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Smart Townships will build Smarter Cities

- **Building Smart Cities, as currently proposed, will not redress existing urban inequalities — digital resources (public Wi-Fi) and smart technologies tend to be allocated in city centres and high rate paying suburbs that already have, often privatised, digital and security services such as high-speed Internet access and video surveillance.**
- **Rather than mobilising resources for a new futuristic city, such as the one proposed for Lanseria, government could crowd in productive private and public investments into a national strategy to deliver 'Smart Townships' and 'Smart Villages' in small and large municipalities with the purpose of enhancing their resilience before the next inevitable pandemic.**
- **The Western Cape Digital Foundation's 'Smart Township Project', despite being short-lived demonstrated that demand-side allocation of resources for public Wi-Fi, or the prioritisation of broadband, smart sensors and Internet of Things (IoTs) to monitor and deliver services in townships could contribute to redressing the spatial inequalities that characterise South African cities and contribute to President Ramaphosa's promise of a more equitable reconstruction of the economy.**

What if, instead of building a R84 billion new 'Smart-Megacity',[1] those resources were diverted to supporting the development of 'Smart Townships' and 'Smart Villages' to redress digital inequality, enable greater social and economic inclusion, and foster urban resilience for the next pandemic?

The COVID-19 lockdowns have laid bare the unevenness of digital resources within cities, between cities and smaller municipalities in South Africa. This unevenness compounds existing spatial inequalities shaped by apartheid legacies, which are now widely perpetuated by income and wealth inequality and urban mobility. These spatial patterns have produced some of the most unequal and fragmented cities in the world.[2]

This digital dichotomy was reflected in lockdown adjustment disparities, where those who are most likely to live in middle-class suburbs with access to highspeed broadband and Internet enabled devices could almost seamlessly transition to online remote work, schooling, food orders and entertainment. In contrast, many

[1] Reboredo, R. (2019). What a failed Johannesburg project tells us about mega cities in Africa. *The Conversation Africa*. Available at: https://theconversation.com/what-a-failed-johannesburg-project-tells-us-about-mega-cities-in-africa-112420
[2] Turok, I. (2018). Worlds apart: spatial inequalities in South Africa. *Confronting inequality: The South African crisis. Chapter in Smith, M.N. (ed.) (2018). Confronting Inequality, Johannesburg: Jacana Media.*

people in townships and informal settlements were unable to resort to digital substitutes and faced severe disruption of informal value and labour supply chains, leaving swathes of urban destitution across the country.[3] The digital divide meant that local government's relief efforts through digital avenues failed to support relief identification and distribution efforts in these marginalised communities.[4]

In addition to remote rural areas, digitally under-resourced groups can generally be found in three different urban locations. The first group are likely to be located in decrepit inner city residential areas of major metropolitan cities. The second group reside further out of central business districts in enduring apartheid-era formal townships. Given the economic characteristics of households in these poor urban areas, who generally survive off lower levels of income,[5] [6] most household members in these locations will have, at best, a feature phone or old basic mobile phone, with relatively few people having access to smartphones.[7] Those who do have feature or smart phones and who live close to free public provincial or municipal Wi-Fi might access a meagre 50 to 100 MBs of data per day[8] to maintain a weak on-line presence.

The third group are located in sprawling informal settlements on the fringes of major metropolitan cities and consist of many people who recently migrated to the 'Big City' from largely unconnected rural areas or countries further North, in search of economic opportunities. While many in this group may have a basic analogue mobile phone, possibly a basic feature phone, large numbers will not have smartphones.[9] In addition to worsening limited access to digital resources, the lockdowns have meant that besides being completely cut off from informal sector supply chains, many people living in these settlements were unable to even receive local community information on civil society initiatives aimed at supporting those who fall out of state support systems.[10]

Smart Townships for digital inclusion

Imizamo Yethu (IY), a mixed formal township and informal settlement that developed within the Cape Town suburb of Hout Bay represents the third type of underserved urban settlement, but with a key distinction, as many residents in IY have access to a feature phone or smart phone (Interview: Owen Xubuzane, producer IYTV, April 2020). Ravaged by the lockdown, the already dismal living

