SHLC
Centre for Sustainable, Healthy and Learning Cities and Neighbourhoods

Sustainable Neighbourhood Development in Emerging Economies: A Review

Type

Literature Review

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Abstract

This study reviews the literature on sustainable development focusing at the neighbourhood level, including relevant assessment frameworks and indicators, with emphasis on the emerging economies. The review briefly comments on the influence of built-environment characteristics on sustainable outcomes. In comparison to advanced economies, neighbourhoods of emerging economies are understudied. Existing studies focus at the city level with an emphasis on environmental sustainability. Given different development trajectories, results from the advanced economies cannot be applied without appropriate calibration. There is, therefore, a need for further study to provide evidence-based interventions for sustainable urban neighbourhood development in consideration of multiple dimensions.

Keywords: sustainability; neighbourhood; urban; assessment framework; indicators

1 Introduction

Cities of emerging economies face crises on multiple fronts, such as poverty and fragmented governance (Pieterse, 2008). These challenges require multipronged strategies. For instance, Devas (2014, p. 3) identifies deep nexus between urban governance and poverty alleviation and suggests the urban poor can achieve well-being through access to economic opportunities, supportive social networks, and greater access to assets, infrastructures and services at city/neighbourhood levels. Similarly, opting for sustainable development (SD) approaches can offset some of these major challenges. However, adopting SD approaches are a difficult task, given the lack of clarity of their operationalisation in built-up environments, particularly at sub-city or neighbourhood levels.

Elaborating the concept of sustainability at the neighbourhood level is necessary to operationalise sustainable development since the neighbourhood is a primary unit of a city that acts as a critical place for interaction among society, economy, and business. A change in the neighbourhood could influence people's interaction with the society, economy, and business that could potentially lead to sustainable outcomes (van Ham, Manley, Bailey, Simpson, & Maclennan, 2012). The current debate on the neighbourhood effects is based on advanced economies (Galster, 2019; Luederitz, Lang, & Von Wehrden, 2013).

The urban/spatial dimension of sustainable development is belatedly recognised in the international policy arena that significantly influences cities of emerging economies through technical and financial support. For example, the Millenium Development Goals (MDGs) had not mentioned urban – it was just about national-level analysis and policy, but the Sustainable Development Goals (SDGs) have 'sustainable cities and communities' as one of the goals. It is now widely accepted that cities matter for sustainable development, but the question remains why and how urban characteristics affect our future (Parnell, 2016). Given heterogeneity within the city, neighbourhoods will influence the outcomes of sustainable development, particularly in emerging economies.

In this context, focusing on emerging economies, this study reviews the literature to understand current debates on neighbourhood sustainability, relevant assessment frameworks and indicators. This study addresses two questions: how do neighbourhoods challenges of emerging economies differ from the advanced economies?; and how could these differences reflect in operationalising sustainable development?

The remaining part of section 1 presents the concept of sustainable development and distinguishes related debates between developed and developing countries. In the context of major urban challenges in emerging economies, section 2 discusses the application of sustainable development in urban areas. Section 3 discusses approaches for embracing sustainability at the neighbourhood level and section 4 presents the conclusion.

1.1 Sustainable development

The World Commission on Environment and Development (WECD, 1987), while formulating 'a global agenda for change', defined sustainable development as development1 that 'meets the needs of the present without compromising the ability of future generations to meet their own needs' (p. 41). This overarching definition evolved to address deteriorating environmental conditions in the middle-twentieth century.

In the post-war period, sustainability in the 'development' agenda has strong linkage from local to global, mainly due to increasing concern about economic prospects. Although advanced and emerging economies face a plethora of challenges in the post-war period (or after decolonisation), the 'development' challenges, and capabilities to meet them, remain different. In advanced economies, for instance, the focus on inequity has changed from absolute poverty to relative poverty and address through welfare state policies e.g., progressive taxation and area-based approaches. Emerging economies, however, still face challenges of mass poverty, mainly in rural areas but increasingly in urban areas.

While addressing absolute poverty (in the sense of low income) is still an important issue in the development agenda, the overall agenda moved to what Amartya Sen describes as human 'capabilities', a moral framework that considers the extent of freedom people have to achieve the function they value (Sen, 1985). Subsequently, this approach took a central role in major policy debate in human development, where it inspired the creation of the UN's Human Development Index (HDI), a popular measure for progress.

A series of UN conferences in the 1990s led to the adoption of eight Millennium Development Goals (MDGs). The MDGs called for action to (i) eradicate extreme poverty and hunger, (ii) achieve universal primary education, (iii) promote gender equality and empower women, (iv) reduce child mortality, (v) improve maternal health, (vi) combat HIV/AIDS, malaria, and other diseases, (vii) ensure environmental sustainability, and (viii) develop a global partnership for development. To a certain extent, the MDGs were an effective measure to address these challenges in developing countries, in an account of reasonably simple eight goals, legally non-binding set of commitments and pursued through practical and specific measures adopted by governments, business, and civil societies (Sachs, 2012). The success of MDGs among developing countries varies across goals, countries, and regions (Fukuda-Parr, Greenstein, & Stewart, 2013; You et al., 2015). For instance, Fukuda-Parr et al. (2013) showed that in sub-Saharan Africa only 46% countries had progressed, 49% stagnated, and the remaining 5% regressed in achieving MDG-7, 'proportion of the population using improved water source'. The MDGs was a focus of global policy debate and national policy planning that inspired to lay several programs at sub-national and local levels.

After the expiry of the MDGs in 2015, subsequent widespread development and climate challenges led to the inception of the 2030 agenda for Sustainable Development with 17 goals, 169 targets, and 230 indicators (United Nations, 2015) with global coverage, including a specific goal on sustainable cities and communities. Thus, the debate on sustainability has moved from the national to sub-national levels, including urban centres. The SDGs on sustainable cities and communities aims to make cities and human settlements inclusive, safe, resilient and sustainable. (United Nations, 2000, 2015). Studies, however, have pointed out challenges and concerns related to our ability to monitor progress in cities, particularly

[1] *In political domain, development can be defined as a process of bringing about social change that allows people to achieve their human capital.*

in emerging economy cities, given the unavailability of the required datasets (Koch & Ahmad, 2018; Simon et al., 2016).

