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Urban expansion and land use changes in Asia and Africa

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This EUA special issue includes eight city-based articles on 'Changes in Land Use and Land Cover in Cities of the Global South'. These cities are case studies of a UK Research and Innovation (UKRI) supported Global Challenge Research Fund (GCRF) project on Sustainable, Healthy and Learning Cities and Neighbourhoods (SHLC). The work presented here is part of the stage two outputs of the SHLC study. Work from first stage of the SHLC project – City Profiles - was also published in an earlier special issue of EUA (10.2 2019). In this Prologue, we set out the background context for these analyses of urban land cover and land use changes and address the question: why is it important to study urban expansion/sprawl and land use changes in Asia and Africa? We first outline the recent trend of urbanization, expansion/sprawl and land use changes and their implications. We then discuss the limitation of planning in developing countries in regulating expansion and sprawl and emphasize the importance of research on land use changes and urban neighbourhoods.

Trends in urbanization and land cover changes

Over 56 percent of the world's population now lives in cities, and the world is still urbanising fast especially in Africa and Asia, with the urban population expected to reach 60 percent by 2030. Urbanisation is widely seen as a main innovative and transformative driving force for economic development, social progress, and political and societal change (UN Habitat 2020). Most cities included in the SHLC study have experienced continuous and large scale economic development, population growth, land use changes and sprawl since the turn of the century. In this process, larger cities and national capitals received more migrants and experienced faster economic transformation.

Delhi, for example, saw its population increased by 3.4 million to 16.3 million between 2001 and 2011, a 2.4 percent increase per annum; the city experienced an even faster annual population growth of 4.2 percent in the previous decade¹. A similar growth trend was found in other cities. Population in Cape Town increased from 2.6 million in 1996 to an estimated 4 million in 2016, although the annual growth rate has fell from 3.3 percent between 2000 and 2010 to 1.5 percent since 2010. In Johannesburg, the population growth has remained high since 1996, ranging between 2.6 and 3.2 percent per annum in recent years, with the total population now at 5 million. Dar es Salaam, a city with approximately 10 percent of the Tanzanian population, saw an increase from 4.4 million residents in 2012 to a current estimate of 6 million.

Unplanned urban sprawl was once associated mainly with the boom years of development in land-rich developed countries such as the USA, Canada and Australia but it is now occurring in cities all over the developing world. In Africa and Asia, urban population growth has consumed large areas of land around major cities. Of the cities covered by SHLC project, suburban sprawl and fragmented land development and transformation have created new sub-centres and industrial districts, as well as ribbon development of residential areas along major roads. The city of Chongqing, for example, has transformed from a regional industrial centre in inland China to a large metropolitan area of national significance in a period of 20 years. Its built-up area has enlarged more than five times so that almost all the developable flat ground around the city has been built on. Delhi's population growth also has been accompanied by urban sprawl; its built-up area expanded by 65 percent in the two decades preceding 2018. Kigali is another of our study cities that has seen a dramatic increase in its built up area, from around 25 to 115 square kilometres in the last 30 years.

Migration and population growth have also led to infill development, intensifying land use in existing built up areas, and causing the loss of green spaces and water bodies within cities. The City

¹ Data referred for each individual case study cities were from SHLC research summaries. To save space, we will not provide reference in the text for each quote, but list the relevant city Research Summaries in reference at the end.

of Manila, with its fixed boundaries and finite land resource, saw its population density increase to 71,000 inhabitants per square kilometre, with a residential population of 1.7 million in a land area of 25 square kilometres. During the day time, its population density is even higher as more than 1 million people commute from surrounding districts into the city for work. In Dhaka, the population density increased from 14,000 per square kilometre in 1991, to 28,900 in 2011 and 31,800 in 2015. Currently, 40 percent of the residential areas in the city have a density of over 99,000 people per square kilometre. In Africa, urban population density is low in comparison with these Asian cities but densification is rising. In Johannesburg the density increased from 2,055 to 3,281 people per square kilometre between 2002 and 2017 and Kigali's new master plan aims to bring its overall population density up to 5198 persons per square kilometre.

Urban expansion and informal development

In a previous *World City Report*, UN Habitat argued that that 'the current urbanization model is unsustainable in many respects, puts many people at risk, creates unnecessary costs, negatively affects the environment, and is intrinsically unfair' (UN Habitat, 2016, p.iv). Fast urban expansion and sprawl indeed often results in more inequality, informality, insecurity and unsustainable forms of urban community. As the SHLC case cities show, alongside of new industrial developments, various types of neighbourhoods are emerging in peripheral areas of large cities, including commercially constructed housing estates of various standard, gated or semi-gated communities for the rich, tenement and high-rise apartments for the middle class and civil servants, and state supported low income settlements. However, informal settlements such as urban villages, townships, relocation settlements as well as various slum settlements are being developed at a much large scale than the various types of planned or semi-planned residential area.