[3] Stiegler, N., & Bouchard, J. P. (2020, May). South Africa: Challenges and successes of the COVID-19 lockdown. In *Annales Médico-psychologiques, revue psychiatrique*. Elsevier Masson.
[4] Skiti, S. (2020). Sassa system ignores digital divide. *Mail & Guardian*. Available at: https://mg.co.za/article/2020-04-29-sassa-system-ignores-digital-divide/
[5] Ahmad, P., Chirisa, I., Magwaro-Ndiweni, L., Michundu, M., Ndela, W., Nkonge, M., & Sachs, D. (2010). *Urbanising Africa: The city centre revisited: Experiences with inner-city revitalisation from Johannesburg (South Africa), Mbabane (Swaziland), Lusaka (Zambia), Harare and Bulawayo (Zimbabwe)* (No. IHS WP 26).
[6] Mahajan, S. (Ed.). (2014). *Economics of South African townships: special focus on Diepsloot*. The World Bank.
[7] Gillwald, A., Mothobi, O., & Rademan, B. (2018). *The State of ICT in South Africa* (Policy Paper No. 5; Series 5: After Access-Assessing Digital Inequality in Africa). Research ICT Africa.
[8] Western Cape Government. (2020). Switching on public Wi-Fi hotspots across the Western Cape. Available at: https://www.westerncape.gov.za/general-publication/switching-public-wi-fi-hotspots-across-western-cape
[9] Gillwald, A., Mothobi, O., & Rademan, B. (2018). *The State of ICT in South Africa* (Policy Paper No. 5; Series 5: After Access-Assessing Digital Inequality in Africa). Research ICT Africa.
[10] Gumede, W. (2020). SA faces food riots and breakouts from the lockdown. *Wits University*. Available at: https://www.wits.ac.za/covid19/covid19-news/latest/sa-faces-food-riots-and-breakouts-from-the-lockdown.html

conditions were exacerbated by limited emergency support from local government, which underlines broader shortcomings.[11] In response to the crisis and the inability of the state to respond to the state of emergency, civil society rose to the occasion by providing food relief initiatives, such as the local Community Action Network (CAN),[12] who were able to provide some form of food support to all IY township residents; a significant number of whom are undocumented migrants, unable to access emergency social grants or unemployment insurance from the state, as they are generally not recipients of these allowances.

With enough political will and financial support, the scenario could have been very different. A mere year prior, government and civil society would have been able to tap into a low cost broadband network, with dozens of informal businesses operating on it and a local television station that could have informed people of both virus containment measures and humanitarian relief.

Like many other public Wi-Fi initiatives across the country that have eventually petered out due to inadequate government funding models, the short lived Smart Township Project, provides another example of the challenge of sustaining demand-side valuation driven initiatives that acknowledge Internet access as social and public goods, in contrast to the supply-side valuation logic of city and provincial level resource allocations that serve the interests of high-end rate-payers and certain elite political constituencies.[13]

A key feature of the Smart Township project was that it combined the practicalities of championing sophisticated digital solutions with addressing fundamental human rights.

Developed under the auspices of the now defunct Cape Digital Foundation and the brainchild of its last CEO, Emma Kaye. The initiative sought to shift the focus of the Western Cape Broadband Initiative of the provincial Department of Economic Development and Tourism (DEDAT), from mere connectivity to building "... smart, digitally savvy business communities by providing digital training to township business owners that would be engaging with and enabling 'Smart Citizens'."[14]

Based on five core pillars (digital infrastructure, affordable connectivity, digital skills, local content, and data collection), the Digital Foundation formed partnerships that provided IY residents with access to reliable, affordable Internet and digital skills training , where daily use of the Internet was supported by relevant, hyper-local content—created 'by the people for the people'. (Interview: Emma Kaye, Digital Foundation CEO, March 2020).

