is important that plastic containers are resistant to UV radiation to increase their durability. Other than plastics, there are other alternatives such as appropriate containers made out of clay, cement and low-cost wood.

Proposed Marketing Strategy

The following has been identified as the most appropriate marketing strategy for popularizing and scaling up the adoption of simplified hydroponics systems for homestead food production.

1. To set up a company or a social enterprise managed by the developers of the nutrient solution to undertake the production of the simplified hydroponics nutrient pack ensuring the quality assurance of the product. The company will also undertake the setting up of demonstration gardens, technology training and dissemination and also get involved in research and development.

2. Based on the findings of the field investigation and the survey and observations made all three components of the simplified hydroponics system need to be available on a commercial basis. This includes; the grow boxes, grow media and nutrient solutions.

3. Grow medium will be manufactured by identified individual entrepreneurs from areas where the raw material for the production of the medium, i.e. rice hull or river sand is available.

4. Identify suitable suppliers/manufactures of grow boxes made out of different material as identified in the market survey to have a wider choice in relation to the material and different sizes to suit different requirements of communities.
5. Identify a private sector partner in the agro-enterprise field to market all three components of the system using demonstration gardens. The selected private sector partners will use their existing marketing networks to distribute the product and for after sales services in consultation with other key stakeholders in the industry.

6. To mobilize and train a selected group of simplified hydroponics growers from among the grassroots communities as promoters of the technology and to provide extension services on simplified hydroponics. This group can also be linked up with the marketing company as agents of nutrient distribution for a commission.

Conclusions

A simplified hydroponics system has been proved to be an appropriate technology that is suited to produce vegetables for household consumption and is most suited for communities with limited space. Efficient use of water, nutrients, time and labour without using any sophisticated equipment are the distinct advantages of this technology, which will suit busy professionals, women, elderly people and also people with disabilities. Results of the socio-economic assessment and market feasibility conducted involving community groups and institutions, revealed that for the successful adoption of the technology and its scaling up, it is important to make all three components of the simplified hydroponics system to be available on a commercial basis.

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Urbanisation and Industrialisation in Asian Countries: The Spectre of Premature Deindustrialisation

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Abstract

This paper analyses urbanization and migration processes in Asian countries since 1950s and the projections made till 2030. It questions the thesis of the epicenter of urbanization shifting to the South and that of an urban explosion in Asia. Increased unaffordability of urban space and basic amenities, negative policy perspective towards migration and various rural development programmes designed to discourage migration are responsible for the distinct decline in the urban-rural growth differential, with a few major exceptions. The pace of urbanization has been modest to low in several countries in Asia due to changes in the pattern of industrialization and low labour intensity of rapidly growing sectors.

Programmes for improving governance and infrastructural facilities in a few large cities have pushed out squatter settlements, informal sector businesses and a large number of pollutant industries to a few pockets and peripheries of the cities, resulting in increased intra-city disparity and degenerated peripheralisation.

The last section of the paper focuses on India where the proposition that the process of migration and urbanisation in recent years has enabled people to move freely, leading to labour market integration. Based on a critical examination of methodological and data-related issues it questions the thesis that mobility in general has gone up significantly, notwithstanding the increased mobility and absorption of poor and unskilled women in low level service sector jobs, particularly in urban areas. Taking the case of the Muslim population, it argues that migration of socio-economically vulnerable sections of the population has gone down.

Introduction

An overview of the contemporary developmet literature in Asian countries suggests that despite widely different trends and patterns, alternative policy frameworks and varying ideological dispositions of policy makers and researchers, the dominant perspective is that the region is currently experiencing rapid urbanisation and migration and that this would continue in future years. The past decade and a half has been considered to be a period of a progressive shift of the epicentre of urbanisation from “the predominantly northern latitudes of developed countries to the southern ones of developing countries” and that “the mean latitude of global urban population has been steadily moving to the south.” Several countries in Asia are noted to be experiencing acceleration in the growth of the number of migrants and urban populations since the late seventies and as a result the continent currently accounts for about half of the world’s urban population.
The World Bank Report (2015a) entitled “Leveraging Urbanization in South Asia: Managing Spatial Transformation for Prosperity and Liveability”, however, postulates that the process of urbanization has been “messy and hidden” due to “widespread existence of slums and sprawl…. particularly on the peripheries of major cities, which is not captured by official statistics.” This is symptomatic of the failure to adequately address congestion constraints. Following the trail, Annette Dixon, the Vice President for the South Asia Region of the World Bank argues that the region must rethink its strategy and undertake reforms to tap into the unrealized potential of the cities. She argues that if managed well, “city based urbanisation can lead to sustainable growth by increasing productivity, meeting the deficits in provisioning of basic amenities and, at the same time, reducing resource consumption and carbon emissions.” One would thus note that despite the problems of messy urbanisation and slums, the dominant paradigm in the developing countries has been rapid urbanisation based on large cities and the solutions prescribed for the problems are higher infrastructural investment in selected cities and through them to link their economies to the global market.

This perspective and the proposed package of solutions, however, have not gone unchallenged. United Nations (1996) had predicted that the urban population would double between 2007 and 2050. This apparently “impressive urban scenario”, however, implies a growth rate of only 1.6 per cent per annum, which is not very high as per the historical records. It has been argued that the pace of migration and urban development in Asia is associated with accentuation of regional and interpersonal inequality, resulting in increased poverty. Furthermore, employment generation in the formal urban economy is not high due to the capital intensive nature of industrialisation which implies that the growth of populations in cities would be associated with increased informalisation of labour and mushrooming of slum settlements.

In the context of the alternative perspectives, the present paper overviews urbanisation and migration process in Asian countries at macro level since 1950s. It analyses the projected scenario of urbanization till 2050 and questions the thesis of southward shift of urbanisation and that of the urban explosion in Asia. The second section, following the present Introduction, presents the alternate perspectives on urban development in the Asian context. Trends and patterns of urbanisation and urban growth across major regions of the world are analysed with a view to exploring the thesis of sluggish and exclusionary urban growth in Asia in the following section. Based on the latest data available from national and international sources, it questions the thesis of rapid and accelerated urban growth in Asian countries. It argues that the UN agencies have become conservative in projecting an urban scenario for the coming decades as they get informed about more recent trends from sources at country level. The fourth section posits the thesis of premature deindustrialization and builds the ground for the apprehension that Asian countries may fall into this trap. The overview of the trend and pattern suggests that the pace of urbanization would be reasonably high but much below the level projected by UNPD for the coming decades. They may experience sluggish urbanization and a decline in the share of value added from the manufacturing sector, unless their urban development strategy becomes broad based and promotes sustainable growth of small and medium towns and the rural urban continuum, as proposed in SDG 11. The changing structure of urban population across different size categories reveals a shift of growth dynamics from large to second order cities and stagnation of small towns, which has been analysed in the next section.
The Thesis of Urban Explosion and Top Heavy Urbanisation in Asia: Recent Trends and An Alternative Perspective

This perspective of urban explosion in Asia posits that “the fulcrum of urban growth” would shift dramatically towards this continent - away from Africa and Latin America. South Asia has been considered a major contributor to the incremental urban population in coming decades because of both its large demographic weight as well as its high rate of urbanisation. Stylised predictions—such as the increase in the number of mega cities (with ten million plus population) in Asia going up from 18, in the global total of 33, to 24 in 2030 against the global figure of 41— are noted as evidence of “unprecedented urban growth”, confirming the perspective of city linked urbanisation.

