SUBMITTED VERSION

Scott Hawken

Editorial: Changes in land use and land cover in cities of the global south - patterns and driving forces

Environment and Urbanization ASIA, 2021; 12(1 Suppl.):9S-12S

© 2021 National Institute of Urban Affairs (NIUA)

Published version available via DOI: http://dx.doi.org/10.1177/0975425321997972

PERMISSIONS

https://au.sagepub.com/en-gb/oce/journal-author-archiving-policies-and-re-use

Green Open Access: SAGE's Archiving and Sharing Policy

You may share the **Original Submission** or **Accepted Manuscript** at any time after your paper is accepted and in any format. Your sharing of the **Original Submission** or **Accepted Manuscript** may include posting a downloadable copy on any website, saving a copy in any repository or network, sharing a copy through any social media channel, and distributing print or electronic copies. Please note some journals will not consider papers that have been posted as preprints prior to submission and you may check a journal's policy regarding considering previously-posted papers by referring to the journal's submission guidelines.

For information on use of Institutional Repository (IR) copies by authors and IR users, see Posting to an Institutional Repository - Green Open Access.

You may use the **Final Published PDF** (or **Original Submission** or **Accepted Manuscript**, if preferred) in the following ways:

- in relation to your own teaching, provided that any electronic distribution maintains restricted access
- to share on an individual basis with research colleagues, provided that such sharing is not for commercial purposes
- in your dissertation or thesis, including where the dissertation or thesis will be posted in any electronic Institutional Repository or database
- in a book authored or edited by you, at any time after the Contribution's publication in the journal.

Provided that:

- Access to the Original Submission and Accepted Manuscript is provided at no charge.
- Any re-use terms for users of websites and repositories (where your **Original Submission** or **Accepted Manuscript** are posted) are restricted to non-commercial and no derivative uses.
- You may not post the **Final Published PDF** on any unrestricted website or repository without permission from SAGE.
- You may not republish or translate any version of your Contribution in another journal without prior permission from SAGE.
- The journal as the original publication of your Contribution is appropriately credited by including the full citation information each time your Contribution, or excerpts, are further distributed or re-used:
    - After your Contribution has been accepted for publication and until it is assigned a DOI, please include a statement that your Contribution has been accepted for publication in the journal.
    - Once full citation information for your Contribution is available, please include this with your posted Contribution, in a format similar to the following:
      Author(s), Contribution Title, Journal Title (Journal Volume Number and Issue Number) pp. xx-xx. Copyright © [year] (Copyright Holder). DOI: [DOI number].

22 June 2021

http://hdl.handle.net/2440/130793

Editorial: Use and Land Cover in Cities of the Global South - Pattern and Driving Forces

Editorial by guest editor Dr Scott Hawken PhD

Supplementary to the main volume 12.1 (March 2021).

This special issue of *Environment and Urbanization ASIA* on 'Changes in Land Use and Land Cover in Cities of the Global South - Pattern and Driving Forces' comes at an important time in the transition of cities in the global south around the world. Within Asia, emerging urban centres have fundamentally changed the regional landscape and it is an appropriate time to both visualise this dramatic transformation and to take stock of the drivers and forces that have shaped it. This special issue departs from *Environment and Urbanization ASIA*'s usual focus on Asia to consider the potential for knowledge transfer between urbanising cities in Asia and Africa. The UN's World Urbanization Prospects (United Nations, Department of Economic and Social Affairs & Population Division 2019:1) projects that between 2018 and 2050 the global urban population will grow by 2.5 billion urban dwellers, with almost 90 per cent of this increase located in Asia and Africa.

Africa is at a different stage of its urbanisation transformation. According to UN estimates, it is set to reach its tipping point whereby the majority of its population live in cities by 2035. Although urban rural distributions are a contentious topic, the scale of the challenge for Asia and Africa is well accepted in academic circles. More than scale, however, it is about the quality and framing of responses to urbanisation. How should cities in Africa and Asia manage and design policy for the massive levels of migration to come? Currently, negative views toward urbanising populations and the urbanisation process limits the effectiveness of policies (United Nations Human Settlements Programme, ICLEI-Local Governments for Sustainability & United Cities and Local Governments of Africa 2014). There is a need to design approaches that manage driving forces in positive and inclusive ways.