Table 1: Key global agreements and initiatives related to sustainable urban development, 1976-2018

2018	CitiesIPCC Cities and Climate Change Science Conference, Edmonton Urban20 Summit G20, Buenos Aires
2016	EU Urban Agenda Urban Agenda for the EU launched in the Pact of Amsterdam, Amsterdam Habitat 3, United Nations Conference on Housing and Sustainable Urban Development, Quito
2015	Sendai Framework World Conference on Disaster Risk Reduction, Sendai Addis Ababa Action Agenda Third International Conference Financing for Development, Addis Ababa SDGs Sustainable Development Goals (SDGs), Resolution 70/1 of the United Nations General Assembly, New York
2013	UrbanSDG Sustainable Development Solutions Network launches "Urban SDG" campaign, New York
2012	Rio+20 Third United Nations Conference on Sustainable Development, Rio de Janeiro
2005	Japan Hyogo Framework World Conference on Disaster Risk Reduction, Hyogo
2002	South Africa WSSD World Summit on Sustainable Development, Johannesburg
2000	MDGs Millennium Summit, New York City
1996	Habitat 2 Second United Nations Conference on Human Settlements, Istanbul
1992	Agenda 21 United Nations Conference on Environment and Development and Agenda 21, Rio de Janeiro
1987	Report of the World Commission on Environment and Development: Our Common Future
1976	First UN Conference on Human Settlements, Vancouver

Source: Report of the International Expert Panel on Science and the Future of Cities (2018)

1.2 Understanding multi-dimensionality: Economic, social and environmental issues

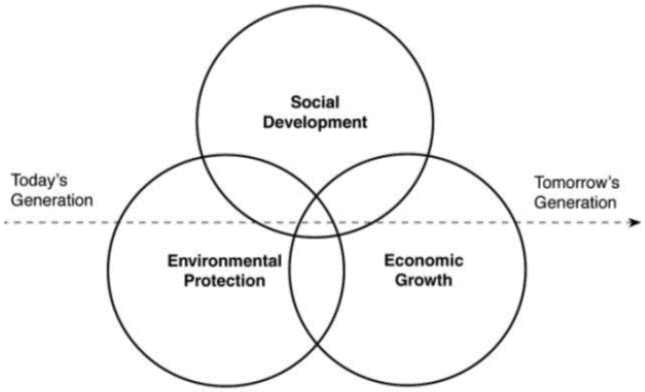
Despite a comprehensive discussion about sustainable development, the concepts remain contested. Sustainable development is often represented by overlapping circles (Venn diagram, Fig. 1a) or as concentric circles ('Russian Doll' model, Fig. 1b). The Venn diagram indicates that the overlap between social development, environmental protection, and economic growth opportunities produces sustainable development. If each of the circles represents a specific stakeholder, then overlaps with the other two circles mark potential shares of cooperation (Manzi, Lucas, Lloyd-Jones, & Allen, 2010). As per the 1992 Rio declaration, sustainable development seeks 'balance' between all three dimensions with certain trade-offs among them.

In contrast, the Russian Doll model of sustainable development suggests that sustainable development is mainly about economic development, with due consideration of adequate trickle-down economic benefits to society within environmental limits (Manzi et al., 2010). The Russian Doll model also underestimates the importance of governance and negotiation in sustainable development. The nature of sustainable development is complex and dynamic,

incorporates several dimensions such as social, cultural, economic, and communities. This interdependent nature of sustainable development should acknowledge the political dimension, which helps in the operationalisation of these competing dimensions. Consequently, Fig. 1c arguably presents a more useful conceptual framework that encompasses a multi-dimensional understanding of sustainable development.

SD has two dominant features – ecocentric model and anthropocentric model (Kearns & Turok, 2004; Manzi et al., 2010). The formal model heavily concerns with ecological and environmental issues in development, and the latter model relies upon the belief that humans are the most important entity in the universe. The anthropocentric model became influential because it considers human needs and quality of life aspects, such as human wellbeing, in development. However, the focus of the global south differs from the global north, as Colantonio and Dixon (2008) suggest that the south should focus on 'hard' themes, for example, basic needs and poverty alleviation and north should focus on 'soft' themes, for example, ageing population and social mixing.

a



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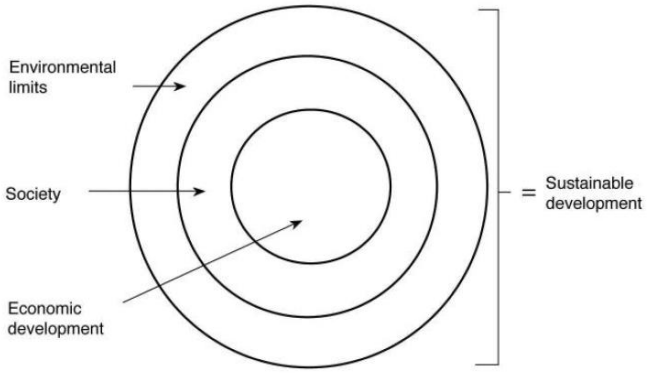

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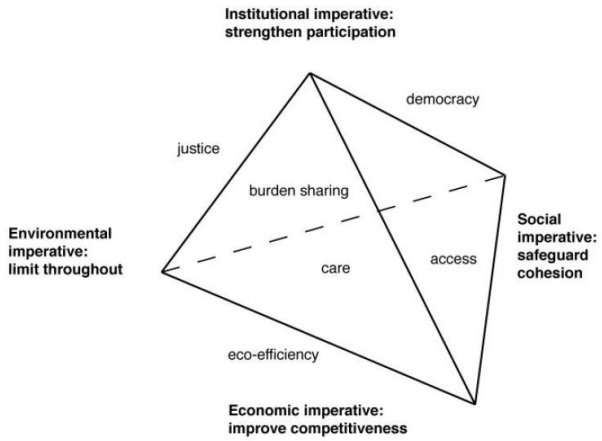


Figure 1: Dimensionality of sustainable development

(a) The dimensions and interactive process in sustainable development; (b) The Russian Doll explanation of sustainable development; and (c) A multi-dimensional understanding of sustainable development.

Source: Figures adapted from Manzi et al. (2010). (a) United Non-Government Organization Committee on Sustainable Development, (b) O'Riordan (1998), and (c) Centre for Sustainable Development, University of Westminster, and the Law School, University of Strathclyde (2006).

1.3 Concerns and debates on sustainable development: advanced versus emerging economies

Concerns for sustainable development in emerging economies are different from those relating to advanced economies on many fronts, for instance, emerging economies face widespread absolute poverty, rapid urbanisation and their inadequate technical and administrative capacities to address these issues (Cobbinah, Erdiaw-Kwasie, & Amoateng, 2015; Wheeler, 2013).

The nature of poverty differs between emerging and advanced economies, the formal dominates by a condition of severe deprivation (such as absolute poor population) and the latter dominates with relative poverty that more strongly linked to welfare provision and benefits from the state (Morazes & Pintak, 2007). With the World Bank's (extreme) poverty line of US$ 1.9 per day, globally 11% (766 million) population live in extreme poverty, out of which 15% (256 million) are in South Asia and 41% (389 million) are in Sub-Sahara Africa in 2013 (World Bank, 2018). Chen and Ravallion (2007) estimate reveal absolute poverty in the developing world had declined with urbanisation between 1981 and 2004. Rural areas have a higher incidence of poverty but poverty is becoming more urban and the poor are urbanizing faster than the population as a whole (Ravallion, Chen, & Sangraula, 2007). Furthermore, work situations complicate the economic perspective in urban areas, for instance, unsatisfactory working conditions and a spatial disconnection between people's residential location and their place of work(Cobbinah et al., 2015).