Projections have been made that the pace of urbanisation would go up in the next few decades which would double Asia’s urban population during the period 2000-30, its share in global urban population going up from 48 per cent to 54 per cent. The proponents of “market with governance” oriented perspective believe that the strategy of globalisation and structural reform would bring about an acceleration of rural urban (RU) migration, giving a boost to the pace of urbanisation and economic transformation. This rapid pace of urbanisation is promoted by the scale of production in large cities, particularly in manufacturing, information asymmetries contributing to agglomeration economies, technological developments in the transport and building sectors and substitution of capital for land. Even when the industrial units get located in inland rural settlements or virgin coastal areas, in a few years, the latter will acquire urban status.

Projections by UN system, as also global development cum banking agencies suggest that South Asia, along with China, will lead the world economic recovery in the next couple of decades. Countries like India, Bangladesh, Sri Lanka etc. will register growth rates around 7 per cent per annum in GDP in real terms. A critical assumption underlying the models giving these projections is that these countries will experience accelerated urban growth. Many of the policy documents of the World Bank (2015b) and the Asian Development Bank (2011) claim that an urban avalanche would hit the Asian continent. This assumption is in the core of the dominant perspective.

The process of urbanization has, thus, implicitly or explicitly been linked to metropolitan (population above a million) and mega cities, that account for much of the urban population in Asian countries. Planners and researchers have looked at urban processes here mostly through a prism of large cities. Urban structure is envisioned through or in comparison with a set of global cities. More recently, these countries are trying to promote a few smart cities that can compete with the iconic megalopolises of New York, London, Paris and Shanghai. The key concern has been how to design infrastructure and public services supported by modern technology in select cities so as to attract capital from within and outside the country for realizing agglomeration economies and transforming them into engines of growth (Mohan and Dasgupta 2005). Several international agencies explicitly and implicitly proposed that the success of globalisation and livelihood strategy in Asia would depend on the speed with which modern production, trading and banking institutions in these urban centres can be linked with world capital markets and global values injected into the business
behavior of the former. The urban world has, thus, been analysed through the perspective of a few metropolitan cities, envisaged in competition with each other¹.

As the dynamics of urban industrial development have been associated with globalisation, the small and medium towns, located away from the emerging global centres of growth, particularly those in backward regions, failed to attract adequate private investment and even academic research. They found it difficult to finance any development project through internal resources or borrowing from capital markets. The fiscal discipline imposed by the Government, banking and credit rating agencies made it impossible for them to undertake infrastructural investment of any kind (High Powered Expert Committee 2011). The resultant deficiency in basic amenities became a serious handicap for them in attracting private investment from within or outside the country. The declining governmental investment in infrastructure and basic amenities in these towns over the years contributed to increasing socio-economic disparities within the settlement structure.

Importantly, there has been a shift from this dominant paradigm in recent years. One would recall that the Population Division of the United Nations (UNPD) had alerted that the global urban population will touch 50 per cent level by 2006-07. With some hiccups, this was finally achieved but only in 2009. The delay was due to the actual growth of urban population in the developing world, particularly Asia, turning out to be less than what was projected². This is due to Euro-zone crisis and global economic slowdown, dampening the momentum of metropolis based urbanization in Asia. Addressing the Bretton Woods Committee, the Managing Director of the World Bank, Mulyani Indrawati (World Bank 2016) shared this concern while arguing that the “Developing and emerging economies that were engines of growth during the last decade, continue to underperform.....Commodity-exporting emerging markets and developing economies, many of them home to millions of poor people, have been hit very hard”.

Understandably, the growth rates of Class I cities and metro (million plus) cities have gone down in many Asian countries, including India. The impetus to urban dynamics has come from the lowest level, with an increase in the number of new towns. What is sustaining the overall urban growth is urbandisation and suburbanisation, a process of rural and peripheral settlements acquiring urban characteristics while retaining their rural socio-economic base. These question the theory of ‘urban explosion’ or ‘over-urbanisation’ through the large cities and casts serious doubts on the prospect for rapid urbanisation in future years.

It would be important to rescue urban studies in Asia from the framework of metropolis based urbanisation, a paradigm which envisions urban processes in the developing world responding passively to compulsions of global capital. A large part of contemporary urban growth is occurring outside of the hegemonic power structure of globalisation. Therefore, instead of confining urban research to global and national markets, state level institutions, formal programmes, missions, it is important to build a “history of urbanisation from below”. It would be a new narrative, constructed through an analysis of situations and processes that have been considered insignificant within the framework of metro centric urbanisation. There is an urgent need to build an alternative macro-economic framework for

¹ Barker, Liu, and Cootman (2016)
² Kundu (2009)
understanding the Economic Geography in Asia by recognizing the process of “rurbanisation” and massive informal expansion in the peripheries of large cities.

One must enquire if the local economic forces and institutional structure are able to do a functional stage-setting for the global capital, partially outside the dependency framework? Do the diverse territories, constituted through a complex web of rural, peri-urban and urban settlements reflect some form of resilience or robustness of the local economic system and, more importantly, can that be strengthened through inclusive and participatory planning, as envisioned by SDG 11? Indeed, simple dualistic formulations, postulating categories such as rural and urban, small and big cities etc. are inappropriate to understand the dynamics of urban development. The spatial pattern of development today is continuously blurring their distinctions and one must focus on the relationships emerging across settlements in different categories.

**Trends and Pattern of Urbanisation in Asian Countries: Exploring the thesis of Exclusionary Urban Growth in Asia**

Tables 1 and 2 present the annual growth rate of urban population for quenquennial periods starting from 1950 till 2059, given by Revision 2009 and Revision 2018 of World Urbanisation Prospect. It may be observed that the speed of urbanisation in Latin America including the Caribbean during the second half of the present century was spectacular, which led to the percentage of urban population going up from 41 per cent to 75 per cent. Africa, too, registered similar urban growth during 1950-70, the rate slowing down after this period. Sub Saharan Africa has recorded even higher urban rural growth differential (URGD) (which has continued throughout the half century) as is the case of South America - a region within Latin America. It is argued that Asia now “will replicate the experience of these continents”.

The growth rate in urban population and URGD in Asia have been reasonably high but fluctuated over the past decades. The rates were above that of the world average, both when China is included or excluded in the calculations, during the entire second half of the last century. Understandably, these were higher than that of Europe and North America, mainly because, in the latter two regions, the rural population base, from where migrants come to cities and towns, is very low due to the high percentage of the urban populations.

