Sustainable City Development is Possible?
A Review of Challenges and Key Practices towards Urban Development in Developing Countries

RJM Uduporuwa

Department of Geography and Environmental Management
Sabaragamuwa University of Sri Lanka

Abstract- Presently, half of the world population live in cities and the world is rapidly urbanizing keeping the cities as the major living space of the people. It has been projected that by the year 2030 urban population in the world will increase up to 60 percent. This rapid increase in urban population will make a huge demand for their socio-economic needs and will exert much pressure on natural resources. Therefore, understanding the issues which can arise in immediate future today's world is working toward the sustainable development, conceptually which is meeting of present as well as future needs of humanity without damaging the natural environment. In this context, how cities can be managed to contribute to this overall achievement as they are engines of economic growth and development and major contributors to numerous environmental problems on the other, should be largely discussed. In this context, this article discusses challenges and key sustainable practices to be considered in building of sustainable cities especially in developing regions based on the secondary sources issued by international organizations such as United Nations, World Health Organization, World Bank and research done by scholars.
According to the current trend and projections, much of urban growth in future will happen in developing countries especially in Africa and Asia, bringing huge social, economic and environmental transformations and face numerous socio-economic, environmental and institutional challenges on the way to the sustainable cities. Uncontrollable rural-urban migration, absence of efficient and environmentally-friendly transportation, waste and water management systems, negative impacts of climate change, weak institutional set up and deficiency of finance for investment can be identified as major challenges faced by developing countries. Promoting rural development, shifting to renewable energy sources for both transportation and buildings, introducing effective waste and water management systems, strengthening institutional set up, educating and making aware of general public for behavioral and attitudinal change, improving financial capacities for investments are some of possible practices to be concerned in achieving sustainable cities.

Index Terms- Sustainability, Urban Development, Challenges, Practices

1. INTRODUCTION

Sustainable development is defined as a long-term solution of meeting needs of the present without compromising the capacity of future generations, guaranteeing the balance between economic growth, care for the natural environment and social well-being. Debate on sustainable development came to appear in 1987 with the report of the Brundtland Commission which tried to find possible solutions to the problems caused by negative environmental consequences of population increase, economic growth and industrialization. Today, the world is facing many of socio-economic and environmental challenges which can be resolved by achieving sustainable development assuring social progress, environmental balance and economic growth. United Nations (UN) in 2015 has published a new road map called '2030 Agenda' to make a sustainable world by the year 2030 (Figure 1). This Agenda contains 17 Sustainable Development Goals to call actions to ensure the global well-being of the people protecting the earth.

Achieving sustainable cities is one of the goals of 2030 Agenda of UN which focus on making cities inclusive, safe, resilient, and sustainable for all. Cities will play a central role in the ability of nations to achieve sustainable development. Today, cities and towns have become the primary human living space. Since 2007, more than half of the world's population has been living in urban areas and this figure is estimated to exceed 68 percent by the year 2050. Although, cities are the power houses of economic growth and development contributing about 60 percent of global Gross Domestic Product in other way, they have created a numerous of complex social and economic impacts with often severe environmental consequences including the greatest contribution to atmospheric, water and ground pollution due to large concentrations of people and activities. This is exacerbated in the South by rapid and continuing urbanization. Sustainable cities are the cities designed with consideration for social, economic, environmental impacts, and resilient habitats for existing populations, without compromising the ability of future generations to experience the same. These cities are inhabited by people whom are dedicated towards minimization of required inputs of energy, water, food and output of wastes, heat, air pollution and water pollution. Achieving sustainable cities is one of the most important and difficult tasks for the coming decades since

present cities are facing numerous challenges associated with rapid increase of population, negative impacts of globalization and economic restructuring. In this respect, this article attempts to discuss the future trends in urban growth, challenges for sustainable city development and applicable strategies in achieving sustainable urban development.

Figure 1: Millennium Development Goals by United Nations by 2030
Source: https://unhabitat.lk

II. Urbanizing the Developing Regions

Today, the world is undergoing the largest wave of urban growth in the history. As revealed by United Nations, Department of Economic and Social Affairs (UN DESA, 2019), today half of the people which is 55 percent of the world's population is residing in cities. In 1950, 30 per cent of the world's population was urban, and by the year 2050, 68 percent of the world's population is projected to be urban. The urbanization process is expected to continue for next decades and an-ever-increasing majority of humankind will likely be living in urban areas. Much of this urbanization will take place in developing countries especially in Africa and Asia, bringing huge social, economic and environmental transformations. Urbanization has the potential to create a new era of well-being, resource efficiency and economic growth. But cities are also home to many socio-economic and environmental issues and how the world meets the challenge of sustainable development will be intimately tied to this process. Rapid growth of cities will be a major challenge to archive sustainable development in 2030 if the cities are not properly planned and managed. Attempting to discuss the world urbanization prospects and challenges will be important to identify key urbanization trends and issues and develop and promote approaches that can draw on the potential benefits of urbanization while avoiding its destructive tendencies.

