



Urban
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Briefing

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Risk beyond the red line: urban risk and large-scale infrastructure projects in Kenya

Cities are at the centre stage of Africa's pathway to prosperity, with the majority of its population expected to be living in urban areas within the next decade. The infrastructure gap to accommodate this demographic shift and the economic opportunity it affords is creating a plethora of large-scale projects, mainly in transport infrastructure and real estate development. In the absence of appropriate governance and regulation, the urban environment is being shaped by these projects individually, rather than by planning processes that recognise the city as a system.¹ The potential risks posed by piecemeal development and uncoordinated growth to both local communities, and the city overall are being overlooked and need to be addressed, as research findings from Nairobi, Kenya demonstrate.

Background

Between 2016 and 2017, research was carried out to explore how two large infrastructure projects – the Thika Highway Improvement Project and the Two Rivers Mall Development – are creating, compounding, or mitigating risks in Nairobi, Kenya.² These projects represent typical large-scale 'road' and key 'nodal' developments that are shaping urban growth in Africa. Such projects lie within complex urban systems and can unevenly create, compound or mitigate risk across different scales. The research explored the relationship between projects and risk accumulation at the following three different scales as illustrated in Figure 1:

- **City:** whether urban risk from large-scale projects is addressed within existing national and city planning, policy and regulations;
- **Project:** whether large-scale projects are planned (or at least regulated) with awareness of risk accumulation 'beyond the red line' of their project plan boundary; and
- **Neighbourhood:** whether the positive and negative impacts of the case study projects on risk accumulation in adjacent communities have been considered.

This briefing summarises the key research findings which influence urban risk accumulation from large infrastructure projects. In response to the challenges and opportunities identified, five key principles and four pathways towards change are proposed.

Key challenges

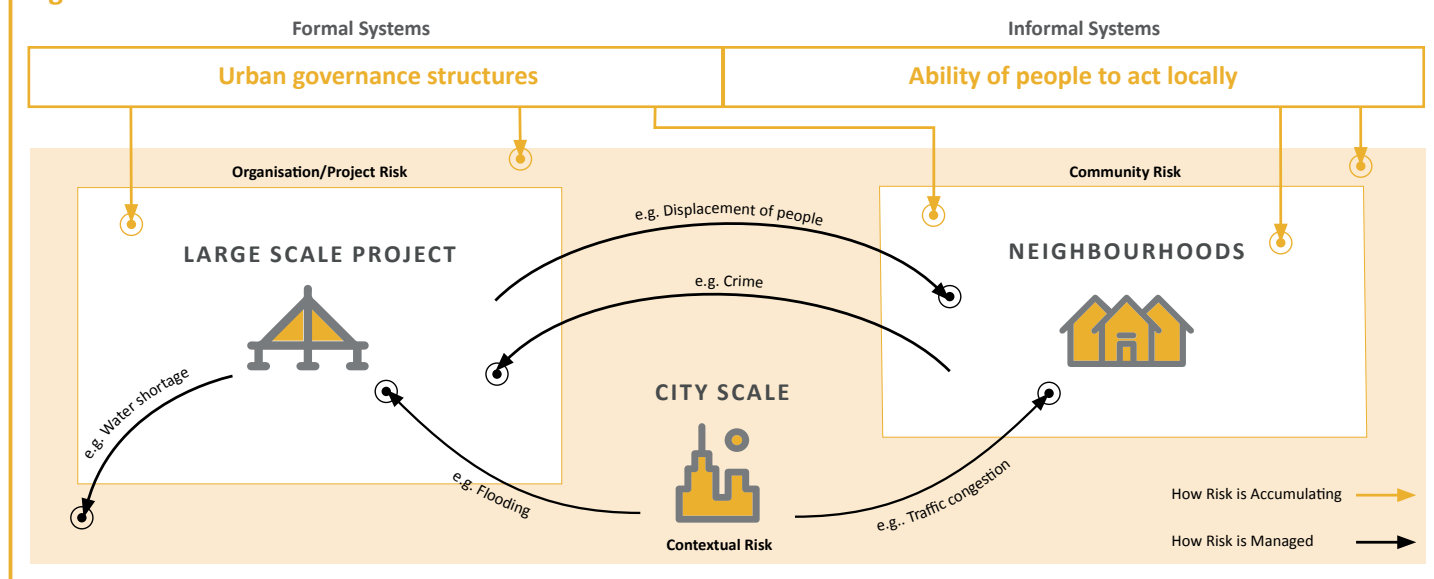
Both case studies aimed to improve economic productivity in Nairobi. Primary research undertaken within local communities confirmed that direct and indirect opportunities have been achieved through the projects, including local job creation³ and increased connectivity.⁴ However, while these developments have mitigated certain risks for local residents, they have also created or compounded other risks such as flooding and housing affordability. This is because the projects have not been required to consider risks 'beyond the red-line' boundary of their sites. Investors, developers, and designers tend to be concerned primarily with risk to their project, rather than risk from their project on the locality or wider city. The following underlying challenges are influencing urban risk accumulation from such projects.