The Asian urban growth rates have, nonetheless, been consistently below that of South America and Sub Saharan Africa. The rates have decelerated since the late sixties. The real acceleration in urban growth and URGD came during the second half of the seventies, the rates being higher than that of Africa and about the same as Latin America during 1975-90. These have come down once again during nineties. The URGD declined from 2.35 per cent during 1970-90 to 2.28 per cent during 1990-00, the latter being less than that of Latin America and has remained so during the entire period 1990-2005.

The proposition of deceleration in urban growth and rural-urban migration gets empirical support from the country level data compiled by the Population Division of the United Nations (UNPD) and released through World Urbanization Prospects (WUP) since the early nineties. UNPD has generally revised the predictions of urban population, its share in the
total population as also its growth rate made in the early nineties, in the subsequent revisions of WUP. Table 1 gives the average annual growth rates of urban population for world’s major regions and India, 1950-2050 based on WUP 2009 Revision. Similar figures provided by WUP 2018 Revision figure are presented in Table 2. Table 3 and 4 give the percentage of urban population and urban–rural growth differential (URGD) for world’s major regions and Asia for the period 1950-2050 based on WUP 2009 and 2018 Revisions respectively. The growth rates of urban population and URGD for Asia in different quinquennial periods, as per these two documents, are shown in Figs. 1 & 2.

**Fig. 1 – Urban Growth Rates for quinquennial periods as given in 2009 and 2018 revision of WUP**

![Urban Growth Rates for quinquennial periods as given in 2009 and 2018 revision of WUP](image)

It may be noted that the prediction of the level and pace of urbanisation for the first three decades of the 21st century in 1995 Revision of WUP were gross overestimations in the context of the revised estimates in Revision 2009. Furthermore, the 2018 Revision of WUP gives much lower figures than those in Revision 2009. The urban growth rate and URGD predicted for 2045-50 were 1.06 and 2.49 respectively in the Revision of 2009 (Table 1 & 3). The figures given in Revision 2018 are much lower 0.84 and 2.0 only (Table 2 & 4). In essence, the UNPD admits that the growth rate of urban population in Asia is decelerating at a much faster rate than anticipated earlier, not only because of decline in natural growth in urban population but also in migration to large cities (Kundu 2019). In fact, urban growth rate and URGD predicted in the latest Revision of 2018 for the thirties and later years are much less than those predicted in Revision 2009, as may be seen in Graph 1 and Graph 2. All this underlines the limitations of a city centric perspective of urbanisation and not looking at the urban system as a whole in the context of regional economy.
Researchers have attempted to estimate the number of rural to urban (RU) migrants through indirect methods, using population figures from their Population Census. Based on a simple identity, the incremental urban population during a decade has been decomposed into four segments: (a) natural increase, (b) new towns less declassified towns, (c) merging of towns and jurisdictional changes in agglomerations and (d) RU migration. It has been argued that there is serious under-reporting of the migrants due to hostile environments in the places of destination and other factors. Consequently, the number can be estimated also as a residual component. In the Indian case, the contribution of RU migration in total incremental urban population through this residual approach has been estimated to be 21 per cent during the nineties which has declined to 18 per cent in the following decade. It should be possible to use this framework for working out the figures for all countries for which the migration data are suspect.

The decline in the rate of growth in urban population in most of the Asian countries understandably is due to decline in natural growth. One can, however, isolate the impact of population growth by focusing on URGD, assuming that the declines in rural and urban areas are similar in magnitude. Now, it may be seen in Table 2 that URGD has gone down for Asia as also in 36 out of 50 countries during nineties compared to the preceding two decades. The deceleration in urban growth must, therefore, be explained in terms of factors other than natural increase in population. Can the deceleration in the pace of urbanisation be attributed to the second factor - growth dynamics becoming week at lower category of settlements slowing down the process of RU transformation? It is possible to hypothesize that since globalization tends to promote growth in large cities, not many new towns would come up on the scene and several existing towns would get declassified. The regional strategies followed in several Asian countries to contain metropolitan expansion include development of satellite towns that would partly explain sluggish growth in metropolitan cities and deceleration in the pace of urbanisation.
Changing Structure of Urbanisation and Percentage Share of Urban Population across Size Classes of Urban Centres

The cities and towns in different size categories have been growing at different rates, altering the size composition of urban population in Asian countries. The share of urban centres with population below half a million (BHM) has remained stable at fifty per cent in Asia over the past 30 years while the global figure has come down from a much higher level to this level during this period. The variation in the figure across continents and regions, however, works out to be high. The developed regions like North America, Central America, Australia and New Zealand, for example, record figures much below fifty per cent. Contrastingly, all the regions in Europe report figures between 60 and 70 per cent (Kundu 2009). One would stipulate that in countries where the process of urban industrial development has a long history, urban structure tends to be more balanced and broad based as compared to the new continents where the process has taken root in recent times. In the case of the latter, development impulses get concentrated in and around a few large cities.

UN-Habitat (2018) reports that “Large cities in the developing world, with populations of more than 5 million people ...... did not experience such high growth rates in the 1990s; the average annual growth rate of large cities was 1.8 per cent, with the exception of those in China” This can be explained in terms of the rapid growth in the number and population in large cities in China occurring as a result of the government’s emphasis on urban development at the higher end after 1949 and the reform measures adopted since the mid- seventies. Understandably, the 22 most populous cities had a total of 47.5 million people or about 12 per cent of the country’s total urban population in 1985. There has been, however, a change in the strategy of urban industrial development and a policy shift in favour of middle level cities, explaining the slowing down of population growth in large cities.

The degree of population concentration in large cities in Asia emerges clearly from the fact that the percentage of people living in cities with five million plus population is 18 as compared to the figure of 15 at the global level (Table 5). This is a manifestation of top heavy urbanisation. The ten-million plus Asian cities, however, have recorded no increase in their number and barely 1.7 per cent population growth per annum which is much below that of cities between 5 and 10 million people during 2000-07. And yet, the growth rates of the latter - both in number and also population during 1990-05 are much below that of the previous decades (Table 6). The growth dynamics seem to have shifted to cities between 1 and 5 million. These second level cities are projected to grow faster than the ten million and five million plus cities during 2005-25. These cities are likely to attract much of the financial and also the industrial capital in future years, resulting in their rapid population growth. Interestingly, the number of million plus cities has increased from 143 in 1990 to 192 in 2000 and further to 246 in 2005. The number of these cities in China has gone up from 63 in 1990 to 87 in 2000 and 94 in 2005. The other country to record an increase in the number of these cities is India, the figure going up from 23 to 32 and then to 40. The importance of the BHM cities and towns in the urban system and their population shares vary significantly across regions within Asia as in no other continent, despite their percentage share remaining stable at 50 per cent (Table 6). East Asia, for example, has less than 40 per cent urbanites living there while the corresponding figure for South Eastern Asia is over 70 per cent. The shares of South Central Asia and Western Asia lie in between the two limits - at 53 per cent and 49 per cent respectively.
The directions of change in the size composition of urban population, too, differ considerably across the regions. South Central and Western Asia report a decline in the share of BHM urban centres, the percentage figure going down from 65 and 62 in 1975 to 53 and 49 in 2005 respectively. This declining trend is projected to continue in the next couple of decades. One would argue that the thrust of migration would shift from mega cities to the middle and lower order cities. Unfortunately, the towns below a hundred thousand population do not seem to be receiving many migrants. Also, emergence of new towns through rural urban transformation is not adding to the demographic weight of this category at the global. As opposed to this, East Asia and South East Asia have registered an increase in their shares of BHM urban centres from 34 per cent to 40 per cent and from 60 per cent to 70 per cent respectively during this period (Table 6). It is projected that five-million plus cities would not claim a larger share in urban population.