In 1800, only 3 percent of the world's population lived in cities, but this figure rose to 47 percent by the end of the twentieth century (Seto, Solecki and Corrie, 2016). The world's population has gone through a process of rapid urbanization since 1950. According to the data published by (UN DESA, 2014) in 1950, more than two-thirds (70 per cent) of people worldwide lived in rural settlements. In 2007, for the first time in history, the global urban population exceeded the global rural population, and since then the number of the world's city dwellers has continued to grow faster than the rural population (Figure 2). In 2030, the share of the world's population living in urban areas is expected to reach 60 percent (Figure 3) and it has been projected that by the year 2050, the world will be more than two-thirds urban (68 percent). Over the coming decades, the level of urbanization is expected to increase in all regions, but with considerable variations (UN DESA, 2019).
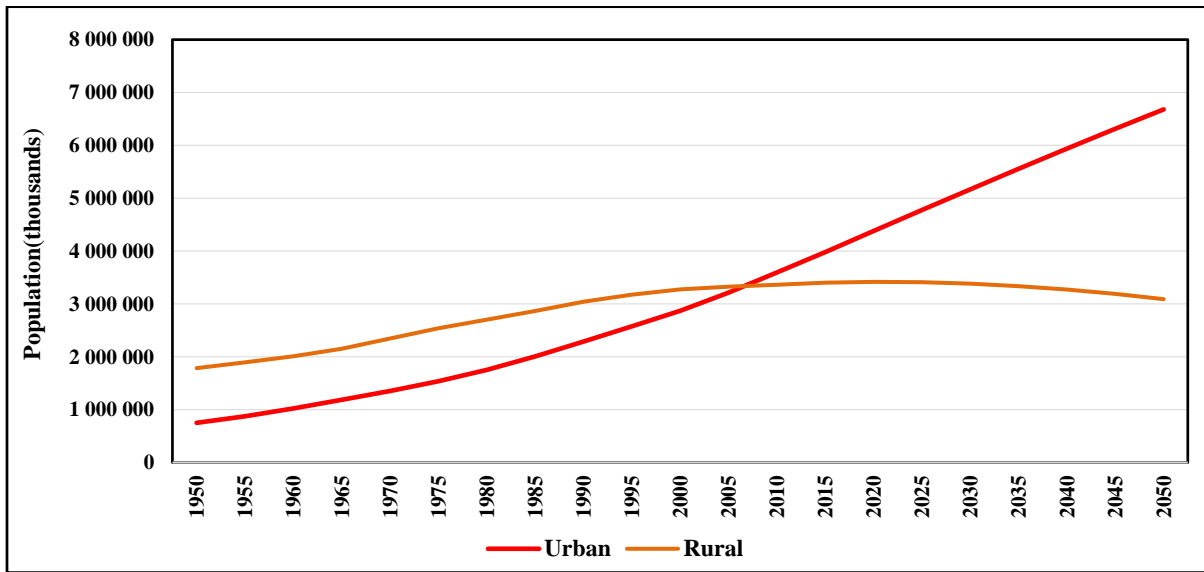
Figure 2: Rural and Urban Population in the World from 1950 to 2050
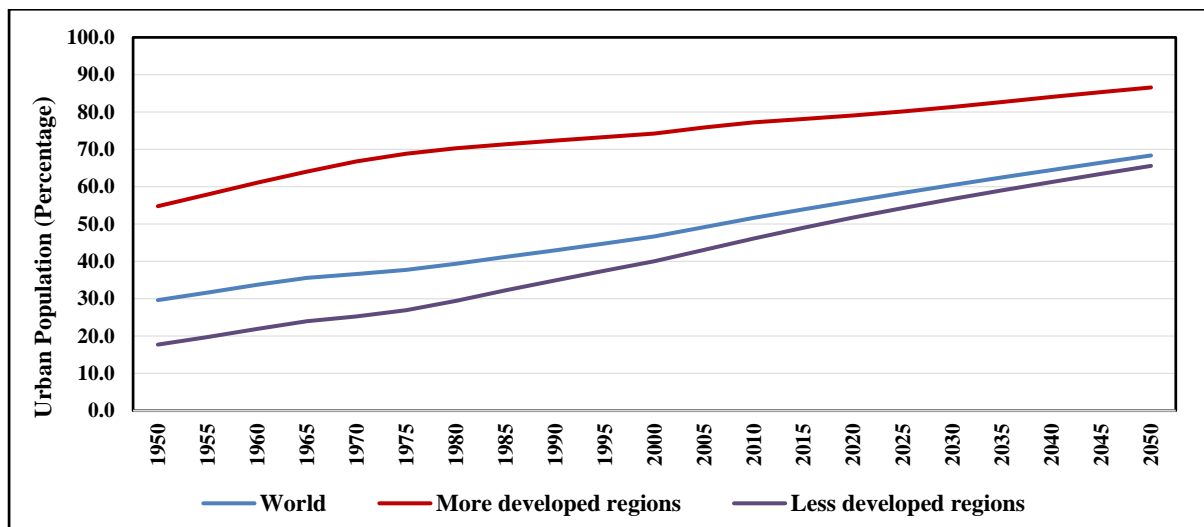Source: UN DESA, 2019