Policy Pointers

Planners and developers need to:

1. **Normalise inclusive development** in the delivery of large infrastructure projects.
2. **Plan for the magnetic effect** and surrounding service demands of large infrastructure projects.
3. **Account for the small- and medium-scale projects** that come up around large infrastructure projects.
4. **Understand the complex risk networks** linked to large infrastructure projects which can create, compound, or mitigate risk.
5. **Recognise the need for rigorous community engagement** in order to achieve risk-sensitive, inclusive development.

Figure 1: Risk Generation and Accumulation between Scales



Pressure for development in Nairobi

- Several lead agencies noted that they are under considerable pressure not to hold up development in Nairobi. This pressure to develop is resulting in rushed planning that does not adequately consider diverse risks.

Gaps in the current planning process

- Fragmentation of the planning system was the principal risk cited by the majority of city stakeholders. Currently the Nairobi city masterplan⁵ is not supported by detailed local area plans, zoning or development guidance. In this context, each new development is negotiated between the developer and the Nairobi City County (NCC), and risk is managed on a case-by-case basis.
- Planning departments lack the capacity to enforce regulation, and rapidly changing land use is not adequately addressed in the current guidance.
- Public consultation is often carried out to achieve compliance. The case study projects complied with legal requirements for consultation; however, for the scale of the projects, the level of consultation was minimal.
- The Environmental Impact Assessment (EIA) process is ineffective. Developers themselves are responsible for appointing a consultant who is responsible for the EIA. Enforcement capacity is insufficient. The EIA and planning approval processes are not linked and small to medium developments often slip between the cracks.

Insufficient detail in project design and implementation

- The detailed design stage is a key step in project design, where risks are addressed before the costly construction stage begins. This stage is often skipped to save costs and speed up development, consequently exposing projects to risks that are much more difficult and expensive to resolve during construction or even operation.
- The quality and quantity of data used to understand key risks on case study projects was limited. On Thika Highway the ability to plan around existing utilities

was generally not possible as no records existed.

Disruptive, intrusive and costly investigations were required to identify existing utility constraints. Projects did not obtain or generate sufficient rainfall, run-off and aquifer geology data for flood and groundwater risk modelling and analysis.

Ineffective contracts and project finance

- Given the complexity of risk management on large projects, contractual arrangements play a significant role in mitigation. The appropriate allocation of risk to the relevant project stakeholders is key, as is the effective management of the financial resources to address risks.
- In the case of Thika Highway, the funder, the African Development Bank (AfDB), has a policy that the recipient country carries the risk by being responsible for procurement, or early works and due diligence at the start of project. This creates risk, as the government struggles to finance enabling works that are then pushed to the contractor who prioritises certain issues over lower priority works.
- In comparison, privately financed infrastructure projects go to significant efforts to agree contracts and risk apportionment. Risk is quantified as far as possible through precise technical assessments. These processes reduce risk to investors and developers and by extension surrounding neighbourhoods.

Principles for risk-sensitive development

The key challenges outlined will require continued institutional reform and capacity building. We suggest that the negative impacts of large infrastructure projects can be avoided, or at least reduced, if planners and developers place greater emphasis on the following five principles:

1. **Normalise inclusive development:** infrastructure can be inclusive or exclusive. It is important to consider who the infrastructure is serving. Good urban governance aims to broker this dynamic and to ensure where possible that development is equitable and inclusive for all. Full consideration needs to be given to

the direct and indirect impacts of a large-scale project and its effects on the most vulnerable. For example, those whose employment situation will improve and those who will suffer, home owners versus renters, and those living near hazard hot spots versus those living further away.