South East Asia showed a rise in the share of the BHM towns in the eighties and nineties. It, subsequently, got stabilized possibly because of the economic crisis of the nineties that had slowed down migration towards large metropolises. One may argue that the urban structure here has become less top heavy over time which may have a healthy impact on urban systems in the long run. The maximum top heaviness in the urban structure is noted in South Central Asia which has over 22 per cent of urban population in five million plus cities, followed by East Asia for which the figure is 18 per cent (Table 6). The latter has 42 per cent of urban population in cities between half million to 5 million, compared to 25 per cent in SC Asia, which is responsible for a somewhat broader urban base in the former. Furthermore, the increase in the population share of half million plus cities has been dramatic in the SC Asia, from 35 per cent to 47 per cent during 1975-2005. A similar
increase has been recorded in West Asia as well. The only difference is that in the latter, one to five million cities predominate as opposed to ten million plus cities in the former. The SC Asia may, therefore, be considered to be a bit more unbalanced compared to even West Asia. It is a matter of anxiety that the cities at the third level, with population between half to a million, that had witnessed acceleration in growth during 1990-05, would report low growth in future years.

The towns at the lowest end of urban hierarchy, that have in general recorded low population growth throughout the period under consideration, experienced demographic growth much below the million plus cities. One would argue that not only has the population growth in these towns been low, but there has not been any reasonable increase in their number through RU transformation until very recently, as mentioned in an earlier section. Emergence of a large number or small towns in and around large cities, along development corridors connecting two mega cities and transformation of administrative centres, opens up possibilities of balanced and sustainable regional development.

**Challenge of Premature Deindustrialisation**

The ADB report Asia 2030 and Asia 2050 tend to suggest that the twenty-first Century belongs to Asia. These predict that the Asian economy will grow by more than 6% per annum in real terms against the global growth rate of less than 3% (Fig. 3).

**Fig. 3 – Percentage Share of Asia in the Global GDP**

![Chart showing percentage share of Asia in the Global GDP](chart)

*Source: Maddison 2018*

Fig.3 prepared based on the data built up by Angus Maddison (2010) in his celebrated work in three volumes that presents the historical data on world economy, shows that the share of Asia in the global economy was as high as 58% of global GDP. Sadly, this declined almost continuously to hit the bottom at about 12% during the fifties and sixties. Based on the demographic and other structural parameters, the study predicts that it would now rise sharply to claim about 52% of GDP, slightly above the share in population, by another three decades. Brookings Institution (Kharas, 2011) has made a similar prediction suggesting that Asian share in global middle class demand of consumer durables will go up from the present level of about 18% to 60% in 2050 (Fig. 4).
Fig. 4 – Percentage Share of Different Countries in the Global Middle Class Consumptions of Durable Goods

A review of relevant development literature brings forth three major challenges that the Asian countries will have to tackle for the materialization of the predicted development scenario. The first is that of premature deindustrialization and the middle-income trap. Dani Rodrik (2015) of the JF Kennedy School of Government, Harvard, has argued that the nature of dependency of the developing countries and market failures at global level are resulting in a decline in the share of GDP in countries that have not realized their basic potential of industrial growth. Consequently, their share of industrial value added has started falling at a low level of industrialisation. Citing the cases of a large number of countries in Africa and Latin America wherein the manufacturing share in income has shown persistent decline before this coming to even 30 to 40% level. Although South Asian economies do not appear to be immediately sunk into this crisis, it is speculated that it may not be able to escape this trap for long. During the past one-and-a-half decades, the World Bank data reveals that the share of manufacturing in national GDP for countries such as Afghanistan, India, Maldives, Pakistan and Sri Lanka has stabilized at different levels or even declined marginally, with the significant exception of Bangladesh (Fig. 5). India is having the problem of pushing forth industrial growth and its share in income has gone down from 34% to 30% during the past decade, creating a crisis in the job market. Bangladesh emerges here as an exception as it records a steady increase in its share of the industrial sector including construction, in national income over the past six decades (Fig. 6).
Recent trends and pattern of investment indicate that the South Asian economies may not necessarily get into a real crisis situation. South Asia has managed to get a share of 36% of global investment. Efforts of the BRICS Development Bank and more recently Asian Infrastructural Development Bank have successfully injected funds into the capital market. They are trying to prioritize investments into those sectors that are critical for sustainable and inclusive development and where the global capital market has shown conservatism.
The most important factor which can rescue Asia from the potential global crisis is the internal demand due to emergence of a strong middle class. It is generally recognised that the middle class in Asian countries, that are politically and economically powerful would emerge strongly, as predicted by the Brookings Institute. This would create a massive demand base which can support rapid growth in their own countries and, at the same time, help in resolving the Euro zone crisis and in stabilizing the global economy.

Summary of Findings and Reflections on the Urbanisation/Migration Experience in Asia

A large majority of the countries belonging to different geographical regions have recorded deceleration in urban growth and migration in recent years that cannot be fully explained in terms of decline in natural growth, definitional or boundary adjustment factors. Exclusionary urban growth, increased unaffordability of urban space and basic amenities for the rural poor and a negative policy perspective leading to greater restrictions on migration are the key determinants. It is surprising that despite the positive assessment of urbanization and migration dynamics at the conceptual and policy level, many of the national, regional and city governments in Asia are pursuing programmes that tend to decelerate in-migration as well as to evict and relocate the existing slums, with predominantly migrant population, into city peripheries. Furthermore, the impetus of urban growth has shifted from large metropolises, from five million plus cities, to those having population between 1 to 5 million or even less. Despite this downward shift of urban dynamics, a large number of small and medium towns with less than one hundred thousand population report economic stagnation and deceleration in population growth in a majority of Asian countries. The emergence of new towns has, however, opened up new possibilities to counter the top heavy urbanization in South and South East Asia. The pace of urbanization has been high in several countries in Asia not because of their level of economic growth but of its composition and labour intensity of rapidly growing informal sectors.