Figure 3: Urban Population in the World from 1950-2015
Source: UN DESA, 2019

Growth of urban population is driven by an overall population increase and by the upward shift in the percentage of population living in urban areas. Together, these two factors are projected to add 2.5 billion to the world's urban population by the year 2050, with almost 90 percent of this growth happening in Asian and African countries. According to the Figure 4, today the most urbanized regions worldwide are North America (82.6 percent), Latin America and the Caribbean (81.2 percent), Europe (74.9 percent) and Oceania (78.3 percent) (UN DESA, 2014). In contrast, African and Asian regions remain mostly rural, with 43.5 percent and 51.5 percent of their respective population living in urban areas. But over the next few decades, urbanization will continue, particularly in Asia and Africa with population growth rates of 3-5 percent per year. The UN Predicts that, by 2050, 65 percent of population in developing countries and nearly 90 percent of population in developed countries will live in urban areas. It also appears that most of the world population growth will be absorbed by cities of the south over the next fifty years (Khan, 2008). Asian cities will play a major role in this 'urban transition' (Roberts and Kanaley, 2007).
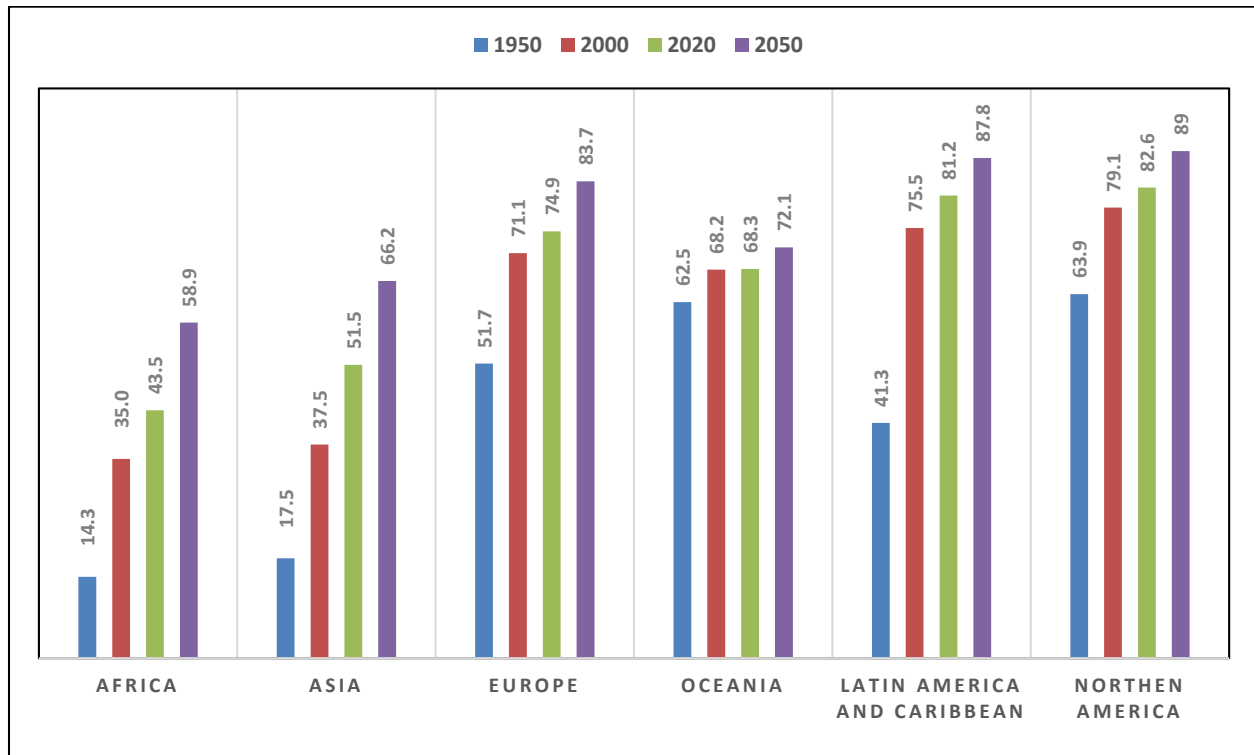
Figure 4: Urban Population in Different Regions from 1950-2050
Source: UN DESA, 2018

Just three countries-India, China and Nigeria with their high population growth rates are expected to account for 35 percent of the growth in the world's urban population between 2018 and 2050. India is projected to add 416 million urban dwellers, China 255 million and Nigeria 189 million. Close to half of the world's urban dwellers reside in settlements with fewer than 500,000 inhabitants, while around one in eight live in 33 megacities with more than 10 million inhabitants. Moreover, the rapid rates of urbanization have led to the growth of megacities of over 10 million in developing countries. In 1975, there were three megacities in the world: Tokyo, New York and Mexico City. In 2005, there were 20 such cities, 16 of which were located in the developing world. By the year 2030, the world is projected to have 43 megacities, most of them in developing regions (UN DESA, 2005). Tokyo is the world's largest city with an agglomeration of 37 million inhabitants, followed by Delhi with 29 million, Shanghai with 26 million, and Mexico City and Sao Paulo, each with around 22 million inhabitants. Cairo, Mumbai, Beijing and Dhaka all have close to 20 million inhabitants. All these situations signal the cities their challenges coming in near future in relation to improving of human well-being.

III. CITIES AS ENGINES OF GROWTH AND DEVELOPMENT

Towns and cities are formed and become larger through time as more people begin living and working in towns and cities. Today, they have become most powerful, irreversible and essential parts of most nations' development because they act as engines of economic growth and modernization of a country. Cities have powered the world economy for centuries. Today cities contribute up to 55 percent of Gross National Product in low-income countries, 73 percent in middle-income countries and 85 percent in high-income countries (Pisano et al, 2014). In some cases, the contribution of a single megacity, for example, Sao Paulo or Bangkok, can be as high as 40 percent of the Gross National Product while comprising only 10 percent of the population of their respective countries (Keivani, 2010). Cities are more productive than rural areas due to the economies of agglomeration effect. They are equipped with infrastructure, services, communications and skilled labor and can achieve economies of scale, agglomeration and urbanization. Agglomeration economies have positive benefits of economic activities when firms are located in close proximity with those engaged in similar businesses. Cities generate positive externalities of agglomeration, scale, diversity and specialization. Cities serve as market centers in providing wide variety of consumer goods, and commercial and personal services through small-scale enterprises and through the informal sector activities. They are the centers of distribution, transfer, storage, brokerage, credit and financial services. They provide convenient locations for decentralizing public services creating greater access for both urban and rural residents to public services and facilities. They act as local or regional centers for the provision of variety of services and facilities such as health, education, welfare, recreation etc. Cities help rural producers in many ways. They act as market centers for rural produce. Many cities act as agro-processing and agricultural supply centres for their regions and their hinterlands. Cities are magnets for non-farm employment and supplementary income opportunities for rural people through remittances of migrants. At the same time, they serve as centres of transportation and

commercialization, linking their residents and those of rural villages and towns in their hinterlands to larger cities and other regions in the country. Regional cities can absorb the rural migrants that might otherwise more directly to the largest city or national capital. Cities provide more opportunities for learning and sharing. They are the centers of knowledge, innovation and specialization of production and services. High concentration of people in cities generates more opportunities for interaction and communication, promotes creative thinking, creates knowledge spillovers and develops new ideas and technologies. They accommodate social heterogeneity and encourage the integration of people from diverse social, ethnic, and religious groups, provide organizations that help to socialize and assimilate rural people into city life, and infuse new attitudes, behavior and life-styles that are more conducive to urban living; and give new opportunities for social and economic mobility. The other side of the significance of cities is that cities are better poverty fighters than their rural counterparts. Economic growth is highly correlated with poverty reduction, the high growth of cities bodes well for poverty reduction. All these potentials and opportunities make cities more attractive to the people and to become homes to billions of people.