Socially, emerging economies have poor social indicators as measured by the Human Development Index. Regional issues, for example, famine, civil war and under-developed agriculture, have also exacerbated poverty. Many emerging economies do not have pro-poor urban governance that hinders poverty alleviation. Poverty also has a gender, spatial and environmental dimensions, for instance, women have higher social deprivation in access to basic services and livelihood opportunities. In the spatial dimension, urban-rural disparity, a key challenge to sustainable development, has contributed to poverty. In the spatial dimension of poverty, disadvantaged urban locations, for example, slums and urban villages, have more poverty than their traditional location – rural areas (Cobbinah et al., 2015). In the environmental perspective, Cobbinah et al. (2015) argue that overreliance of the poor on natural resources and the environment for their livelihoods tends to degrade the environment and further compounds their poverty, for example, forest degradation.

2 Sustainable Urban Development

Today, 55% of the world's population, 7.6 billion, live in urban areas. By 2050, urban areas will increase in population by **2.5 billion**, with close to **90% of this increase in Asia and Africa** (UNDESA, 2018). About 50% of the urban dwellers live in settlements with fewer than half a million inhabitants, whereas, worldwide only 12.5% live in 33 megacities (Fig. 2 and Fig. 3) (UNDESA, 2018). As the world continues to urbanise, sustainable development depends on the successful management of urban growth, especially in developing countries, where the pace of urbanisation is projected to be the fastest. This section briefly discusses the characteristics of sustainable urban development and discusses underlying forces that shape sustainable outcomes in emerging economies, such as urbanisation, migration, housing, and climate change.

2.1 Sustainable urban development

The WECD (1987) definition of sustainable development 'capability of meeting today's needs without compromising the ability of future generations to meet their needs' (p. 41) encompasses inter-generational equity, social justice, environmental awareness, geographical equity (Haughton & Hunter, 1994). There is a growing consensus on the definition and underlying principles of sustainable development, but not on the processes of operationalisation. Scholars have attempted to operationalise sustainable development in urban areas by developing characteristics of 'sustainable cities', 'sustainable urban development', or 'smart sustainable cities' (Ahvenniemi, Huovila, Pinto-Seppä, & Airaksinen, 2017; Bibri & Krogstie, 2017; Breheny, 1992; Elkin, McLaren, & Hillman, 1991; Hunter & Haughton, 1994; Parnell, 2016; Smith, Whitelegg, & Williams, 1998).

Elkin et al. (1991, p12) suggest that '… sustainable urban development must aim to produce a city that is user-friendly and resourceful, in terms of not only its form and energy-efficiency but also its function as a place of living.' Breheny (1992) further adds aspiration to equity and justice considerations without depleting natural resources beyond their regenerative capacity.

Haughton and Hunter (1994, p27) bring multiple dimensions and scale '… people and businesses continuously endeavour to improve their natural, built, and cultural environments at *neighbourhood* and *regional* levels, whilst working in ways which always support the goal of global sustainable development' (emphasis added).

Smith et al. (1998, p.17) suggest built environment can be sustainable if it follows some or all these five principles:

(a) the Brundtland definition – 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs';
(b) development and consumption with 'environmental' interest rather than 'capital' interest;
(c) development that promotes a sense of equity and justice;
(d) development that does not breach critical environmental threshold; and
(e) a development process that follows inclusive procedures for decision-making

In contrast, Haughton (1997) classifies cities into four models for sustainable urban development, which remain applicable today: self-reliant; redesigning; the free market or externally dependent; and fair-share.

The *self-reliant cities* model incorporates intensive internalisation of economic and environmental activities. It relies on circular metabolism, bioregionalism, and urban autarky. In circular metabolism, the use of resources is reduced, recycled, and reused within an appropriate bioregion, for instance, using water from nearby sources and reduce the consumption by recycling. This model minimises dependence on external resources. It embraces key pillars of the deep-green approach that holds a more nature-centred worldview, limits destruction of natural assets beyond their regenerative capacities by reducing over-consumption and avoiding unnecessary untested technological solutions for sustainable development (Haughton, 1999). The central theme of the *redesigning cities* model is to reshape the physical fabric of the city so that it can provide greater resource efficiency. For instance, higher densification would reduce travel distance hence save fossil fuels. The *externally dependent cities* model seeks to address urban environmental problems through market mechanisms, particularly market externalities. This is a light-green approach to sustainable development. The final model, *fair-share cities*, adopts many characteristics of the self-reliant and redesigning models to balance needs and rights equitably, with regulated flows of environmental value and compensatory systems. Guy & Marvin (2001) illustrates these models well while acknowledging the multiplicity of pathways in achieving sustainable urban futures.

Nevertheless, approaches for sustainable urban development need spatial contextualization. We cannot adopt a one-size-fits-all approach, given differences between the city in development levels and capabilities. Given different development level, advanced and emerging economy cities have different priorities. For example, cities of emerging economies immediately require basic urban amenities (e.g. drinking water and electricity), whereas advanced economy cities already have these services. Here, we elaborate some of the distinct features in emerging economies that would help contextualise sustainable urban development in cities perspective. These are urbanisation, migration, housing and climate change.

2.2 Urbanisation and migration

Urbanisation refers to the demographic processes of shifting the population from rural areas to urban areas. The exact definition of urbanisation varies from one country to another but may include some of these criteria: size and population in a location, population density, distance between built-up areas, the predominant type of economic activities, legal or administrative boundaries, and urban characteristics (Jenkins, Smith, & Wang, 2006). urbanisation can arise from three ways: (1) rural-urban migration; (2) natural population growth (excess of births over deaths); and (3) reclassification.