Several countries have launched programmes for improving governance and infrastructural facilities in a few large cities, attracting private investors from within as well as outside the country. Land for them has been made available through the market as also state supported schemes. These have pushed out squatter settlements, informal sector businesses along with a large number of pollutant industries to the city peripheries that have poor quality of micro environment. The income level and quality of basic amenities in these cities, as a result, have gone up but that has been associated with increased intra-city disparity and creation of degenerated periphery. Several governments have taken major initiatives to tackle these problems by promoting rural development, creating satellite towns for slowing down RU migration and reducing pressure on infrastructure, particularly in the globalizing cities. These regional development measures, in a sense, have been complementary to the city level interventions that have encouraged only selective migration into central areas and “sanitization of the cities”.

All these facts question the proposition that urban dynamics would shift to Asia in the next few decades, notwithstanding the magnitude of absolute figures of increment due to pure demographic weight of the region. The pace of urbanization would be reasonably high but much below the level projected by UNPD. The pace of urbanization in the next few decades is likely to be rapid in less urbanized and less developed countries, as the
relatively developed and larger countries in the continent are likely to limit migration in order to have more orderly urbanisation and well governed cities. Positive association between the pace of urbanisation and a few indicators of economic growth in recent years would make governments push reform measures in land, capital and labour markets, giving greater freedom to market-based actors. This would also manifest in policies and programmes adopted by the state and city governments to restrict the entry of poor and unskilled migrants from rural areas and outside the country, especially those coming with their dependents, strengthening the process of exclusionary urban growth.

References


World Bank (2015a): Leveraging Urbanization in South Asia: Managing Spatial Transformation for Prosperity and Livability. Peter Ellis and Mark Roberts


Table 1 – Average annual growth rate of urban population for world’s major regions and India, 1950-2050 based on WUP 2009 Revision

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Table 3 – Percentage of urban populations and urban–rural growth differential for world’s major regions and India, 1950-2050 based on WUP 2009 revision

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Note: The percentage of urban population is for initial year in each period.
### Table 4 – Percentage of urban populations and urban–rural growth differential for world’s major regions and India, 1950-2050 based on WUP 2018 Revision

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Urbanization and emerging infectious Diseases
(Addressing SGD 1, 3, 6, 9 and 11)

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Abstract

The world is becoming more urban and under the 4th industrial revolution more opportunities are provided for urbanization. The United Nations estimates that 3.9 billion people live in Urban centres. The increase in urban population in the next 20 years is expected to be mainly in Asia and Africa. Urbanization leads to many changes in global health and the epidemiology of infectious diseases.

Malaysia relies heavily on foreign labourers for their various industries. Over the last decade attention has once again been drawn to infectious diseases, with the emergence of new infections and the re-emergence of diseases previously well controlled in the Asian region. Migrant workers are deemed to play an increasingly prominent role in the socio-economic development of the Asia Pacific region. The migrant workers in Malaysia are from Indonesia, Bangladesh, Thailand, Philippines, Myanmar and smaller numbers from Vietnam, Cambodia, India, Sri Lanka, and a small minority from elsewhere, including countries in Africa. The estimated number of migrant workers in Peninsular Malaysia is around 2-3 million, of which nearly 2 million are documented with legal status; the actual status of the others is unknown.

A long term study on migrant health was carried out at UMMC (University of Malaya Medical Centre) in 2004 to evaluate the extent of infectious diseases among migrant workers in Malaysia. It was reported that the migrant workers carried Amoebiasis, Malaria, Echinococcosis, Scistosomiasis, Leishmaniasis, Filariasis, Trypanosomiasis, Tuberculosis, HIV, hepatitis and leprosy.

In Malaysia, the presence of migrant workers raises questions on their health care needs, and the impact on local morbidity patterns and emerging and re-emerging infectious diseases. Adequate city planning and surveillance can be powerful tools to improve the global health and decrease the burden of communicable diseases, at the same time ensuring Sustainable Development of Urbanization and health.

Keywords: Urbanization, migrant workers, urban infection, emerging infection
Introduction

“For the purpose of this presentation the author defines migrants as persons who make a conscious choice to leave their country to seek a better life elsewhere”.

The world is becoming more urban and under the 4th industrial revolution more opportunities are provided for urbanization. The United Nation estimates 3.9 billion people live in Urban centres. The increase in urban population in the next 20 years is expected to be mainly in Asia and Africa. Urbanization leads to many changes for global health and the epidemiology of infectious diseases.

Malaya as it was known under British rule got its independence in 1957. Along with Singapore, Sarawak and Sabah formed Malaysia in 1963. Continuous development and good economic factors brought about by growth in industries, increased the need for low skilled workers in various sectors. The building of sky scrapers and spaces for office and industrial activities required more and more foreign workers. The level of physical development in the last 20 years surpassed the level in the previous 50 years of development. Malaysia continued to import foreign workers in large numbers.

New World Bank data compiled through satellite imagery and geospatial mapping provides a new understanding of East Asia’s accelerating urbanization. The new analysis provides vital data at a time when much of the region’s infrastructure is being built as part of the physical and social transformation in East Asia.

According to the World Bank report (2015) titled East Asia’s Changing Urban Landscape: Measuring a Decade of Spatial Growth, Malaysia is among the more urbanized countries of East Asia, and its urban population continues to increase rapidly. However, urban areas in the country are among the least dense in East Asia. The Kuala Lumpur urban area is one of the largest in the region as measured by area, but not as measured by population.

The standard of living in Malaysia is one of the highest in Southeast Asia. The country is rich in natural resources such as palm oil, rubber, tin, petroleum, natural gas and timber. Malaysia is the largest producer of palm oil in the world and ranks third as producer of natural rubber. Petroleum is the country’s main foreign exchange earner, followed by timber. Malaysia has progressed into a nation that has diversified successfully to become one of the top exporters of manufactured goods such as Petroleum and timber products, processed palm oil products, electronics, apparel and textiles.

Malaysia’s buoyant economy has made it possible for the country to have a good infrastructure and communications system which are essential for industrialization. With privatization of large industries, foreign investment in manufacturing has increased tremendously during the last decades. Malaysia’s expanding industrial sector contributed to its 8% to 10% annual growth rate during the past decade. However, the country’s limited labour force about 10% was not adequate to meet the needs of the growing industries so that the Government of Malaysia had to allow employers to bring in foreign workers to work in the factories and in the agricultural, services, domestic and construction sectors.
The number of people moving from one country to another has increased in recent years, especially in South East Asia [1]; approximately 30% of the population in Singapore and 8% in Hong Kong were foreigners in 2014. In Malaysia, the number of foreigners increased from 1.4 million in 2000 to 2.3 million in 2010; the latter comprised 8.2% of the population in Malaysia. However, this number was probably an underestimation because there were a number of undocumented foreigners who might not have been included [2]. It was estimated that more than 90.0% of these foreigners were low to medium-skilled workers [3]. The remaining 10.0% were expatriates, foreign spouses, international students, foreign retirees who migrated to Malaysia via its international residency scheme (Malaysia My Second Home Programme), asylum seekers, and refugees that altogether constituted less than 300,000 people [2].