IV. SUSTAINABLE CITIES: CONCEPTUAL MEANING

The concept of sustainable cities and its link with sustainable development have been discussed since the early 1980s. It has been suggested that the building of a "green" city is equivalent to the building of sustainability (Beatley, 2012). Many countries are planning and engaged in building 'green cities' and 'eco-cities' as a starting point for building of sustainable cities. However. It is important to understand cities' sustainability as a broader concept which integrates social development, economic development, environmental management and urban governances which are as municipal authorities responsible for the management and investment decisions in coordination with national authorities and institutions.

Report published by the Brundtland Commission (World Commission on Environment and Development) in 1987 has defined sustainable development as development that meets the needs of the present, without compromising the ability of future generations to meet their own needs (https://en.wikipedia.org/wiki/Brundtland Commission). In 2000, Sustainable Cities Programme of the United Nations Centre for Human Settlements (UNCHS) and United Nations Environment Programme (UNEP) has attempted to define a sustainable city as one "where achievements in social, economic and physical development are made to last" (UNCHS and UNEP, 2000). According to Rees (1992) sustainable city must have a low ecological footprint and reduce risk transfer (economic, social and environmental) to other locations and into the future. As Satterthwaite in 1992 pointed out sustainable cities should meet their inhabitants' development needs without imposing unsustainable demands on local or global natural resources and systems. Presently, consumption patterns of urban middle-and high-income groups are responsible for the use of a significant portion of the world's finite resources and contribute significantly to the production of polluting wastes. Sustainable development should focus on better living and working conditions for the poor, including affordable access to, and improvement of, housing, health care, water and sanitation, and electricity. In 1992 Rio de Janiero Conference on Environment and Development (Earth Summit) integrated the economic, social, environmental and governability dimensions of sustainability and argued for the eradication of unsustainable patterns of production and consumption, the eradication of poverty, and the role of the State, civil society and international community in protecting the environment (UN, 1993). The Habitat Agenda of the United Nations Conference on Human Settlements (Habitat II), held in Istanbul 1996, has discussed urban sustainability as requiring a harmonious integration of economic, social and environmental issues (UN, 1997). At this summit climate change as one of the main threats to building sustainable cities and to development has been included. At the first session of the World Urban Forum convened at the headquarters of the United Nations Human Settlements Programme (UN-HABITAT) in Nairobi 2002, an in-depth discussion has been held on urbanization in the context of sustainable development and affirmed that addressing economic, social, environmental and governance issues was integral to the creation of sustainable cities, and that the inability to address those issues would prevent the achievement of sustainable development (UN DESA, 2013).

As discussed above, according to the present trends of urbanization all most all the counties are becoming increasingly urbanized demanding more sustainable ways of living and urban governances should involve the fostering of urban planning and environmental management which includes the reduction of ecological footprints, and the decentralization of decision-making, and resource allocation, as well as enhanced policy coordination between local and national authorities. In this context, achieving the sustainability of cities can be conceived as entailing the integration of four pillars: social development, economic development, environmental management, and urban governance. Figure 4 presents the four pillars for achieving urban sustainability encompassing the balanced accomplishment of social and economic development, environmental management and effective governances. For achieving the sustainable cities these four pillars should be integrated by solving problems related to each pillar and needed to be maintained.
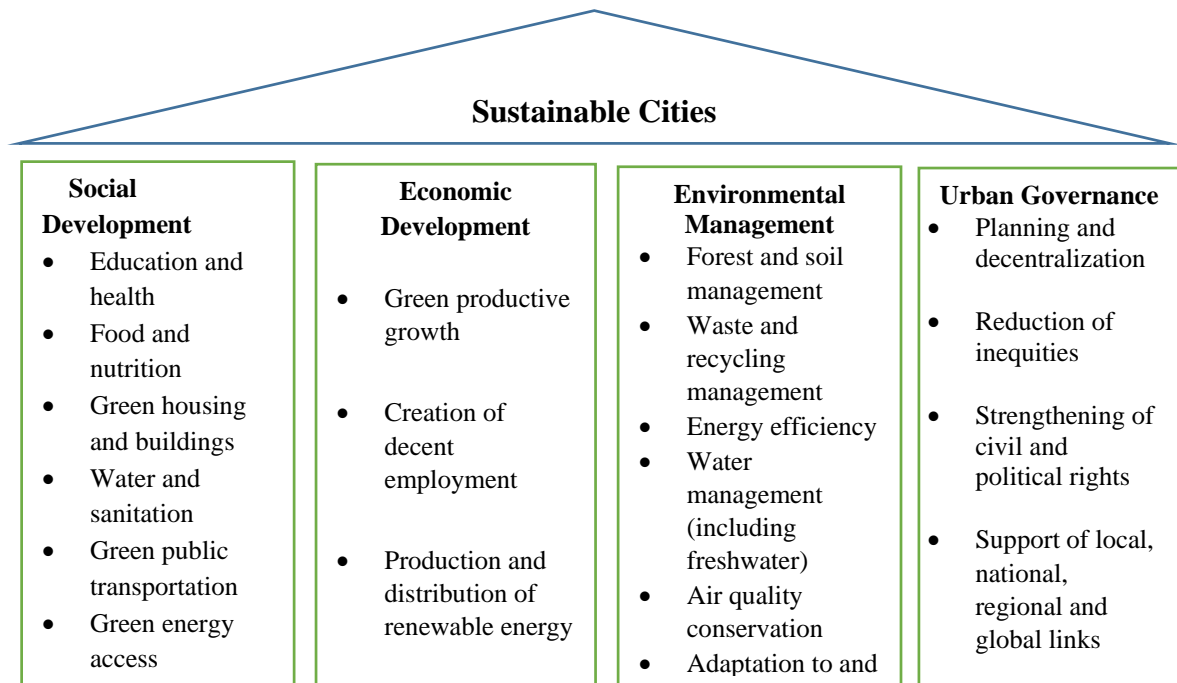
Sustainable Cities