Another reason many cities are not well prepared to accommodate urbanising populations is policies which are built on insufficient data. Asia and Africa have significant data gaps and special issues like the one presented here can help contribute to meeting this need. The special issue is therefore framed as an opportunity to reflect and to assess what lessons and knowledge on the urban transition can be transferred from Asia to Africa and vice versa. It is also necessary to compare and recognise the distinctive patterns of urbanisation of each region, and to consider what is particular to Asia and therefore not relevant to the African experience.

Remote sensing, which all of the eight papers in this special issue touch on and apply to different effect, is one of the most powerful and revealing techniques for understanding this land use and landcover transformation. Actual urban footprints are revealed through remote sensed data, in contrast to bureaucratic boundaries which often disguise the true extent of cities. Some of the most effective technologies are not necessarily that new, yet still offer up startling insights when interrogated and analysed at different scales and using different methods. Remarkable new datasets produced in recent years include the Global Urban Footprint (Esch *et al.* 2017). Many of these remarkable datasets are available in Google Earth Engine and some authors (Scheba et al) from this special issue have made good use of this aggregator to assemble and analyse these across time to better understand changing spatial patterns of urban land use and landcover.

Such data are frequently global in extent, share common spatial and time periods, and are open access in nature. This makes such resources accessible to all and provide a powerful asset for global comparative analysis. Satellite data especially provide a consistent dataset, making urban

comparative research much more accessible and powerful and transforming empirical research on landcover, land use and urban development patterns. The papers in this special issue generally focus on using satellite imagery and other datasets such as census data, to discern developed from undeveloped land. From such classifications a variety of metrics can then be derived to describe the pattern, extent and transformation of urban areas over time. Of particular interest is the shape and fragmentation of spatial growth and its connectivity. Equally important are the landcover types being lost to urban development, such as agricultural and ecological lands. Recent work by d'Amour et al (2017) has described the extent of this and some of the case studies in this special issue provide focused investigation for the cities at hand.

Today's urban landscape has been shaped by the emergence of new constellations of cities, often linked in extensive urban regions. Some cities have grown beyond recognition, many new ones have appeared, and others have diminished in size. However, when looked at in aggregate the world's urban areas are expanding and their densities are decreasing. Generally, the global trend has been for a dramatic decentralisation with a reduction of urban density. In the west and east alike this has caused much consternation. However, as scholars such as Angel (2011) attest, the response must be measured and space must be made for urban newcomers. The burgeoning populations of Africa and Asia must be encouraged to urbanise to meet a range of sustainability targets. Part of this means making space for Asian and African migrating populations.

The eight cities considered in this special issue, moving geographically from east to west are: Chongqing, China; Batangas City, Philippines; Dar es Salaam City, Tanzania; Kigali City, Rwanda; Johannesburg, South Africa; Cape Town; South Africa; Dhaka, Bangladesh; and Delhi, India. The eight city case studies capture an extraordinary swathe of urban experience and geographic reach, taking in East Asia, Southeast Asia, South Asia, East Africa, Central Africa and Southern Africa. The mapping by the special issue authors reveals a range of patterns, all of them polycentric. Each of these case studies demonstrate a remarkable diversity and the importance of approaches that integrate a more granular urban design scaled analysis that takes into consideration the diversity within the urban footprint and within the broad classes identified by remote sensing approaches.

The paper by Sun, Liu et al emphasises the scale of China's urban transformation, noting that Chongqing has expanded by almost 500% in the last 20 years in a polycentric pattern (Sun, Liu, Sun, Yu. Li, Zhai). So much so that it is sometimes regarded as the largest city in China, although that depends how its urban area and connectivity is defined. Chongqing's urbanisation is generally admired within China and has come about through a combination of good management and opportunistic use of circumstance. For example, its strategic location on the Yangtze and geopolitical location in relation to the Belt and Road initiative and its ability to keep housing prices relatively stable through good management of property auctions and land development, amongst other factors, has allowed rapid and more inclusive growth than many other Chinese cities. Significantly, Chongqing has not blindly followed the eastern seaboard cities in some regards and has instead focused on its competitive advantage and therefore benefited from its own distinctive developmental path (Bao, Li & Lizieri 2019).