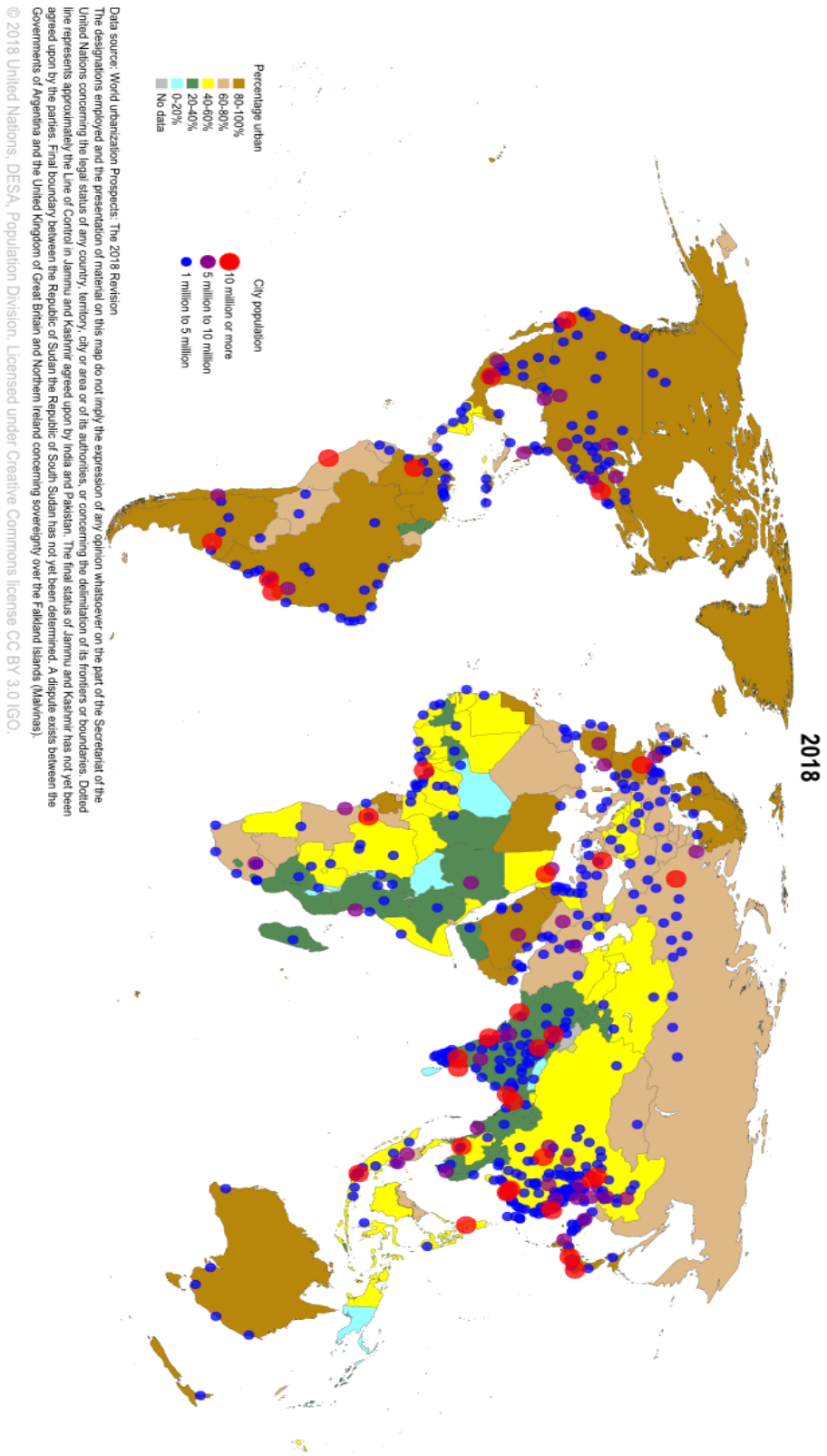


Figure 2:

Percentage of urban and urban agglomerations by size class, 2018

Source:UNDESA, 2018

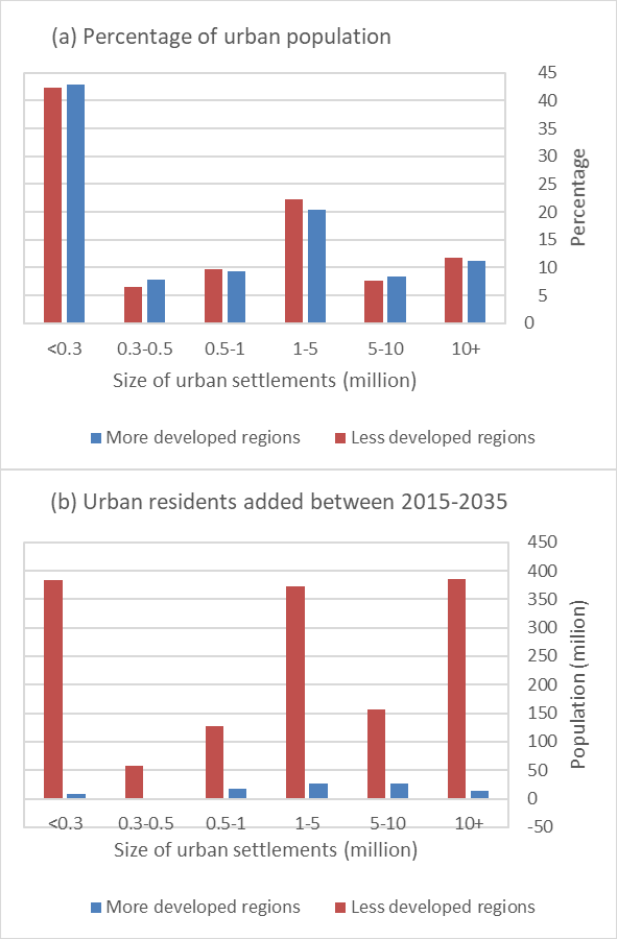


Figure 3: Population in more developed regions versus less developed regions

(a) distribution of urban residents by city size, (b) the number of urban residents added between 2015 and 2035. *Data source: (UNDESA, 2018)*

About two-third of urban population growth is attributable to natural population growth and the remaining one-third by rural-urban migration and reclassification of rural areas into urban areas. During the 1990s the natural population growth among urban residents accounted for 62% of the urban growth that took place in developing countries as a whole (e.g., India 63.2%), with rural-urban migration and reclassification accounting for the remaining 38% (Stecklov, 2008).

Overall, urban growth attributable to rural-urban migration is low but have received considerable attention in the policy arena. In emerging economies, rural-urban migration is driven by push factors that are limited opportunities in rural areas push the population into urban areas and pull factors that are abundant opportunities, low- and semi-skilled occupation opportunities draw the rural population.

Emerging economies urbanisation and its characteristics distinct from the advanced economies. Current urbanisation in emerging economies is characterised by rapid urbanisation, large agglomeration, a high share of secondary cities, socio-economic fragmentation and concentration in Africa and Asia (Figure 2 and 3) (Cobbinah et al., 2015; Cohen, 2006). Previous experiences reveal that policies to control urbanisation have proven counterproductive, despite huge expenditure (Bettencourt & West, 2010).

Migration, particularly international, increases remittances, where part of the remittances are used for developing the built environment, such as housing and related facilities. Rural-urban migration can enhance job opportunities, improves livelihood and contributes to poverty alleviation (Lucci, Mansour-Ille, Easton-Calabria, & Cummings, 2016). Migration has helped in upward mobility (e.g., access to the job) in Indian slums (Mitra, 2010). On the other hand, rural-urban migration is attributable to some of the urban crises in emerging economies such as rising housing price and inadequate infrastructures. Both management of urbanisation process and access to jobs and services to migrants in urban areas are crucial to achieve sustainable development.

2.3 Housing and settlement policy innovation in developing countries

Housing is one of the major challenges in developing countries. Emerging economies scale and speed of urban population growth with limited capacity to provide complementary infrastructures result in a poor quality of housing. The poor housing (e.g. slums and squatters) has two dominant academic views: one in a negative context such as isolated enclave where dwellers are desperate and anti-social and another in a positive context such as aspirational space and resource-efficient (Turok & Borel-Saladin, 2016). Using empirical data from South Africa, Turok & Borel-Saladin (2016) provide evidence that informal settlements enable people to move out of rural poverty albeit with poor employment conditions such as low-paid and unskilled jobs. Better urban planning approaches can help slum households' upward mobility, such as transition into the formal housing sector or access to employment(Lall, Suri, & Deichmann, 2006; Mitra, 2010). Thus, housing plays a vital role in sustainable development. Policymakers provide due attention to housing. The remaining part of this sub-section highlights the historical context adopted to house the poor in developing countries (Y. P. Wang, Wang, & Wu, 2010).