Social Development	Economic Development	Environmental Management	Urban Governance
• Education and health • Food and nutrition • Green housing and buildings • Water and sanitation • Green public transportation • Green energy access	• Green productive growth • Creation of decent employment • Production and distribution of renewable energy	• Forest and soil management • Waste and recycling management • Energy efficiency • Water management (including freshwater) • Air quality conservation • Adaptation to and	• Planning and decentralization • Reduction of inequities • Strengthening of civil and political rights • Support of local, national, regional and global links

Figure 4: Pillars of Achieving Sustainability of Cities
Source: UN/DESA, 2013

V. KEY CHALLENGES ON THE PATH

It is witnessed that today, rapid as well as haphazard growth of cities has become a threatening factor to the world' sustainable prosperous future. There is no doubt that cities have become the world's major growth engines with their numerous potentials for socio-economic development but uncontrolled increase in urban population undeniably brings tremendous challenges in achieving sustainable development.

With the concern of magnitude of present and future growth of city population, one of the major challenges faced by most of the cities today as well as in future is uncontrollable rural-urban migration. This is a prominent problem in developing countries where higher percentage of population live in rural areas. In these countries rapidly increasing share of the population migrates to cities in searching for employment opportunities in industrial enterprises and the service sector. Although, these countries in the past, have implemented some national rural development schemes such as providing urban amenities to rural areas and improvements in infrastructure and development in villages, researches shows that rural-urban migration is unlikely to reduce through such activities and ironically may even increase because of recent trend in enabling higher mobility of rural households. In most of developing countries rural people are suffering from various problems especially insufficient income due to low productivity of crops, land fragmentation, unemployment and under employment and ultimately social and economic deprivation and these factors lastly become push factors to them to migrate to cities. In this connection, the unavoidable result is the rapid growth of low-income housing termed as urban 'slums' and 'squatter settlements. Close to 1 billion people, or 32 percent of the world's current urban population, live in slums in inequitable and life-threatening conditions, and are directly affected by both environmental disasters and social crises (UN Habitat, 2003). A slum household is defined as a group of individuals living under the same roof lacking access to improved water, access to improved sanitation, sufficient living area, and durability of housing. Many people move to cities primarily because cities promise more jobs, better schools for poor's children, and diverse income opportunities than subsistence farming in rural areas (Baker, 2008). For example, in 1995, 95.8 percent of migrants to Surabaya, Indonesia reported that jobs were their primary motivation for moving to the city (Prinjono, and Hasmi, 2005). However, some rural migrants may not find jobs immediately because of their lack of skills and the increasingly competitive job markets, which leads to their financial shortage. Heavy migration from rural areas definitely contribute to the problem of overcrowding of cities which is too many people occupying little space in many cities in developing countries. Today, most of the cities in all over the world are suffering from the problem of overcrowding and create huge problems such as congestion, unemployment, land, air and water pollution with rubbish, sewage and carbon and social crimes.

The main problem faced by governments of these countries due to this intense rural-urban migration is provision of adequate, affordable and quality basic services such as education, health, sanitation, and affordable housing for the continuously increasing population. The decent affordable housing is fundamental to the health and well-being of the people and the poorest city dwellers all over the world are struggling to meet affordable housing. Currently some 330 million urban households cannot access affordable and secure

accommodation. This has been forecasted to grow by more than 1.6 billion people by 2025 (Mckinsey Global Institute, 2014). Urban poor are extremely exposed to may disasters and health risk residing in environmentally sensitive areas where flooding and sometimes landslides are prominent are highly affected by natural disasters. They are under the significant health risk such as spread of diseases. With all these vulnerabilities in life their standard of living is very low and improving their living status is really a big challenge for developing nations.

Although, high performing, cost-effective, resource-efferent and environmentally-friendly urban infrastructure is central to sustainable cities providing such a quality infrastructure also a challenging task today for many countries in the light of stress caused by massive expansion of population in cities. Urban infrastructure refers to the engineered system of water, energy, transport, sanitation and communication that make up a city. Cities must build, maintain and upgrade extensive transport, power, water and telecommunication networks, in order to continue with the demands of economic development and population growth without damaging the natural environment. Infrastructure is essential to continue to progress of societies and improve living standards. Transport networks remain as the heart of cites and if they are insufficient, inefficient and not environmentally friendly to meet demand, urban economies, societies as well as environment can be severely impacted. The current transport systems in developing countries are contributors of major-energy consumption and burn fossil fuels, high noisy and high emission of greenhouse gasses which invite a wide range of problems including global warming, environmental degradation, and physical and mental health implications. The growth of greenhouse gas emissions from transport is expected to continue throughout the world. In 2050, as much as 30-50 percent of total CO_2 emissions are projected to come from the transport sector compared with today's 20-25 percent (Alcamo at el, 2000). Within the transport sector, road transport is the largest contributors to global warming.