In Southeast Asia the path to urbanisation has been challenging and dominated by large metropolitan areas and supporting peripheral cities. This is the case for Manila and its extended urban region (Kelly 1999, 2003) which has stimulated the industrialisation of a cluster of surrounding settlements such as Cavite, Laguna, Batangas, Rizal and Quezon. Daguio, Rivera, Delos Reyes, Santiago and Mendoza investigate Batangas, one of these peripheral cities to the south of Manila, seeking to chart the patterns of land value dispersed throughout this formerly agricultural area.

South Asian urbanisation has taken a very different turn from that in East and Southeast Asia. There is a remarkable diversity of urban patterns emerging in this region, with urban areas experiencing

unprecedented rates of growth over the past three decades. This economic growth has come at great cost, placing extreme pressure on India's social and environmental systems. Roy , Sowgat , Islam and Anjum map the sprawling peri-urban area of Dhaka, describing the driving factors that have stimulated growth in the urban periphery. Further, they highlight that socio-economic sustainability is a major challenge with inadequate service provisioning creating inequalities and segregated communities surrounding the denser city centre. These new areas are emerging without policies and measures for safeguarding the interests of urbanising citizens in the sprawling periphery of the city. They note that these forces could lead to future social unrest in the city region. In such contexts, better management of bottom up and informal resource development and capacity building need to be a high priority. Kundu, Mondol, Sharma and Bansal focus more on the green resources of Delhi and assess the landscape and ecological risk zones considering both landscape fragmentation and land use land cover vulnerability. Their findings suggest the urgency of understanding more about the ecological security patterns within Indian cities and their associated mega-urban regions.

Within the different regions of Africa, a range of complementary but also new pressures are evident. Amongst these new pressures are the extreme rate of urbanisation in cities such as Dar es Salaam described by the special issue authors Msuya, Moshi and Levira. From 2000 to 2015, Dar es Salaam's population grew from 2,272,483 to 5,115,698 - a growth rate of 5.74 per cent, whilst the built-up area expanded by 23.16 per cent. The need for new housing has driven both informal and formal housing development. Populations who had lived in informal inner city developments have been resettled in formal schemes on the periphery. This has however, come at the expense of ecological resources that the city relies upon.

The paper on Kigali, Rwanda presents another case of the distinctive rapid urbanisation taking place in Africa. Within Kigali the average annual growth rate was almost 10.24 per cent from 1999 to 2018. Informal urban expansion has characterised the city since independence, with formal developments lacking the scale, resources, and ambition to provide for urbanizing populations on the periphery. Of note is the special economic zone which sits as a formal development in the midst of more informal urbanisation. One interesting aspect of Kigali's urbanisation has been an increase in afforestation despite the massive new urban development taking place.

The final two papers considered, and those furthest west in the city sample, focus on Johannesburg and Cape Town in South Africa. Both cities are immensely complex and, in many ways, unique within global discussions of urbanisation. The authors attempt to lay bare several decades of urbanisation drivers and trends in relation to urban land cover and census data analyses. Katumba and Everatt explain that the question of urbanisation, land cover and 'sprawl' are inherently political in South Africa, where the post apartheid constitutional settlement negotiated gave the state the right to expropriate land but effectively left the property status quo in place. Cities and urbanisation were not effectively considered a national priority by the new ruling party, the African National Congress (ANC), until 2014, when a new national urban policy came into effect. Nevertheless, this has come as too little too late, with the structural inequalities of apartheid proving both formidable and lasting.

Extending on from the paper by Katumba and Everatt, the excellent paper by Scheba, Turok and Visagie al describe how policy that does not interface well with underlying driving forces will often produce unintended outcomes. In Cape Town this means a densification of already incredibly dense poorer townships located well beyond easy access to services, whilst the wealthy inner urban residential areas, well placed in relation to urban amenity, have generally resisted densification. The result is an increase in the already severe inequalities that plague the city. This has not been helped by the sidelining of urban design as a city shaping approach in recent years. More than any other paper in the special issue, Scheba and co-authors consider the importance of the fine grain and how it can transform the broad and high-level impressions and findings provided by remote sensing and

census data. Further urban design approaches are necessary to translate high level remote sensing analyses in a way that is meaningful and effective to the lives of local people. This affirms the importance of multidisciplinary research between remote sensing specialists and planners and those working on the ground shaping cities at the level of the street.