In the post-war period, many newly independent states followed the practice of industrialised countries – building subsidised public housing estates on cheap suburban land. This was a general strategy to stabilise labour and the creation of skilled working class and middle class (Jenkins et al., 2006; Wakely, 1988). The alternative to public dominated conventional housing construction, government-aided self-build housing was also tried in Latin American countries (Burgess, 1992). However, these approaches – public housing and self-build – were not successful in housing the poor in the 1950s and 1960s. Both forms of housing were too expensive for the urban poor, rather they fulfilled the housing need for the middle classes (Jenkins et al., 2006).

In the late 1960s, John Turner and his colleagues promoted 'self-help' housing, where Turner argued that squatter areas were not a form of social malaise, but triumphs of 'self-help' effort (Harris & Giles, 2003). He argued for limiting the government's role to ensure tenure security, applying lower official standards, and providing access to financial and appropriate technological support. Overall, he argued that housing users know their needs better than public officers, and often higher housing standards undermine adequate housing. In comparison to conventional housing solutions, self-help housing users can access and utilise resources effectively that also lower costs and increase housing affordability.

In the 1970s, the World Bank and the United Nations adopted and promoted a self-help housing approach, along with a shift in development strategies from modernization to the idea of 'basic needs' and 'redistribution with growth'. The World Bank invested in a range of

self-help housing projects such as site and service, and slum area upgrade (Pugh, 1997). Despite the support from these organizations, self-help housing policies and projects had limited results in bridging the gap in housing demand.

With the emergence of neoliberal development strategies in the 1980s, housing policy became closely related to macro-economic and structural adjustment. At that point, governments shifted their strategies from direct housing supply to enable housing supply policy formulation in system perspective with increasing overall supply, without focusing on lower-income groups and the poor. This 'support approach' complemented neoliberal tendencies to privatisation. This approach was adopted by the World Bank and the United Nations through the 'enabling policies', which facilitate and encourage the private sector in responding to housing demand and limits government interventions to legislative, institutional, and financial frameworks. Such policies aimed to the growth and development of the whole housing sector and poverty alleviation was to take place through the 'trickle-down' effect and be supplemented by a 'safety-net' for the most vulnerable (Pugh, 1997).

In the 2000s two major global initiatives – the Habitat Agenda and the Millennium Development Goals (MDGs) – launched towards housing the poor. On the one hand, the Habitat Agenda aimed to provide adequate shelter for all, and the development of sustainable human settlements in the urbanizing world, through integrated housing policies with overall macro-economic, environmental and social policies, through enabled market strategies. On the other hand, the MDGs called for a 'significant improvement in the lives of at least 100 million slum dwellers by the year 2020'. The MDGs improved the declining trend of living condition since the 1980s.

In the middle of the 2010s, both of these global initiatives reappear in the form of the New Urban Agenda and the Sustainable Development Goals. Based on previous experiences, these initiatives attempted to address contemporary challenges housing the poor. The very first target of the SDG 11 'Make cities and human settlements inclusive, safe, resilient and sustainable' is to 'ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums by 2030,' alongside others targets related to urban areas, for example, sustainable urbanisation and transportation. Habitat III or the New Urban Agenda provided a framework for the implementation of the SDGs and transformative commitments for sustainable urban development through 'sustainable urban development for social inclusion and ending poverty', 'sustainable and inclusive urban prosperity and opportunities for all', and 'environmentally sustainable and resilient urban development.' The New Urban Agenda also envisioned the mechanisms for implementation, but several scholars are sceptical of its transformative role in shaping the urban future (Garschagen et al., 2018).

2.4 Urban climate change

Climate change poses unprecedented challenges for the urban built environment. It necessitates effective adaptation and mitigation strategies. Today, urban areas consume between 67% and 76% of global energy and generate over 70 % of global carbon emissions (Seto et al., 2014). Under the current national agreement, the estimated average temperature increase from 2.9°C to 3.4°C relative to preindustrial levels by the end of the century. The impacts of average temperature warming by more than 1.5°C could be severe. A Special Report on Global Warming of 1.5°C identifies urban and infrastructure as one of four critical global systems (along with energy, land use and ecosystems, and industry) that can accelerate and upscale climate actions to limit global warming to 1.5°C (V. Masson-

Delmotte). The 2015 Paris Agreement marked a historic step in global coordination on climate adaptation and mitigation.

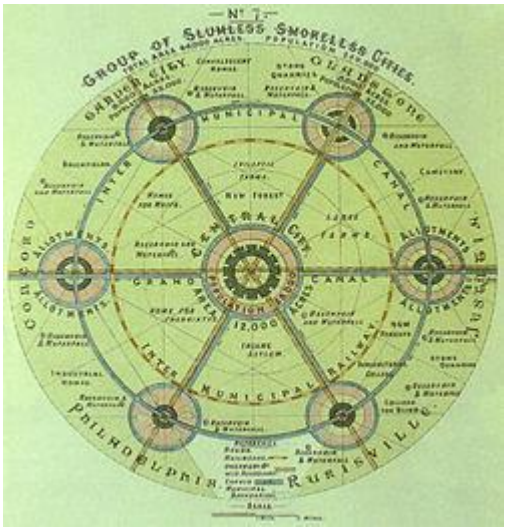
Climate change affects the urban built environment in multiple ways. Climate change may change air quality, precipitation patterns, the occurrence of extreme events. These changes would influence human well-being, particularly to disadvantaged communities given their inadequate coping capacity. For example, change in precipitation could lead to floods or reduced water supply in urban areas. In either case, poor residents in the global south would affect the most. To summarise, heading off dangerous climate change is one of the top sustainability priorities. Change in human settlements and human behaviours are necessary to mitigate climate change and adapt to it. It requires a reasonable change in almost every other dimensions of social and economic development (Wheeler, 2013). In today context, all human settlements need to a certain extent climate actions with varying priorities. For example, low-income or informal neighbourhoods need to focus climate adaptation such as strengthening resistance power to floods, and influential/rich neighbourhoods need to focus on climate mitigation, such as lesser (energy) consumption.

3 Sustainable Neighbourhood Development

3.1 Neighbourhood definition, evolution and principles

Despite a long history of scholarly interest in neighbourhoods, the definition remains unresolved. Galster (2019, p. 21) defines the neighbourhood as 'the bundle of spatially based attributes associated with a proximate cluster of occupied residences, sometimes in conjunction with other land uses.' Kearns & Turok (2004, pp. 9-10) suggest 'sustainable communities are settlements which meet diverse needs of all existing and future residents; contribute to a high quality of life; and offer appropriate ladders of opportunity for household advancement, either locally or through external connections. They also limit the adverse external effects on the environment, society and economy.'

Choguill (2008) while tracing the evolution of neighbourhood theory, suggests 'neighbourhood is primarily in the eyes of the beholders', it is a sub-division of an urban area, but planners have attributed to its functions. Ebenezer Howard's garden city proposal and subsequently new town movement, which transformed urban planning merely from a public health exercise to detailed spatial arrangements of urban activities: the dwelling units, the neighbourhood, and the town in relation to other activities (Howard, 1902). The first time, the neighbourhood became part of the urban planning activity. Subsequently, Clarence Perry picked and developed the concept, focusing on the basic urban amenities, such as elementary school, parks, playground, local shopping centre in consideration of citizen participation (Perry, 1939). Clarence Stein and Henry Wright extended the intellectual base of Howard and Perry, and developed superblock concept, separating vehicular from pedestrian traffic in a neighbourhood, primarily using cul-de-sacs while getting away from the use of grid-shaped road system (Fig 4). This arrangement, indeed, enhanced social interaction. Mumford (1937, 1954) while supporting Perry argued that neighbourhood units are critical for promoting 'feeling of belongings', that diminishes after a certain size.