Heavy traffic congestion in public roads is a main problem created by insufficient transport networks in many developing countries resulting in massive delays, increased fuel wastage and monetary losses. Commuters stuck in traffic can be loss of a number of working hours, reduce output and negative health outputs. For examples, presently cost of traffic jams in Manilla per year in terms of lost potential income has been estimated at $2.4 billion and this could be rise up to $142 a day by the year 2030. Cost of traffic jams in Sao Paulo has been estimated as $17.8 billion a year in lost productivity, wasted fuel and adverse earth from vehicle emissions. To overcome all these negative impacts long-term planning and investment is essential for avoiding the negative economic and environmental consequences of insufficient and inefficient infrastructure.

Creating a sustainable waste management system also has become one of the challenges for the cities especially in developing countries. Waste management is the practice of collecting, transporting, processing or disposing of managing and monitoring various waste materials. In developing countries with the rapid increase of population waste generation is increasing day by day, but appropriate treatment and disposal techniques are rare. With rapid population growth and urbanization, annual waste generation is expected to increase by 70 percent which is 3.40 billion tons from 2016 to 2050 (The World Bank, 2019). Compared to those in developed nations, residents in developing countries, especially the urban poor are more severely impacted by unsustainably managed waste. In low-income countries, over 90 percent of waste is often disposed in unregulated dumps or openly burned. Absence of proper practices in waste sector create problems related to cleanliness and environmental sustainability including rising greenhouse gas emissions, insanitary public spaces, smelly garbage, growing energy demand and low recycling rates. Poorly managed waste serves as breeding ground for disease vectors, contributes to global climate change through methane generation. Managing waste proper is essential for building sustainable and livable cities, but it remains as a big challenge for many developing countries and cities.

One of the other most significant environmental challenge at present cities are facing is the negative impacts of climate change. Today, climate change poses serious threats to urban infrastructure, quality of life, and entire urban systems. Not only poor countries, but also rich ones will increasingly be affected by anomalous climate events and trends (World Bank, 2010). Rising global temperatures causes sea level to rise, increase the number of extreme weather events such as floods, drought and storms and increases the spread of tropical diseases. Vehicle emissions in cities contribute significantly to greenhouse gas emissions and hence global warming. All these events have costly impacts on cities, basic services, infrastructure, housing human livelihoods and health. According to the UN Environment's 2019 Global Environment Outlook report, the cities in USA which will be mostly impacted by climate change in coming decades tend to be coastal-and heavily populated.

Traditionally, most of the cities were located near rivers and oceans for transportation and connectivity purposes. This natural geographic advantage is now increasing vulnerability of cities as sea levels rise and wind storms increase in severity and frequency. In Europe, 70 percent of the largest cities have areas that are particularly vulnerable to rising sea levels, and most of these cities less than 10 meters above sea level. Port cities in developing countries such as Kolkata, Shanghai are as vulnerable as such cities in developed countries such as Rotterdam, Tokyo, or New York City. China alone has more than 78 million people living in vulnerable low elevation cities and this number is increasing annually at 3 percent (McGranahan and Anderson, 2007). In 2003, more than 70,000 people died in Europe from a severe heat wave (World Bank 2009, Dhainut et al. 2004). Especially, the poor city dwellers are vulnerable to climate change. Poor city residents tend to locate in the most vulnerable locations and housing construction materials are not robust. The consequences of surging seas, wind storms, and flooding are much more dramatic in these areas. In other way, cites are a key contributor to climate change as urban activities are major sources of greenhouse emissions. Estimates suggest that cities are responsible for 75 percent of

global CO$_2$ emission with transport and building being among the largest contributor. In addition to the transport, the energy usage for the purpose of public lighting and industrial, commercial and building consumption is another main source of emissions. Industrial sector is responsible for 43 per cent of the global carbon.

Maintaining air quality also is a challenging task for cities today. Air pollution is one of the biggest threats in cities today which adversely affect the health of the city residents and city environment. According to World Health Organization (WHO) most recent survey of more than 4300 cities in the world says that only 20 percent of the urban population comply with WHO air quality guideline level for MP2.5. Average air quality level in many developing cities is PM4 to PM 15 which is greater than WHO guideline putting many at risk of long-terms health problems (WHO, 2019). Air pollution is a silent killer which causes asthma and chronic respiratory illness and other kind of breathing problems and reduce lung function. Air pollution in cities in low and middle income countries has become worsen over the last several years. Many factors contribute to this trend including mainly industrial emissions, increased urban power demand which drives up power emissions and increasing use of private motor vehicle transport. In these countries burning of solid waste and agricultural waste in peri-urban areas and use of solid fuels such as coal biomass for cooking and heating also are serious air pollution issues. 25 percent of households in less-developed cities are dependent on solid fuels for cooking. These households suffer from a double air pollution burden - polluted air outsides as well as polluted air inside the homes (WHO, 2019).

The role played by the national and municipalities is crucial in making cities sustainable. All transformations toward sustainability is linked with a strong and efficient institutional arrangement and investments. A strong and efficient institutional set up and investments are essential for a country to work toward sustainability. Policy formulations, effective decision-making and project implementations as well as socially, economically and environmentally viable urban planning toward sustainable cities should be done through a strong link between public and private sector institutions. Compared to developed nations, severe institutional weaknesses and lack of materials and financial resources have become greatest challenges in working toward the sustainable cities in many developing countries. Absence of strategic economic vision, the lack of coordination among various levels of government compartmentalized sector and impacts of political instability in developing countries lead to both ineffective and inefficient policy interventions and wastage of resources.

The other related concern is the lack of national and Municipal finance. This is highly important not only to the municipal investments for capital projects to support economic activities but also the provision of essential city services such as green space, garbage collection, recycling, street lighting, and offering social support activities such as community development activities and raising municipal revenues. Financial support from national Governments and donor agencies is often minimal, and provided, typically, only for the initial construction of infrastructure and not for ongoing operations. In general, cities rely mainly on fees, tariffs and property taxes. However, property valuations can be out of date or incomplete, while capacities to collect taxes remain weak. Many national governments and municipalities in developing countries are suffering from this issue and if this is not addressed through creation of a sustainable policy framework for enhancing financial capacity, sustainable cities may be a dream for developing counties.