I am delighted to be given the opportunity to introduce this special issue, my first as a member of the editorial board for *Environment and Urbanization ASIA*, which offers an important range of insights on cities that are generally beyond the purvey of mainstream urban studies. It is so important because they are emblematic of the challenges throughout Asia and Africa, where the most critical new urban growth of the next two decades will take place.

References

d'Amour, C.B., Reitsma, F., Baiocchi, G., Barthel, S., Güneralp, B., Erb, K.-H., Haberl, H., Creutzig, F., *et al.* 2017. Future urban land expansion and implications for global croplands. *Proceedings of the National Academy of Sciences*. 114(34):8939–8944.

Angel, S. 2011. *Making room for a planet of cities*. Cambridge, MA: Lincoln Institute of Land Policy.

Bao, H.X.H., Li, L. & Lizieri, C. 2019. City profile: Chongqing (1997–2017). *Cities*. 94:161–171.

Esch, T., Heldens, W., Hirner, A., Keil, M., Marconcini, M., Roth, A., Zeidler, J., Dech, S., *et al.* 2017. Breaking new ground in mapping human settlements from space – The Global Urban Footprint. *ISPRS Journal of Photogrammetry and Remote Sensing*. 134:30–42.

Kelly, P.F. 1999. Everyday Urbanization: The Social Dynamics of Development in Manila's Extended Metropolitan Region. *International Journal of Urban and Regional Research*. 23(2):283–303.

Kelly, P.F. 2003. Urbanization and the Politics of Land in the Manila Region. *The ANNALS of the American Academy of Political and Social Science*. 590(1):170–187.

United Nations, Department of Economic and Social Affairs & Population Division. 2019. *World urbanization prospects: the 2018 revision*.

United Nations Human Settlements Programme, ICLEI-Local Governments for Sustainability & United Cities and Local Governments of Africa. 2014. *The state of African cities, 2014: re-imagining sustainable urban transitions*. Nairobi: United Nations Human Settlements Programme.

Special Issue Papers

Daguio, K., Rivera, R., Delos Reyes, M., Santiago, J., Mendoza, J. (2021). Urban sprawl and land value in urban sprawl and land value in Batangas City, Philippines*, Environment and Urbanization ASIA* (This issue).

Katumba, S., Everatt, D. (2021). Urban sprawl and land cover in post-apartheid Johannesburg and the Gauteng City-Region, 1990-2018, *Environment and Urbanization ASIA* (This issue).

Commented [CC1]: The style says not to capitalise each word of a journal asrticle title so I have amended these titles to comply with that.

Commented [SH2R1]: reading this makes me think we should do the sam for the pieces title. can you please fix?

Kundu, D., Mondol, B., Sharma, P., Bansal, S. (2021). Spatio-temporal assessment of landscape ecological risk in Delhi based on land use land cover change, *Environment and Urbanization ASIA* (This issue).

Msuya, I., Moshi, I., Levira, F. (2021). Land pattern of highly urbanizing cities: Change in built-up area, population density and spatial development of Dar es Salaam City, *Environment and Urbanization ASIA* (This issue).

Nduwayezu, G., Manirakiza, V., Mugabe, L., Malonza, J. (2021). Quantitative measures of Kigali land cover change and urban growth in the post-genocide period, *Environment and Urbanization ASIA* (This issue).

Roy, S., Sowgat, T., Tafsirul, I., Anjum, N. (2021). Sustainability challenges for sprawling Dhaka, *Environment and Urbanization ASIA* (This issue).

Scheba, A., Turok, I., Visagie, J. (2021). Inequality and urban density: Socio-economic drivers of uneven densification in Cape Town, *Environment and Urbanization ASIA* (This issue).

Sun, X., Liu, Y., Sun, T., Yu, S., Li, C. Zhai, L. (2021). Studies on the land cover change and urban expansion of Chongqing, China Based on Remote Sensing images, *Environment and Urbanization ASIA* (This Issue).