"The Social City," by Ebenezer Howard, 1898.

Radburn, NJ site plan. Clarence Stein, 1928

Figure 4: Howard's garden city and Stein's Radburn

Similar to the definition of neighbourhood, guiding principles of sustainable neighbourhoods development are not clear and comprehensive (Luederitz et al., 2013). This paper reviews some of the mainstream works, such as the Sustainable Urban Neighbourhoods Network, UN-Habitat and Luederitz et al. (2013), that discuss the key principles for sustainable neighbourhood development.

The Sustainable Urban Neighbourhoods Network defines a sustainable urban neighbourhood as having the following five characteristics (Falk & Carley, 2012, p. 12):

a) It has a wide enough choice of housing and facilities to ensure long-term value and create a balanced community over time;
b) It is well connected to jobs and services by foot, bike and public transport;
c) It has places of different character that stand the test of time and appeal to different markets;
d) It is designed to conserve resources; and
e) It benefits from hands-on management and long-term stewardship by responsible local organisations, both during development and after residents have moved in.

UN-Habitat employing a technocratic approach proposes five principles of sustainable neighbourhood planning: adequate space for streets and an efficient street network; high density; mixed land-use; social mix; and limited land-use specialization (UN-Habitat, 2014). Table 2 lists guidelines for each principle that seeks to vibrant street life, walkable neighbourhoods, and affordable economic activities, services, and housing in various contexts like fast-growing cities, new urban settlements and urban extensions, urban renewal and renaissance, and growing cities with limited land.

Table 2: UN-Habitat's principles and guidelines for sustainable neighbourhood planning

Principle	Guideline
Adequate space for streets and an efficient street network	The street network should occupy at least 30 per cent of the land and at least 18 km of street length per km².
High density	At least 15,000 people per km², that is 150 people/ha or 61 people/acre
Mixed land-use	At least 40 per cent of floor space should be allocated for economic use in any neighbourhood.
Social mix	The availability of houses in different price ranges and tenures in any given neighbourhood to accommodate different incomes; 20 to 50 per cent of the residential floor area should be for low-cost housing; and each tenure type should be no more than 50 per cent of the total.
Limited land-use specialization	This is to limit single-function blocks or neighbourhoods; single function blocks should cover less than 10 per cent of any neighbourhood.

Source: (UN-Habitat, 2014)

Based on a systematic review of guiding principles for sustainable urban development, Luederitz et al. (2013) develop nine integrated principles, which capture a broad spectrum of sustainability features at the neighbourhood level. These are: (i) develop harmonized couples human-environment systems; (ii) sustainable urban metabolism; (iii) environmentally benign building design using local and sustainable materials; (iv) cater for a liveable and vibrant neighbourhood; (v) provide compact development and integrated sustainable mobility; (vi) cater for the resilient neighbourhood; (vii) ensure democratic

governance and empower neighbourhood residents; (viii) satisfaction of human needs, and; (ix) consider neighbourhood impact on the wider environment (p. 46).

These studies, along with others, reveal the principles of sustainable urban NH development are transdisciplinary and contain a combination of place-based and people-based aspects. As expected, these principles have incorporated the challenges of lower strata of society, for example, using a social mix or empowering neighbourhood residents.

3.2 Differences in neighbourhoods between advanced and emerging economies

Most of the neighbourhood's scholarships originate from the advanced economies, therefore not necessarily address emerging economy neighbourhood's issues. Table 3 elucidates the differences between advanced and emerging economy neighbourhoods. Both economies perceive neighbourhoods differently in their land use plans and service provisions. Some inequalities exist between neighbourhoods of both economies but emerging economy neighbourhoods have a higher order of inequalities that undermine life chances, partly driven from political classes (for discussion see Fernandes 2004).

Table 3: Difference between advanced and emerging economy neighbourhoods

	Advanced economy	Emerging economy
Background	- Recent urban development plans/management have considered neighbourhood concepts (e.g., London's Localism Act 2011) - Authorities have absolute control over the land development - In general, the gap between planning and implementation is limited - Given higher socio-economic base, excellent social support for the targeted population's quality of life (e.g., support to education and housing)	- Urban development rarely conceived with the neighbourhood concept though the pattern is reversing. Mandated local area plan (e.g., in Delhi Master Plan), have hardly progressed neighbourhood planning. - In the result of weak land development control (and somehow high planning standards) informal neighbourhoods have proliferated - Have a huge implementation deficit - The lower economic base and significant subsidy leaks lead to limited support for the life chances - Recent attempt to govern locally, such as Delhi's Resident welfare Associations (in a limited way)
Planning outcomes	- Spatial layout as per plan	- Informal settlements and often without recognition - Marginalised social groups, e.g. Fernandes (2004) - Planning agencies have lesser control, particularly in informal neighbourhoods - Rather than improving efficiency, services are being privatized

Sustainability outcomes	- Neighbourhood concept provides access to basic services locally. For instance, accessibility to nursery/primary school locally may reduce fuel consumption. - Social interaction is relatively low, but varies by context and setting such as high urbanisation	- Planned settlements do have access to amenities locally, but unplanned areas do not have. It results in unsustainable outcomes in social, economic and environmental contexts, for example, long travel distance to secondary school students. - Social interaction is relatively high, varies by context and setting

Note: Mostly based on Indian subcontinent and Western Europe cases. Source: Authors (2019)

3.3 Sustainability concerns of different types of neighbourhoods in emerging economies

Urban neighbourhood of the emerging economies face a significant challenge in classification/categorisation, however, attempts, based on the needs/purposes, have been made. Yigitcanlar, Kamruzzaman et al. (2015) while assessing residential development sustainability chose three types of neighbourhoods – sub-division, piecemeal, master-planned – for assessing sustainability, mainly based on their physical layout. While assessing tenure security for the urban poor in Delhi, Kundu (2004) opted assessment by types of settlements: squatter clusters, designated slum areas, unauthorised settlements, regularised-unauthorised settlements, resettlement sites, rural villages, urban villages, and planned settlements. Similarly, Forest & Yip (2007) choose three neighbourhoods—an area of older, inner-city housing; an area of predominantly work-unit housing; and a newer area of mostly commodified apartments – in Guangzhou, as representative of different and contrasting physical environments and areas which were likely to have different social profiles. Whereas, Wang, Shaw et al. (2018) select five distinct neighbourhood types based on size and density: large-scale medium-density (LSMD), medium-scale low-density (MSLD), medium-scale medium-density (MSMD), medium-scale high-density (MSHD), and small-scale high-density (SSHD). These studies suggest many ways of neighbourhood classifications in the city of emerging economies, such as historical evolution, layouts, and contemporary issues. In addition to these qualitative approaches, quantitative approaches, like cluster analysis, have been used for classifying the neighbourhoods (Mikelbank, 2011; Odoi et al., 2005).