VI. THE WAY FORWARD FOR SUSTAINABLE CITIES: SOME PRACTICES NEEDED

With all above challenges building of sustainable cities is a daunting task, but not an impossible one. For this purpose, a holistic urban development approach which is able to address all the areas of social, economic, environmental and institutional is needed. It requires a comprehensive and coordinated change in behavior, and government at all levels to cooperate, invest, share ideas, replicate best practices, and plan for the long term. Therefore, looking at what kind of sustainable practices needed to make cites inclusive, safe, resilient, and sustainable is uttermost important. By getting right urban development with sustainable practices cities can create jobs and offer better livelihoods, increase economic growth, improve social inclusion, promote the living standard, protect local and regional environment and reduce both urban and rural poverty.

(a) Promoting rural development
Rural development of a country is an essential part of building of sustainable cities. Even though rural and urban areas are considered as detached entities, they are mutually dependent in their development. These two areas are absolutely connected each other in terms of complex linkages such as physical, social, economic, infrastructural, demographical technical, attitudinal and environmental and the intensity of these linkages vary region to region depending on different factors or situations in each region. As studies from the different part of the world have shown rural-urban linkages have been strongly established in developed countries with high rate of urbanization than developing countries where rural-urban linkages are mostly weak with slow and low rate of urbanization. These links between rural areas and cities should be properly understood and should be strengthened because they can facilitate sustainable development in both urban and rural areas by delivering services and infrastructure improvements and expanding opportunities for off-farm employment to rural dwellers. Investments to develop physical, economic and social infrastructure in rural areas will strengthen all kind of linkages between these two areas and can be a catalyst for reducing the problem of intense rural-urban migration.

(b) Shifting to environmentally-friendly and affordable public transport
Shifting from traditional, expensive and inefficient transport system to rapid, reliable, accessible, affordable and eco-friendly public transportation is an essential requirement for sustainable cities. Promoting efficient-less energy consuming public transport networks that prioritize rapid bus transit or light rails over private vehicles can reduce the long-term impacts of both air pollution and climate emissions which are generated by private transport and improve health equity by providing better mobility. Today the concept of 'car free cities' or a 'city with large pedestrian areas' is often part of the design of sustainable city development in most of European countries. A large part of the carbon footprint of a city is generated by cars so the car free concept is often considered an integral part of the design of a sustainable city. Simultaneously, use of diverse fuel-efficient transportation vehicles in order to reduce greenhouse emissions and diversity fuel demand is also important. Due to the increasingly expensive and unstable cost of energy, this strategy has become very important because it allows a way for city residents to be less susceptible to varying highs and lows in various energy prices.

Walking paths and cycling infrastructure which are already used by most of European countries also are very important for internal circulation in cities because they are comparatively easy and inexpensive. This non-motorized travel systems can support healthy physical activities and further reduce air pollution and climate emissions with zero-emissions transport modes, as urban population become more mobile. Compact cities served by transit and dedicated walking and cycling networks are more energy-efficient and safer for pedestrians and cyclists.

(c) Shifting to renewable energy sources for transportation and buildings
Buildings and transport sector are major high energy consumers in cities and fossil fuels are the main energy sources of most of the cities in developing countries which bring many environmental issues, climate change and global warming. Therefore, replacing of fossil fuels with alternative energy sources especially renewable energy which do not produce harmful impacts is essential cities to be sustainable. Renewable energy is the energy produced by natural resources such as sun light, wind, rain, waves, tides, geothermal and bio mass heat that are naturally replenished within a time span of a few years. The most important feature of renewable energy is that it can be harnessed without the release of harmful pollutants. They are environmentally friendly sources of energy that do not pollute environment and do not contribute to climate change and global warming like traditional energy sources do.
Buildings should be designed and operate so as to use less energy and generate less energy. Buildings are responsible for substantial CO_2 emissions, owing to the materials used in their constructions, their cooling and heating requirements, and auxiliary functions such as water supply, wastewater, and solid-waste disposal. Building codes should be changed to promote energy-efficient engineering and construction technologies, which can be supported by tax incentives and stricter regulations.

 (d) Introducing effective waste management systems
Waste management is one of the key service city government must provide. Waste generation is putting numerous pressures on local government especially in the rapid growing cities in Asia, Africa, and Latin America. Poorly managed waste and lack of sanitation have impact on climate, health, environment and economy. Waste sector of these countries needs greater attention in establishing sustainable waste management systems to improve waste collection, transport and safe disposal of Municipal waste. Municipalities should enhance waste infrastructure development to deploy cost-effective and efficient waste collection and transport services. All at once, policies should be designed to manage disposal and recovery facilities such as landfill, composting, landfill gas utilization, material recovery facilities eliminating open dumping and open burning, waste recovery infrastructure and improving recycling and segregation.

(e) Reformation of managing water resources
Water sustainability begins with protecting water resources. A wide range of measurement can be implemented for the protection of water resource especially in terms of reduction of water wastage both in infrastructure sector and among users. New rules and regulations should be implemented toward protecting and storing water. In this connection, technical practices to secure and protect the existing natural water resource and use of local knowledge as part of sustainable water resource development are important.
Peoples' education and awareness about the water resources is much important in protecting and using water. Peoples' awareness regarding water scarcity and limited nature of the water and its significance to sustain ecosystems will contribute to preserve water and to minimize the pollution releasing to the water bodies such as lakes, rivers and reservoirs. Effective practices for using water resources will greatly benefit the human livelihood and the environment. This requires integration of various aspects of water management, such as household supply, re-use of water several times in urban areas, rain water harvesting, waste water treatment and recycling, and flood-control measures.
To enhance sustainability of water resource management, conducting relevant research on challenges and barriers associated with practices of water-quality management is also very much required. A number of related methodologies, applications and policy implementation should be examined.