We will focus the 90% of the foreigners who are involved in various industries as labour workers. The health of these foreigners has generated much interest because of their diverse problems and health seeking behaviours. In general, foreigners are expected to be healthy when they enter another country due to self-selection process and pre-departure health screening; this is commonly described as the “healthy immigrant effect” [1]. However, their health could deteriorate over time, thereby necessitating the use of healthcare services. Previous studies have indicated that 46.0 to 57.0% of foreign workers experienced health problems while working or during their stay abroad [4]. Being mostly manual workers, they are at risk of occupational accidents and diseases. Furthermore, their poor living conditions and inadequate access to healthcare facilities compound the problem which could therefore pose a public healthcare issue [1].

Global status of health problems in Migrant Workers

Several current emerging threats and risks exposing public health vulnerabilities are linked to global processes, such as economics, trade, transportation, environment and climate change, and civil security [5]. Many of these processes are influenced or affected by the migration and mobility of human populations. International migration, which is a supporting component and a consequence of globalization, increasingly affects health in migrant source, transit, and recipient nations [5]. The flow of populations between locations with widely different health determinants and outcomes creates situations in which locally defined public health threats and risks assume international or global relevance. Global demographic predictions indicate that the forces promoting and supporting international migration will continue to do so, and may become stronger in all regions of the world as populations attempt to move up gradients of opportunity (such as economic, educational, security, health) [5].

Local status of health problems in Migrant Workers

Malaysia is an importer as well as an exporter of human resources, requiring largely low-skilled labor from other countries such as Indonesia, Myanmar and Bangladesh. Concern over the influx of migrants stems from competition with local communities for jobs, for low-cost or squatter housing and other amenities and improprieties in behavior arising from cultural differences [6]. In terms of health implications, migration is associated with changes in living conditions and socioeconomic status. Importer countries are concerned about diseases or carriers that migrants bring in whereas migrants are exposed to host-country diseases, acute or chronic, as well as problems in accessing health and social services [6].
mild disease for the local community may manifest itself with increased severity in migrants
who come from areas where the disease is not endemic and vice-versa. Furthermore, the
stress of relocation and adaptation may influence susceptibility to illnesses [6].

The influx of foreign immigrants has not only resulted in adverse socio-economic impacts
on Malaysia but has also affected national health and security. Data gathered by the Foreign
Workers’ Medical Examination Monitoring Agency (Fomema) revealed that three out of
100 foreign workers who underwent health screening suffered from dangerous diseases such
as Tuberculosis (TB), Hepatitis B and AIDS. There were still foreign workers who failed their
medical examination in Malaysia even after undergoing health screening in their country of
origin. Fomema statistics showed that only 1.2 million foreign workers in Malaysia undergo
medical examinations every year. The Malaysian Trades Union Congress (MTUC) reportedly
said there were nearly seven million foreign workers, including illegal immigrants, in the
country.

Emerging and re-emerging diseases: The migrant factor

There are over 2 million foreign workers employed legally in Malaysia; this figure may
be exceeded if we take into consideration the illegal immigrants. The presence of such a
large number of foreign workers is a major concern for Malaysia, especially with respect to
health care [6]. As the immigrant community is highly dynamic, emerging and re-emerging
infectious diseases are a great concern for Malaysia.

The most common infectious diseases reported among the migrant workers in Malaysia
are tuberculosis, leprosy, malaria, dengue and filariasis. In addition to this they also had a
range of gastro intestinal parasites. Most migrant workers are employed in construction,
agriculture, manufacturing and service industries.

To date, there were 8 cases of clinical Kalaazar reported amongst Bangladeshi workers. This
disease poses a problem both to general practitioners and pathologists in Malaysia as this
was not a disease normally seen in Malaysia

Global statistics show that 94% of new leprosy cases were reported from 13 countries
reporting more than 1000 new cases (Bangladesh, Brazil, Democratic Republic of Congo,
Ethiopia, India, Indonesia, Madagascar, Myanmar, Nepal, Nigeria, the Philippines, Sri Lanka
and the United Republic of Tanzania.). This important public health problem in South East
Asia accounted for more than 70% of all cases registered worldwide (WHO, 1996). About
30% of the cases reported annually in Malaysia involve migrant workers. In 2015, a total
of 308 cases of leprosy were reported. Most of the cases involve migrants from Indonesia
and the Philippines.

Ngeow, showed that the prevalence of syphilis as 2.6%. HIV infection was detected in 0.1-
0.2% and HBsAg positive rate of 3.8%. HEV which has an oral-fecal route of transmission
was seen in 14.4% of the migrant workers. While Pei, reported that in her study nine (2.8%) from 317 migrant workers were positive for Salmonella [12,13].

Cases of tuberculosis among foreign workers in Malaysia have been increasing in the last
five years. The number of foreign workers afflicted with tuberculosis (TB) spiked to more
than 1,360 cases in 2015; TB cases among foreign workers increased in the last five years,
with 17,981 cases recorded last year, compared with 9,255 in 2010. Moreover, 7,243 cases were recorded in 2011, 18,346 (2012) and 17,303 cases (2013). The statistics simultaneously proved the effectiveness of the mandatory medical testing system for foreign workers under Foreign Workers’ Medical Examination Monitoring Agency (Fomema). However, the effectiveness of the system would be meaningless if the infectious disease among foreign workers was not treated and they were sent home. Referring to the Foreign Workers Health Insurance Protection Scheme System, they said 359 foreign workers were treated for TB at hospitals from 2011 to April 2015.

The question that should be asked is: are undocumented migrants the sole cause of disease spread in Malaysia? Although it is true that health-screening measures are imposed by the government, it fails to take account of the difficulty undocumented migrants face in seeking medical treatment at public hospitals [7]. If foreign workers who have legal status here face such uncertainty in receiving adequate and proper medical treatment, accessibility to medical treatment for undocumented migrants in public hospitals is far more difficult [7].

A total of 22 filariasis cases were reported in 1998. In 2000, the number of cases noted decreased, in year 2015 the total number detected was 55 cases showing an increase in number of new cases. In 2012 out of 267 total cases, 155 cases (58%) were detected among the immigrants and 112 cases (42%) were detected among locals. In 2012, the predominant parasite species were *Wuchereria bancrofti* which contributes to 56%, followed by *Brugia malayi* (periodic) 35% and *Brugia malayi* (subperiodic) 9%.