The literature highlights several sustainability concerns in the urban neighbourhood of emerging economies.

- Neighbourhoods in informal settlements: Some of the megacities are the hotspots of informal neighbourhoods. These neighbourhoods have poor housing conditions and urban amenities, and a few of them are even uninhabitable. For example, some of the Indian megacities, the majority of them live in informal settlements, for instance, over 50% of Mumbai and Delhi inhabitants live in informal settlements.
- Neighbourhood in gated communities: These settlements are residential enclaves often developed by the private sector. Generally, residents of these neighbourhoods have higher socioeconomic status, resource inefficiency and homogenise by wealth, age, race and status. These neighbourhoods could be efficient in certain aspects, such as the provision of services, but in the majority of cases, negatively influence the sustainable outcomes, such as lack of social cohesion.
- Neighbourhood in the old city (historical): Historical old cities (for example, Delhi) have congestions and dilapidated housing but are economically vibrant. These

neighbourhoods also face difficulty in the provision of modern amenities, for example, access to piped water or sewerage system.

- Neighbourhoods in suburban areas: Neighbourhoods live in the periphery of cities may experience some unsustainable practice, for instance, require long-distance travelling for accessing basic amenities e.g., schools, and often rely on the car rather than public transport or active transport.

3.4 Frameworks for measuring sustainability at the neighbourhood level

Components of sustainable development vary by scale. Some of the elements could be applicable to lower scales such as building or bock e.g., Kuala Lumpur's Menara Mesiniaga bio-climatic skyscrapers that incorporate plants and vegetation and reduce energy consumption, and some at higher scale such as city and region, e.g., Singapore's urban development model that combines density and nature through park and green areas (Wheeler & Beatley, 2014). Here, I discuss frameworks at the neighbourhood level, without undermining the importance of framework at other scales.

The fundamental characteristics of frameworks for measuring sustainability should be (a) Integrating, (b) forward-looking, (c) distributional, and (d) developed with the input from multiple stakeholders in the community (Maclaren, 1996). These characteristics distinguish urban sustainability indicators from simple environmental, economic, and social indicators.

As discussed in the sustainability literature, indicators should be integrating since there are linkages among environmental, economic and social dimensions of sustainability. For example, an increase in the share of active travel mode in a community can improve environmental sustainability by reducing fuel use and increase social interactions. Composite indicators, representing two or more dimensions, could be also used, but these are often difficult to interpret. Forward-looking indicators are expected to measure progress towards achieving intergenerational equity, for example by using a trend indicator. Similarly, sustainability indicators should capture inter-generational and intra-generational equity issues. Spatially integrated indicators may not capture distributional effects, such as by reporting data at the city level. Perhaps this could be in the form of age, gender, and location. Finally, it should develop from the consultation of multiple stakeholders from a broad section of society.

Based on good practice measuring and reporting the state of the environment, quality of life, healthy city performance and urban sustainability, Maclaren (1996) proposed six general frameworks for developing sustainability indicators. These frameworks are (a) domain-based (e.g., environment, society), (b) goal-based (e.g., carrying capacity, basic human needs), (c) sectoral-based (e.g., housing, welfare), (d) issue-based (e.g., urban sprawl, waste management), (e) causal-based (e.g., air quality, automobile use), and (f) a combination of these.

Frameworks are contentious issues. Often a set of indicators for a specific purpose can be agreed but not their relative weighting. Adopting different relative weighting drastically change the result. Turcu (2013) argues the selection of indicators and their weighting needs to be co-created with experts and community.

Some neighbourhood sustainability assessment tools are extensions of tools for measuring the environmental performance of single buildings such as LEED, BREEAM, and CASBEE (Sharifi & Murayama, 2015). For example, Leadership in Energy and Environmental Design for Neighbourhood Development (LEED-ND) is a US-based rating system that integrates the principles of smart growth, urbanism, and green building into a national system of neighbourhood design. It recognizes projects that successfully protect and enhance the overall health, natural environment and quality of life. CASBEE for Urban Development (CASBEE-UD), where CASBEE stands for Comprehensive Assessment System for Built Environment Efficiency is another framework to assess the environmental efficiency of planned projects consisting of multiple buildings and public areas. BREEAM Communities, where BREEAM stands for Building Research Establishment Environmental Assessment Method aims to improve, measure, and certify the sustainability of large-scale development plans by integrating sustainable design into the master planning of new communities or regeneration projects.

Using comparative case studies of Hoyt Yards (LEED-ND), MediaCityUK (BREEAM Communities) and Koshigaya Lake Town (CASSBEE-UD), Sharifi & Murayama (2015) show assessment result significantly vary according to the set of indicators and benchmarks used in the neighbourhood sustainability assessment tools. Thus, identical developments can achieve different ratings under different assessments. Several studies, including Sharifi & Murayama (2015), underscore the contested and pluralistic nature of sustainability at the neighbourhood level and suggest that not all criteria and indicators would be relevant in each context. Therefore, locally contextualized assessment tools should be developed for the assessment of neighbourhood sustainability, rather than a global standard one.

3.5 Sustainable development indicators for neighbourhoods

Table 4 lists selected sustainable development indicators at the neighbourhood level, broadly representative of domain-based groups (Maclaren, 1996). These indicators are broad but empirically measurable at the neighbourhood level. These indicators may be useful for a comparative study at cities/neighbourhoods level.

From a wide range of planning practices at the sub-national level – Curitiba (Brazil), Kerala (India), and Nayarit (Mexico) – Basiago (1998) presented alternative models of cultural development practices embodied the integration and interlinkage of economic, social, and environmental sustainability. Curitiba's efficient bus system, expanding urban green space and meeting the basic need of urban poor has contributed to achieving economic sustainability. Kerala's equitable resource distribution has helped in achieving social harmony (see Véron, 2001). Nayarit's nature-friendly development plans that involve the public in development processes have helped in the balanced development of the region. Some of these imaginative policies, often cited as successful examples to achieve 'urban sustainability', potentially useful at the neighbourhood level (see Box 2).

Table 4: Sustainable development indicators at urban or neighbourhood level (selected and without any order)

Social sustainability	Economic sustainability
Dissatisfaction with area Neighbourhood problems Difficulty to access to local services** Trust and reciprocity Connected with neighbour Sense of community/place Community activity Local partnership Community stability Participation ** Network/meeting (places) Social/demographic mixing at estate or neighbourhood level Social interaction/ common meeting place (may be in the form of school/park, coffee shop)	Local jobs ** Access to jobs *** Business activity ** Local training and skills *** Housing affordability *** Decent housing ** Low transport costs and infrastructure**
Environmental sustainability	**Institutional sustainability**
Parks and other green space Cycle paths and pedestrian routes Resource: energy use, water use, waste recycling Housing and built environment: housing conditions, housing state of repair, satisfaction with home, green open space Services and facilities: provision and quality, school GP/health services, public transport Equitable access to basic urban services *** A mix of land use A mix of housing types	Local authority services *** Community activity Local partnership

Notes: Asterisks represent indicators of great interest to emerging economy neighbourhoods (3 stars are more important than 1 star). Sources: (Bramley & Morgan, 2003; Bramley & Power, 2009; Choguill, 2008; Kamruzzaman et al., 2014; Turcu, 2013; Yoo & Lee, 2016)

One of the critical aspects of the urban neighbourhood is the drivers and dynamics of urban/neighbourhood sustainability that could be associated with people (e.g., education and health) and place (e.g., parks and amenities). The next section briefly reviews how built environment shape sustainable neighbourhoods.