(f) Capacity building of institutions and general public
Sustainable city development is a collective effect of various institutions, organizations and inhabitants of the city. Consequently, building of capacities needed to be done at the institutional level as well as at the societal level especially in developing countries. At the institutional level appropriate changes should be done to change the work culture to improve the integration, coordination, efficacy

of working, skills and knowledge and dedication for work. At the societal level a change in values and norms, life goals and expectations and consumption patterns should be done through public awareness programs and educating the people.

(g) Improving financial capacities for investments

Since working toward sustainability is costly both central government and city governances should improve their financial capacity for more investments. In this connection, promoting public-private partnerships is a viable instrument for raising funds for financing infrastructure projects particularly in developing countries. Introducing efficient tax system, formulation and implementation of revenue enhancement strategy for municipalities, granting more autonomy to municipalities in generating financial resources for their development activities are some of such possible strategies for improving financial capacities. Access to international funding agencies, national and private banks and making a better platform to attract private investors also are important for increasing finance for investments.

I.   REFERENCES

Alcamo,J., Henrichs, T. & Rosch, T. (2000) *World Water in 2025-Globle Modelling Scenarios for the World Commission on Water for the 21 st Century*, Kassel World Water Series, Report No. 2. Kassel, Germany: Center for Environmental Systems Research, University of Kassel

Baker, Judy. (2008) *Urban Poverty: An Overview*. The World Bank

Beatley, Timothy. (eds). (2012) *Green Cities of Europe: Global Lessons on Green Urbanism*. Washington, D.C.: Island Press

Dhainut, J-F., Y-E. Claessens, C. Ginsburg, and B. Riou. (2004) *Unprecedented Heat-related Deaths during the 2003 Heat Wave in Paris: Consequences on Emergency Departments.* Critical Care 8(1):1-2

Brundtland Commission available at https://en.wikipedia.org/wiki/Brundtland Commission, Retrieved on 01, 09. 2019

Khan, Haider A. (2008) *Challenges for Sustainable Development: Rapid Urbanization, Poverty and Capabilities*, International and Development Economics in Josef Korbel School of International Studies, University of Denver, USA

Keivani, R. (2010) *A Review of the Main Challenges to Urban Sustainability*. International Journal of Urban Sustainable Development, Volume 1, 2010, Issue 1-2, Available at https://doi.org/10.1080/19463131003704213, Retrieved on 29.08.2019

McGranahan, G., D. Balk and B. Anderson. (2007) *The Rising Tide: Assessing the Risks of Climate Change and Human Settlements in Low Elevation Coastal Zones*. Environment and Urbanization. 19 (1)

McKinsey Global Institute (2014) *A Blueprint for Addressing the Global Affordable Housing Challenge*: Executive Summary, McKinsey & Company

Pisano, Umberto, Lepuschitz, Katrin and Berger, Gerald. (2014) *Urban Sustainable Development Approaches of Three Different Cities: Copenhagen, Newcastle, Vienna*, European Sustainable Development Network

Prinjono, Tjiptoherijanto, and Hasmi, Eddy. (2005) *Urbanization and Urban Growth in Indonesia, Asian Urbanization in the New Millennium*, (eds). Gayl D. Ness and Prem P. Talwar, Singapore: Marshall Cavendish Academy

Rees, William E. (1992) *Ecological Footprints and Appropriated Carrying Capacity: What Urban Economics Leaves out? Environment and Urbanization*, vol. 4, No. 2.

Roberts, Brian, Kanaley, Thevor. (2007) Sustainable Urban Development in Asia, Vol 44, Australian Planner

Satterthwaite, David. (1992) *Sustainable Cities: Introduction. Environment and Urbanization*, Vol. 4, No. 2.

Seto, Karen, C., Solecki, William D and Griffith, Corrie, A. (eds) (2016) *The Routledge Handbook of Urbanization and Global Environmental Change*, Routledge

United Nations (1993) *Report of the United Nations Conference on Environment and Development, Rio de Janeiro*, 3-14 June 1992, vol. I, Resolutions Adopted by the Conference, Sales No. E.93.I.8 and corrigendum. Resolution I, annex I (Rio Declaration on Environment and Development). Resolution I, annex II (Agenda 21)

United Nations (1997) *Report of the United Nations Conference on Human Settlements (Habitat II)*, Istanbul, 3-14 June 1996. Sales No. E.97.IV.6. Chap. I resolution 1, annex II (Habitat Agenda)

United Nations Centre for Human Settlements (UNCHS) and United Nations Environment Programme (UNEP) (2000) *Sustainable Cities and Local Governance*, Nairobi, Kenya

United Nations, Human Settlements Programme (UN Habitat) (2003) *The Challenges of Slums, Global Report on Human Settlement*, Nairobi, Kenya

United Nations, Department of Economic and Social Affairs (UN DESA) (2005) *World Population Revisions, Highlights*, New York

United Nations, Department of Economic and Social Affairs (UN DESA) (2013) *World Economic and Social Survey: Sustainable Development Challenges*, New York

United Nations, Department of Economic and Social Affairs (UN DESA) (2014) *The World Urbanization Prospects: The 2014 Revisions*, Highlights, New York

United Nations, Department of Economic and Social Affairs (UN DESA) (2019) *The World Urbanization Prospects: The 2018 Revisions*, New York

World Bank (2009) *Development and Climate Change*, Washington, DC

World Bank (2010) *World Development Report-2009, Development and Climate Change*, Washington, DC

World Bank (2019) *Solid Waste Management*, Available at https//www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management, Retrieved on 05.09.2019

World Health Organization (WHO) (2019) *Health, Environment, and Sustainable Development: Air Pollution* Available at https://www.who.int/sustainable-development/cities/health-risks/air-pollution/en/, Retrieved on 02.09.2019