Despite the major efforts made in poverty reduction during first 15 years of the 21st century under the UN Millennium Development Goals (MDGs) programme, urban slums still house a significant

proportion of population. The six SHLC countries for which data is available have all seen a decline in the slum population between 2000 and 2018, and some countries have made very significant progress (Table 1), a large proportion of urban population still live in slums and many new residential developments are informal and spontaneous. In Johannesburg, for example, by 2018, informal land use had grown to the equivalent of almost a third of the entire built up area.

Table 1 Urban population living in slum areas in SHLC case countries (% of population)

Country	2000	2018	Change
Philippines	47.2	44.3	-2.9
India	41.5	34.8	-6.7
Bangladesh	77.8	47.6	-30.2
Rwanda	79.7	44.1	-35.6
Tanzania	70.1	40.2	-29.9
South Africa	33.2	26.4	-6.8

Note: China does not report any slum population.

Source: UN Habitat, 2020.

In all cities, most informal residential areas lack formal legal recognition; they are often disconnected from the infrastructural grids for drinking water, gas, electricity, and sanitation. Public services, including basic services such as refuse collection but also health care and education in these informal districts either do not exist or are very poor quality. In Manila for example, in some low income neighbourhoods, children can only attend school on a half time basis due to limited classroom space. Where there are services available, the private sector often plays a major role and the cost for residents tends to be high. These slums tend to locate at marginal places such as river banks, along railway lines, beaches, stripe land left over by industrial facilities, under bridges and other environmentally hazardous places. Slums and informal housing areas are always poorly connected by paved road and transport, further limiting their job and employment opportunities.

Challenges for urban planning

To realise the full potential of the urban transformative power and address the social and economic problems caused by urban sprawl and expansion, the international community has adopted several agreements to guide urban development, with the assumption that well-planned cities and urban extensions can curb excessive land consumption. The UN 2030 *Agenda for Sustainable Development* and the *Sustainable Development Goals* (SDGs) aim for an accelerated sustainable solution (United Nations 2015). The related document *The New Urban Agenda* (NUA) provides a spatial framework intended to achieve better urban outcomes. The NUA aims, by readdressing the way cities and human settlements are planned, designed, financed, developed, governed and managed, to end poverty and hunger in all its forms and dimensions; reduce inequalities; promote sustained, inclusive and sustainable economic growth; achieve gender equality; improve human health and wellbeing; foster resilience; and protect the environment (United Nations 2017). The World Cities Report 2020 makes the case that sustainable urbanization is essential to the global effort to 'build back better' from the impacts of the COVID-19 pandemic and get the world back on track to achieve the SDGs and meet the ambitious targets of the Paris Agreement on climate change (UN-Habitat 2020).

These global policies and targets are very ambitious and maybe not very realistic. There are only 10 years left to achieve the SDGs and the global Covid-19 pandemics has made the task even more challenging. SHLC fieldwork show that there was no wide spread of practice of urban planning, especially at local and neighbourhood levels in African and Asian cities. Only in the two case study cities in China - Chongqing and Datong, due to their state ownership of urban land and strong public control of the development process, the effect of urban planning on the built environment was very clearly shown; most of new areas and neighbourhoods there, including large high-rise social housing and relocation estates, were planned and professionally constructed. The impact of planning in other cities tends to be more piecemeal and fragmented. The City of Kigali for example launched a

new master plan in 2020 that allow more flexibility for residents to know what and where to invest their resources and to enhance social inclusion (Sabiiti, 2020). At the city level, planning practice tend to focus on infrastructure improvement in general and slum upgrading. At local level, professional planning of new residential areas concentrated at sites of demonstration, such as the Vision City. In other areas planning means very simple drawing of street patterns and the division of land into family blocks. Housing development often start without proper infrastructure on the ground. Delhi's urban planning brought significant improvement of the urban infrastructure, such as the metro system; planning of the residential areas tend to focus on the rich quarter of the population.

Professional planned housing development are marketed at a high price in all cities, often out of the reach of the low income and urban poor. SHLC fieldwork found that most new residential areas in African and Asian cities is mainly the result of a process of uncontrolled or minimally regulated concentration of low-rise family houses in the style familiar in rural areas, rather than large scale construction of well-planned housing estates. It is the wealthy and upper-middle-income residents that benefit most from planned spaces and neighbourhoods, as they can afford homes that are built in a regulated way, meeting 'planning' standards of construction, layouts, scheme design, technical standards for building services, etc. Only these planned wealthy neighbourhoods were supported by modern infrastructure with good road network links, adequate local amenities and clear and running tap water, sanitation and electricity.