[11] Brand, D. (2018). South Africa is paying a heavy price for dysfunctional local government. *The Conversation Africa*. Available at: https://theconversation.com/south-africa-is-paying-a-heavy-price-for-dysfunctional-local-government-102295

[12] Human, L. (2020). How a Cape Town group is helping neighbourhoods fight Covid-19. *GroundUp*. Available at: https://www.groundup.org.za/article/how-cape-town-group-helping-neighbourhoods-fight-covid-19/

[13] Geerdts, C., Gillwald, A., & Enrico Calandro, D. (2016). Developing Smart Public Wi-Fi in South Africa. *Research ICT Africa*. Available at: https://researchictafrica.net/publications/Other_publications/2016_Public_Wi-Fi_Policy_Paper_-_Developing_Smart_Public_Wi-Fi_in_South_Africa.pdf

[14] Mkosi, A. (N.D.). Last Mile Digital Access – No Citizen Let Behind. *Digital Economy Update Newsletter*. Western Cape Government. Available at: https://www.westerncape.gov.za/site-page/last-mile-digital-access-no-citizen-left-behind

The project enlisted the support of a local micro provider, TooMuchWiFi,[15] that provided reliable digital infrastructure and affordable Internet access by connecting resellers to local fibre connections and mesh networks for an initial connection fee of R1000 with R1000 of free data. The partnership was an alternative to expensive mobile data costs and high reliance on mobile data networks in townships.[16] This meant that IY residents had wider Internet access options beyond spending a large share of their income on mobile data, they were also able to access high quality bandwidth at a much lower cost.

Furthermore, the project also provided residents with free access to IYTV, a multidimensional hyper-local content channel. The channel had a regular following of about 4000 daily viewers. Its content included local community news and a directory of local businesses, including a range of micro-businesses such as hairdressers, informal retail traders and hot food vendors, to name a few that were listed for free. These listings had full business descriptions and contact details that included Google Map location pins.

As an alternate scenario, provided other factors were also in place,[17] including a fair and progressive tax model[18] and land tenure, both the state and private sector could have leveraged the informal retail trade that is predominant in these areas, and encouraged more innovative financial inclusion efforts from formal financial institutions,[19] which could've spurred the township economy where local spaza shops and street traders could have access to formal capital and supply chains.[20] This would have allowed these businesses to participate in the apparent lockdown induced e-commerce boom in locations with few street names or no house/business/building numbers.

The channel also provided educational material through digital workbooks for students from grades 4 to 9 and animated content for younger children. Under the right conditions,[21] during the lockdown IYTV could have been expanded to include a separate online educational channel that included more grades, zero-rated websites and educational resources to supplement school closures. Lastly, the channel also reflected the cultural diversity of IY by catering to the foreign migrant community, for instance by including recipes and international cuisine (Interview: Owen Xubuzane, producer IYTV, April 2020). Aside from local self-taught tech savvy

[15] TooMuchWiFi website. Available at: https://toomuchwifi.co.za/

[16] Phokeer, A., Densmore, M., Johnson, D., & Feamster, N. (2016, November). A first look at mobile internet use in township communities in South Africa. In *Proceedings of the 7th Annual Symposium on Computing for Development* (pp. 1-10).

[17] UNCTAD. (2019). UNCTAD B2C E-COMMERCE INDEX 2019. *United Nations*. Available at: https://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d14_en.pdf

[18] Gallien, M. & van den Boogaard, V (2020). Unpacking Formalisation: The need for a new research agenda on taxation and the informal economy. International Centre for Tax and Development. Available at: https://www.ictd.ac/blog/unpacking-formalisation-need-new-research-agenda-taxation-informal-economy/

[19] Rumney, E. (2019). In South African townships, 'unseen' businesses catch a big bank's eye. *Moneyweb*. Available at: https://www.moneyweb.co.za/news/south-africa/in-south-african-townships-unseen-businesses-catch-a-big-banks-eye/

[20] Mahajan, S. (Ed.). (2014). *Economics of South African townships: special focus on Diepsloot*. The World Bank.

[21] Trucano, M. (2016). Promising uses of technology in education in poor, rural and isolated communities around the world. Available at: https://blogs.worldbank.org/edutech/education-technology-poor-rural

Owen Xubuzane,[22] who was trained to produce the content and schedule, IYTV also had other citizen journalists who uploaded local community stories daily.

A central aspect of the project was the implementation of supply-side measures to connect the unconnected — for example, by working with partners who could provide fast and affordable Wi-Fi into homes and public spaces. However, the initiative also considered demand-side constraints related to optimal use of the Internet. For instance, through a partnership with the University of the Western Cape's CoLab, a number of training workshops for micro, small and medium-sized enterprises (MSMEs) were organised to develop digital skills within the community with a particular focus on women (Interview: Dr Leonora Craffert Director: CoLab for E-Inclusion and Social Innovation, April 2020).