Visceral leishmaniasis is considered an emerging disease of public health concern in Malaysia, especially with the influx of immigrant workers from endemic countries. This concern was strengthened by the existence of the vectors, which were found in abundance in the country. In 2016, a study was conducted with the aim to investigate the seroprevalence of leishmaniasis among the workers and the potential for transmission of the disease to local people in Malaysia. Results showed that 55.3% were seropositive, with the highest was among the Nepalese (68.6%), followed by Indians (62.2%), Bangladeshis (54.9%), Myanmar (44.4%), Vietnamese (25.8%), and Indonesian (25.6%) [9]. A total of 1,218 sand flies were caught and microscopically identified, and it was found that 981 were *Phlebotomus* spp. and 237 were *Sergentomyia* spp. None of the sand-flies were positive for *Leishmania* spp by both microscopic examination and PCR. It was concluded that the seroprevalence of leishmaniasis among the immigrant workers was relatively high, although it was negative for the vectors [9].

Other infections commonly found were Amoebiasis, Schistosomiasis, *Ascaris lumbricoides*, Echinococcosis, *Blastocystis hominis*, tape worm and *Enterobius vermicularis*. A recent study revealed the highest prevalence of *Enterobius vermicularis* 13.1%; followed by *Ascaris lumbricoides* 13.1%; Hook worm infection 10.5%; *Entamoeba histolytica* 20.32%; *Giardia lamblia* 9.5%; and Tape worm infection (*Hymenolepis nana*) 1.8% [11, 14].

The format for the screening of prospective workers initially carried out in the country of origin is shown below. On arrival in Malaysia the migrant workers are screened again within three months and the screening is repeated annually. These examinations are monitored by Fomema and doubtful cases are referred to tertiary hospitals.
Fig. 1 – Proposed scheme for foreign workers seeking employment

This was the original proposed scheme by Khairul Anuar and Nooriah MS [10].

This is the currently practiced scheme for screening of the migrant workers. FOMEMA (2019).
Discussion

There has been no or little documentation of the health status, healthcare, utilization patterns of migrant workers, implications of public health care services and costs as well as impact on disease patterns in Malaysia. Therefore, there is a need to assess the prevalence of infectious diseases in the immigrant population in Malaysia. The presence of migrant workers in Malaysia raises questions on their health care needs and the impact on local morbidity patterns. In Sabah, where the migrant population is sizable, 35% of cases in major outbreaks of cholera and the majority of deaths due to this illness have occurred among this group. Outbreaks of measles in Sabah also occurred in migrant settlements and among foreign workers, many of whom are migrants.

Little research so far has been undertaken to examine access to health services of foreigners in Malaysia. The dual healthcare system in Malaysia comprising the public and private sector provides a comprehensive range of services and access to healthcare [1]. The public healthcare system is heavily subsidized by the government and designed on the basis of providing affordable healthcare. Private healthcare on the other hand, operates on a fee-for-service basis and is limited to those who can afford it as it is relatively more costly compared to public healthcare services [1]. All foreign workers in Malaysia are required to subscribe to basic private health insurance scheme that covers hospitalization and surgical charges at public hospitals [1]. The 2012 statistics reported that 826,801 foreigners attended public healthcare facilities throughout the country; the numbers showed an increment of 16.5% from the previous year [1]. Of these, 420,722 were visits to public primary care clinics and they comprised 1.4% of total primary care attendances for 2012. Under the medical tourism programme in Malaysia, the number of medical tourists in 2015 was 900,00 and this figure is directed to private hospitals in Malaysia [1]. The number of foreigners who visited private clinics was unknown.

The frequency and range of health problems encountered by foreigners provides a description of healthcare services utilization and needs. Yet, little is known about the morbidity and utilization patterns by foreigners in primary care, and no detailed description is available for Malaysia. Such information would provide an insight into their needs and access to healthcare services hitherto not realized [1].

Recommendation for achieving sustainable development goals

As long as the current economic situation prevails, Malaysia will continue to attract migrant workers from this region. To ensure sustainable development the government of Malaysia has put in steps to overcome the emergence of infectious diseases in the country, especially those that may be brought in by the migrant workers. There have been some changes in format of handling patients in government hospitals and health centers. Most laboratories are now able to detect and diagnose emerging diseases. To help foreign workers, the charges for treatment and management have been reviewed allowing for migrant workers to seek medical treatment. In addition, a very competitive health insurance for migrant workers has been introduced. Research priorities focused on health issues pertaining to migrant workers are now being seriously considered.
Current policies for the recruitment of migrant workers includes a full medical examination in the country of origin of the workers and another medical examination within one month of their arrival into the country. The gate keeper Fomema is able to monitor the health examination of these foreign workers as evidenced by the scheme of medical examination. Some existing policies of the Ministry of health can be further refined for healthy migrant workers, such as:

1. Implementation of mass chemotherapy for the newly arrived workers as recommended by WHO [2001].
2. Educating the migrant workers on the importance of personal hygiene and proper sanitation.
3. Health awareness programmes by the MOH can be further enhanced by providing the migrant workers with health education materials in the relevant languages.

Finally, there is an urgent need for a establishing digitalized data base which will collate all medical reports on migrant workers in Malaysia which will assist the ministry of health in disease prevention and control; and provide a sustainable development of urbanization.

Acknowledgement

1. Ministry of Health Malaysia for the use of data on Infectious disease among foreign workers.
2. FOMEMA for the information made available on foreign workers.

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Urbanization policies in Sri Lanka: Are urban sectors ignoring health implications?\footnote{All authors are members of the Science Committee of Urban Health and Wellbeing: a Systems Approach Programme, International Science Council}

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Abstract

The paper explores the importance given to health in urban development programmes in Sri Lanka. In this study, only development programmes in Colombo by the state or under state direction were considered. The approaches of the Treasury, Urban Development Authority of the Ministry of Megapolis and Western Province Development (UDA), Port City Project, and Urban Settlement Development Authority of the Ministry of Housing and Construction (USDA were compared.

The Treasury’s Vision 2025 states: “The Government will encourage vertical housing projects to meet demand for urban low income and middle-class affordable housing”.

The UDA has identified 68,812 families living in 1,499 community clusters who lack a healthy environment and access to basic infrastructure. The UDA’s response is its Urban Regeneration Programme which aims to construct 70,000 housing units for relocation of underserved settlements. The health impacts are discussed in terms of access to healthcare services.

USDA has several Physical Development Projects which are high-rise apartments in the suburbs. Health is not explicitly mentioned in its documents.

In contrast, the Port City Project has captured the centrality of health in its mission and philosophy, which states “It will be a city that will promote a healthy and sustainable lifestyle to all inhabitants”.

The place given to urban health varies in the different agencies responsible for urban development in Colombo. The highest priority for health is given by The Port City, the most affluent project. The Treasury, UDA and USDA could give more recognition to health and social implications of vertical living and relocation during the planning process in view of the available research evidence that urbanization has serious health implications, including the increased prevalence of NCDs.
Introduction

Urban living has become the principal habitat for the human species and continues to grow in almost all countries. The underlying processes of urbanization and the resultant urban population vary across regions and countries due to differences in economic activity, culture, historical antecedents, geography and population densities.