'Planning' of infrastructure fails to benefit the wider set of neighbourhoods in the city. In addition, good quality public services (schools and health care) for reasons of history, politics and demand are not evenly distributed spatially and in fact deliberately skewed towards areas where rich and middle class people live. There is therefore a continuing disconnect between the standards that planners think they ought to set for urban development in line with international standards and the ability of both public authorities and residents to afford those standards. Therefore, UN Habitat's repeated

calls for better planning in pursuit of urban sustainability often gets little reaction beyond an expression of aspirations in formal plans that are seldom realised in practice.

The need for innovative research

Two major processes of urban land use changes can be observed in Africa and Asia – fast expansion and sprawl in suburban areas and infill developments and increases in population and building densities in the existing built up areas. Thanks to the geospatial technologies and remote sensing methodology, many researchers have carried out city level analysis of land use changes in their cities (e.g. Patra, et al 2018; Rizk, et al 2015). The papers included in this issue provide some further examples of research in these areas and reveal the common trend and unique characteristics of these eight cities. To achieve sustainable urbanization and SDGs, apart from the practice of planning and these city level analysis, we will need further innovative research to help us to understand the local land use changes and associated social and economic processes. The next stage of SHLC work focuses on the neighbourhood level analysis and examination of the spatial, social, economic and environmental inequalities in detail in relation to land use changes.

References:

Sabiiti D. (2020) City of Kigali Launches New, Citizen Centered Master Plan, KTPress.
www.ktpress.rw. (The Master Plan is at: <https://masterplan2020.kigalicity.gov.rw/>)

Patra S., Sahoo S., Mishra, P. and Mahapatra, S. (2018) Impacts of urbanization on land use /cover changes and its probable implications on local climate and groundwater level. *Journal of Urban Management* Volume 7, Issue 2, Pages 70-84.

Rizk I., Mosbeh H. and Kaloopb R. (2015) Monitoring urban growth and land use change detection with GIS and remote sensing techniques in Daqahlia governorate Egypt. *International Journal of Sustainable Built Environment*. Volume 4, Issue 1, Pages 117-124.

United Nations (2015) *Transforming our World: The 2030 Agenda for Sustainable Development*, United Nations (sustainabledevelopment.un.org)

United Nations (2017) *The New Urban Agenda*. United Nations publication issued by the Habitat III Secretariat.

UN-Habitat (2016) *World Cities Report 2016: URBANIZATION AND DEVELOPMENT - Emerging Futures*. Nairobi: United Nations Human Settlements Programme (UN-Habitat) (www.unhabitat.org)

UN-Habitat (2020) *World Cities Report 2020: The Value of Sustainable Urbanization*. Nairobi: United Nations Human Settlements Programme (UN-Habitat) (www.unhabitat.org)

SHLC Research Summaries (All could be found at: www.centreforsustainablecities.ac.uk)

SHLC RESEARCH SUMMARY 01: Ivan Turok, Andreas Scheba, Justin Visagie (2020) *Cape Town: a city still divided by race and class*. (Human Sciences Research Council, South Africa).

SHLC RESEARCH SUMMARY 02: Debolina Kundu, Pragya Sharma, Baishali Lahiri, Chitra Sangtani (2020) *Delhi: a city of diversity and disparity*. (National Institute of Urban Affairs, India)

SHLC RESEARCH SUMMARY 05: Mario R. Delos Reyes, Mark Anthony M. Gamboa, Keith Gerard L. Daguio, Ryan Randle B. Rivera (2020) *Manila: understanding neighbourhoods for a more sustainable city*. (University of the Philippines School of Urban and Regional Planning and Centre for Neighbourhood Studies (CeNS)).

SHLC RESEARCH SUMMARY 06: Vincent Manirakiza, Gilbert Nduwayezu, Josephine Malonza, Leon Mugabe, Aimable Nsabimana, Pierre Claver Rutayisire, Manasse Nzayirambaho, Jonas Kato Njunwa, Deogratius Jaganyi (2020) *Kigali: the rapid urban growth and neighbourhood dynamics of a prosperous city*. (University of Rwanda)

SHLC RESEARCH SUMMARY 08: Shilpi Roy, Tanjil Sowgat (2020) *Dhaka: diverse, dense, and damaged neighbourhoods and the impacts of unplanned urbanisation*. (Khulna University).

SHLC RESEARCH SUMMARY 10: David Everatt, Caryn Abrahams, Halfdan Lynge (2020) *Johannesburg: the growing importance of class in shaping neighbourhoods*. (Wits School of Governance, University of the Witwatersrand, Johannesburg, South Africa)

SHLC RESEARCH SUMMARY 11: Ibrahim Msuya, Irene Moshi, Francis Levira Ifakara (2020) *Dar es Salaam: the unplanned urban sprawl threatening neighbourhood sustainability*. (Ifakara Health Institute, Dar es Salaam, Tanzania)