Initiatives such as the Smart Township project provide a real alternative to the techno-utopian Smart City visions.

Although the Western Cape Government claimed to be committed to the initiative,[23] it was at best a fringe project. The Project was initiated, implemented and driven by an individual, Digital Foundation CEO, Emma Kaye, and supported by the Digital Foundation's board. But without a commitment of financial resources from the private sector or (provincial or local) government, which would have enabled the institutionalisation of the project and thus potentially created the longevity, financial support, scale and progression required to develop a deeper impact, the project was short-lived. (Interviews: Emma Kaye, Sean Pather, Tracy Cohen, April 2020).

The main attribute of bottom-up interventions like the Smart Township project is that unlike the common top-down Smart City approach that revolves around efficiency and optimisation of urban processes, bottom-up approaches draw on current realities and consider the recipients of urban development processes in ways that embrace informality and leverage the use of ICTs to build inclusive, holistic urban resilience for citizens (Interviews: Emma Kaye, Tracy Cohen April 2020).

Conclusion and recommendations

Techno-utopian views of 'Smart Cities'[24] not only perpetuate inequality and negate future urban resilience, they also disregard the user-centric, social-technical criteria that are crucial to classify a city as 'smart'—where all who reside in the city are digitally connected and have greater access to employment opportunities, public services, transportation and overall better quality of life, through the use of information and communications technologies (ICT) and wiser management of

Nationally led strategies to deploy public broadband access, including smart sensors and IoTs are essential to support municipalities overcome apartheid-legacy geospatial inequality .

[22] Jay, D. (N.D.). Success Story: Hailing from the Streets of Imizamo Yethu. *Digital Economy Update Newsletter*. Western Cape Government. Available at: https://www.westerncape.gov.za/site-page/success-story-hailing-streets-imizamo-yethu-owen-xubuzane

[23] Mkosi, A. (N.D.). Last Mile Digital Access – No Citizen Let Behind. *Digital Economy Update Newsletter*. Western Cape Government. Available at: https://www.westerncape.gov.za/site-page/last-mile-digital-access-no-citizen-left-behind

[24] Mzekandaba, S. (2020). SA's 5G-ready smart city in the works, says Ramaphosa. ITWeb. Available at: https://www.itweb.co.za/content/KA3WwMdlPnzMrydZ

natural resources.[25] A considerable body of literature has developed over this time to demonstrate that poorly planned Smart City Initiatives, in a developing country context, exacerbate socio-economic inequalities, spatial segregation and public funding injustice even further.[26]

The solution is an integrated local government strategy that supports the evenness of delivery not only within cities but between them and smaller municipalities. This could be a critical element of an integrated digital new deal, where coordination of digital strategies and indeed governance of global public goods, such as Internet, data and cybersecurity are realised at the national level. Also, given the uneven development of the South African economy and enormous geospatial inequality, directives from national government are better suited to address these challenges, as there is far less capacity in many cities and often none, in the municipalities outside of the main metropoles to deploy ICTs to enhance the efficiencies of their operations and ensure that all citizens have public access to the Internet to benefit from online services or create livelihoods.

In order to produce a more equitable and inclusive economy, national implementation of inclusive urban policies and spatial planning is required to drive the massive economic reconstruction that President Ramaphosa has promised.

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Authors
Shamira Ahmed: sahmed@researchictafrica.net
Alison Gillwald: agillwald@researchictafrica.net

Enquiries
info@researchictafrica.net
409 The Studios, Old Castle Brewery, Beach Road, Woodstock, Cape Town
T: +27 214476332
W**: www.researchictafrica.net**

More RIA policy briefs ***here***.

25 OECD. (2020). Smart Cities and Inclusive Growth. *Organisation for Economic Co-operation and Development*. Available at: https://www.oecd.org/cfe/cities/OECD_Policy_Paper_Smart_Cities_and_Inclusive_Growth.pdf

26 Cain, A. (2014). African urban fantasies: past lessons and emerging realities. *Environment and Urbanization*, *26*(2), 561-567.