Sri Lanka was considered one of the slowest urbanizing countries globally (1). In 2012 the census estimated a population of 20.359 million with 18.2% living in 64 municipal areas (including the 9 provincial capitals). However, studies using satellite imagery have found that urban sprawl and urbanization are indeed occurring at a very rapid pace and estimates of urban and peri-urban populations range from 35-45% or even 50% (2, 3).

The impact of urbanization and urban living on health and wellbeing are complex. As a result, each urban area or city has a unique, dynamic mix or pattern health outcomes, morbidities, and mortalities. Understanding the complex dynamic interactions between urban environment, urban living and these health parameters requires a systems approach (4). Under these circumstances, it is necessary to explore the importance given to health during the process of urbanization in Sri Lanka, by sectors other than health. Colombo was selected because it is the commercial capital and the largest city.

As an initial step we studied the commitment given to health and wellbeing in publicly available policy documents of government related institutions that are largely responsible for urbanization. The second part of the study will explore this further using questionnaires to assess awareness of health issues in the urban planning community, institutional arrangements, stakeholder engagement and multi-sectoral activities in relation to health. The crucial and important role played by the health sector is not discussed in this paper.

Methods

For the purposes of the paper, only those developments in Colombo, by the state or under state direction, were considered. Documents available in the official websites of UN Habitat, Treasury, Department of National Planning, Urban Development Authority of the Ministry of Megapolis and Western Province Development (UDA), Port City Project, Urban Settlement Development Authority of the Ministry of Housing and Construction (USDA), and published literature were selected. Their texts were perused to assess the importance given to health in the policy documents on urbanization.

Results

Key statements relating to health in these documents are given below. The Treasury’s Vision 2025 states (5):

*The Government will establish major economic development zones such as Ruhuna & Wayamba and mega projects of urban development. The Megapolis project and the Colombo International Financial Centre (CIFC) will take centre-stage.*

*The Government will improve access to pipe borne water supply facilities in underserved urban areas and rural and estate areas*
The Government will encourage vertical housing projects to meet demand for urban low income and middle-class affordable housing.

With growing industrial activities and urbanization, environment pollution in the country too is on the rise. Inadequate waste and water management systems, ineffective regulations, and the lack of strong monitoring mechanisms pose threats to sustainable development.

The Mission of the UDA’s Urban Regeneration Programme is “To eliminate slums, shanties and other dilapidated housing from the city of Colombo by relocating dwellers in modern houses to upgrade the living standards of the Citizens” (6). It has identified 68,812 families living in 1,499 community clusters that lack a healthy environment and access to basic infrastructure and aims to construct 60,000 housing units for relocation of underserved settlements for Colombo and its suburbs (6). This will also “free land for investment and high-rise buildings and bring in much needed revenue to the government” (7). The potential negative social (and economic) impacts are described in the documents and health impacts are discussed in terms of access to healthcare services.

The Western Region Megapolis Masterplan 2030 states that “The Social and low income community regeneration programmes are urgent; specially to release the economic corridors occupied by them (8). These housing complexes need to include the following functionalities.

• Community hall for functions and events
• One ward, OPD & clinics affiliated to nearest hospital
• Nearby school, pre-school and day care centers
• Shopping area for commodities
• Areas for leisure/ recreation/ play/ green garden

The Urban Settlement Development Authority (USDA) was formed in 2008 by the Parliament Act No. 36 of 2008. It functions under the Ministry of Housing & Construction and is responsible for formulating and ensuring implementation of national policy on urban settlement development and provision of improvements of the living conditions of persons in underserved settlements (9). The Vision of the Urban Settlement Development Authority (USDA) is “to ensure enhanced life style within sustainable urban human settlements”. Its Mission Statements describes the need to “Fulfill the aspirations of underserved, low income dwellers in urban areas by empowering them…. “ USDA has several Physical Development Projects that are high-rise apartments in the suburbs. USDA also has a “Diriya” Urban Housing Programme which converts the temporary and partially constructed housing stock in urban areas into the standard housing stock and several small-scale projects (e.g. rebuilding relocated houses affected by tsunami). They have a parallel human development project to empower the communities. Health is not explicitly mentioned in its documents.

In contrast, the Port City has captured the centrality of health in its mission and philosophy (10). The Mission states “To develop the most livable city in South Asia. Built on sustainable values, a healthy environment with future ready infrastructure to enhance living convenience” Its statement on Philosophy is clearer “It will be a city that will promote a healthy and sustainable lifestyle to all inhabitants, both human and animal. It will reduce greenhouse gas emissions and pollutants by pedestrian and cycling transport planning”. 
We are not aware of any of the above organizations (i.e. UDA, Port City Project, USDA) having specific allocations for health, or institutional arrangements to obtain the views of health experts. Stakeholder engagements are part of the process adopted by the UDA in its relocation process.

Discussion

Rapid urbanization is a reality in Sri Lanka. The process needs to be guided to maximize health and minimize unintended consequences. In such an endeavor, it is important to recognize the centrality of health and well-being. The place given for urban health shows an evolution of emphasis in the different agencies responsible for urbanization in Colombo. The highest priority for health is given by The Port City, the most recent and affluent project.

The UDA, Port City Project and USDA could give more recognition to health by strengthening formal interactions with the health sector. They need to carefully review the health and social implications of vertical living and relocation, during the planning process. This is justified by the presence of research evidence that urbanization has serious health implications. Vertical living of poorer communities could lead to higher rates of crime, alienation and social exclusion and these are associated with poorer health outcomes. The prevalence of asthma, coronary artery disease and neuro-psychiatric disorders are well known to by higher in urban especially in those living in inner cities (11,12,13). In contrast to these adverse consequences there is mounting evidence of how urban environment can improve health outcomes. Examples include urban design to promote walking and cycling, green spaces to reduce cardiovascular diseases and depression, and recycling of waste to minimize environmental impacts (14, 15, 16).

A complex systems approach will help to understand how the processes during urbanization could be used to promote health and wellbeing and avoid the emergence of unintended adverse health and social consequences (17).

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Visit to the Colombo Port City Project site
**ORGANISERS:**

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Accident & Emergency Unit in the Batticaloa Teaching Hospital Complex, Batticaloa, Sri Lanka

The building was designed with a host of green features that reduce both energy and water consumption. The orientation of the main part of the building avoids direct solar penetration into the building which reduces heat build-up. Overall energy consumption was reduced by over 41% when compared to a baseline through a combination of high efficiency HVAC equipment, LED lighting, and solar hot water. In terms of water savings, the building has a rainwater harvesting capacity of 50,000 litres. Together with water efficient fixtures, this collection is sufficient to meet almost all the building’s requirements for toilet and urinal flushing, as well as for watering landscaped areas. The building was awarded the Sri Lanka Green Building Council’s GreenSL Gold level certification in recognition of it being a very good example of sustainable construction.