Box 1: Substrates of economic, social, and environmental sustainability in planning practice in developing countries

Element	Criteria	Means
Economic Sustainability in Curitiba, Brazil	Growth Development Productivity Trickle Down	1. Launch program to reduce automobile use 2. Establish a modern bus mass transit scheme 3. Enhance bus system efficiency to draw riders 4. Make bus transit fast, cheap and comfortable 5. Place high density living near major arterials 6. Zone for mixed residential/commercial use 7. Make downtown streets pedestrian malls 8. Expand green zones to safeguard open space 9. Enlarge the amount of per capita green space 10. Enact regulations to protect every urban tree 11. Allow poor to swap their garbage for food 12. Encourage residents to separate their garbage 13. Set up programs to recycle recyclables 14. Produce civic theatre to promote recycling 15. Enlist the aid of children in recycling efforts 16. Develop a low emissions industrial zone 17. Enact policies to give the poor basic services 18. Give poor free medical and dental care 19. Give poor free child care so they can work 20. Nurture civic enthusiasm, brightness and zest
Social Sustainability in Kerala, India	Equity Empowerment Accessibility Participation Sharing Cultural Identity Institutional Stability	1. View natural resources as limited in nature 2. Cultivate the lushness of the settlement area 3. Stress equitable distribution over production 4. Rely on information, not machinery 5. Establish deliberative decision process 6. Value family/community over individuals 7. Work for enjoyment rather than avoiding toil 8. Cherish folk life rather than entertainment 9. Reduce family size and resource use 10. Eliminate divisions of clan, caste, class 11. Practice gender-neutral opportunity policies 12. Strive for universal education of population 13. Address disparities in economic attainment 14. Level the economic playing field for all 15. Make all citizens economic stake-holders 16. Sponsor land reform to give land to its tillers 17. Subsidize food, health care, and education 18. Work deliberately to use resources efficiently 19. Address 'wellness needs' of the population 20. Meet 'wellness needs' on an all-for-one basis
Environmental Sustainability in Nayarit, Mexico	Eco-System Integrity Carrying Capacity Biodiversity	1. Propose a plan to protect natural systems 2. Form team of indigenous resource managers 3. Educate the team in environmental planning 4. Survey the landscape's natural attributes 5. Identify natural opportunities and constraints 6. Identify sensitivities of plants and animals 7. Identify social opportunities/constraints 8. Identify cultural opportunities/constraints 9. Apply eco-principles from other regions 10. Adapt environmental laws from other regions 11. Draft a nature friendly development plan 12. Recommend land development suitabilities 13. Recommend land conservation suitabilities 14. Establish nature reserves and protected areas 15. Establish environmental protection council 16. Provide 'one-stop' development permission 17. Establish community participation committee 18. Hear local citizens affected by development 19. Host democratic fora of citizen participation 20. Integrate social and economic factors in plan

Source: Basiago (1998)

3.6 Determinants of sustainable urban neighbourhood development

Several studies have measured the influence of built-environment characteristics on sustainable development outcomes. Here we present the influence of some of the built-environment characteristics on sustainability outcomes (social, economic, and environmental) focus on the neighbourhood.

3.6.1 Urban form

Density is an important element of the urban form along with mixed land uses, well-connected urban layouts, and accessible public transport. Studies reveal denser urban form positively influence access to services and facilities, but negatively influence the sustainability of community (Bramley & Power, 2009). Dempsey, Brown, & Bramley (2012) while answering means and extent of urban form contribute to sustainability with case studies of five UK cities – Edinburgh, Glasgow, Leicester, Oxford, and Sheffield – showed that dense neighbourhoods are more likely to provide poor access to quality green space and dense neighbourhoods' residents report a more likely feeling of unsafe and less social interaction. Density improves the use of active and public transport and reduces the use of private transport, hence improves sustainability (Ahmad, Baiocchi, & Creutzig, 2015; Ahmad & de Oliveira, 2016). Similarly, transit-oriented development increases social capital, and therefore social sustainability (Kamruzzaman et al., 2014).

3.6.2 Parks and green space

Green space contributes significantly to neighbourhoods sustainability (Yoo & Lee, 2016). With the case study on three urban neighbourhoods in Delhi, Karuppannan & Sivam (2011) demonstrated that high quality and well-located open spaces, mixed land use and good accessibility of the public realm and social infrastructure play an important role in increasing the social sustainability of the neighbourhood. While recognising the role of green space in social and environmental sustainability, the inhabitant's expectation varies by their socioeconomic status. For instance, low-income and disadvantaged groups more value to green space than the high-income group (de la Barrera, Reyes-Paecke, Harris, Bascuñán, & Farías, 2016). Even green space contributes to poverty alleviation in slums (Gopal, Nagendra, & Manthey, 2015). residents prefer walking in greener neighbourhoods, therefore improve local and global environments, thereby contribute to urban sustainability (Sallis et al., 2015; H. Wang & Qiu, 2018).

3.6.3 Other factors

Other factors, such as education, health and urban governance, shape neighbourhood sustainability. For example, better schools attract investment that potentially turns into sustainable development.

4 Conclusion

This brief review of literature on sustainable urban neighbourhood development reveals that debate about urban sustainable development has focused on cities/towns, with limited attention on the neighbourhood level, particularly in developing countries. The trajectory of urban development in developing countries is different from developed countries, for example, rapid growth in developing countries. Thus, neighbourhoods' challenges and concerns of developing countries significantly differ from developed countries. To face these challenges, there is a need for producing relevant knowledge, particularly identifying evidence-based urban policy interventions for sustainable urban/neighbourhood development in developing countries. High magnitude of current and future development indicates lock-in effects and therefore suggest urgency for evidence-based, action-oriented research. Moreover, learning within developing countries, for instance, India and China could be more practical than learning between cities of the global north and south.

Focusing on SHLC's project, this study recommends to:

- Given limited studies from the developing countries, we suspect the existence of grey literature/practice on urban (neighbourhood) sustainability, perhaps unknown to mainstream scholars. There is a need to document such practices from the emerging economy cities and neighbourhoods.
- As we argued policy interventions adopted from the developed economies for urban/neighbourhood sustainability would not be always useful in emerging economies, could even be counterproductive. In this context, there is a need to understand the nature of planning interventions that work (or not work) within and between developing country ecosystems. There is a need to list, prioritise, and package them to stakeholders.
- Finally, there is a need to explore south-to-south evidence-based learning for sustainable urban/neighbourhood development. Literature suggests a huge potential for such learning and practice.

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