2. Plan for the magnetic effect of large-scale projects:

both Thika Highway and Two Rivers have added desirability to surrounding locations. This has affected house prices, population growth and related infrastructure demand. Residents with adequate financial capacity are able to absorb the impact. However, for more vulnerable parts of the community, the day-to-day, extensive risks that they experience are compounded by rapid development.

3. Do not forget the small to medium-scale projects:

despite their issues, large-scale projects are being delivered locally to a higher standard and have captured the attention of the public. Numerous small and medium-scale developments are popping up surrounding these large-scale projects. These developments are often designed and constructed rapidly without seeking planning permission. They frequently fly under the radar and pose a risk to occupants or those residing nearby these buildings. Urban authorities should be aware of the risks and anticipate the need for greater building control demands once a large-scale project is planned for an area.

4. Understand the complex risk network:

the research highlights complex project-risk relationships where certain risks have been mitigated but others created, compounded, or transferred with cascading impacts. A robust risk analysis should be undertaken before a large-scale project is approved. Risk analysis should consider both internal risk to a project and the project’s relationship with the wider environment outside the project boundary. This means not only considering local risks which might be created or compounded by the project, but also opportunities to mitigate existing risks faced by local communities. This risk-sensitive approach can be achieved by rigorous, methodical consideration of the potential direct and indirect benefits of the project during the design process.

5. Recognise the need for quality engagement:

several of the areas for improvement discussed in this briefing can be addressed through improved engagement with communities and between agencies. In Kenya, there are positive signs that public consultation and engagement is improving

and there is growing evidence of community-based planning, including a network of neighbourhood actors supported by evolving legislation, which should be built on.

Pathways towards change

Knowledge and awareness – thinking beyond the ‘red line’

Case studies highlighted the need for project stakeholders (both developers and regulators) to employ greater systems-thinking in consideration of risk ‘beyond the red line’ of their development boundary. The use of accessible tools, such as the Nairobi Hazard Lens used in this study (to consider the direct and indirect of impacts of case study projects beyond their boundary), could potentially be used to engage developers and regulators in this approach.⁶

Regulatory reform, systems and processes

Much progress has been made in Nairobi and Kenya in creating legislation, plans, policies and regulation since the 2010 constitution and devolution process.⁷ This research highlighted examples of recent road projects, such as the Western Bypass, which appear to have displayed greater integrated thinking. However, considerable progress is still needed, to include up-to-date and detailed plans, policies, and regulations for effective development control.

Identifying actors and mechanisms that can be engaged to influence risk management on projects is crucial. While the research highlights how strengthening the planning process, including EIAs, would help to regulate risk beyond the red line of projects, new actors who hold significant influence over development may also need to be found. For example, in Kenya the Special Economic Zones Authority – a special national body formed in 2015 to establish and regulate these zones – is in a powerful position to ensure developers employ ‘red-line’ thinking.

Capacity building at different levels

The capacity of diverse agencies involved in development control is a key issue blocking the robust regulation of risk. Quantifying the problem through considering key issues will aid awareness. For example, it is important to ask the question: “How many applications do planning departments currently process versus the number of full-time staff?”.

It is also important to develop tools and processes to help planners consider and regulate the full spectrum of project risks. The research used accessible hazard mapping exercises to engage local neighbourhoods,

Figure 2: Pathways towards change

The majority of the underlying issues behind the development-related risks described in this paper can largely be categorised as:

- Those inhibited by a lack of awareness;
- Those requiring regulatory reform;
- Those requiring increased capacity; and
- Those which do not align with financial objectives.



as well as open source satellite imagery, to analyse urban growth patterns and the evolution of certain local risks. It also highlighted the gaps in existing city planning tools, including planning handbooks, local area development plans, and EIA processes which are either out of date, missing, or lacking in sufficient detail. Capacity building needs to consider not just the resource capacity of departments responsible for Nairobi development regulation, but also the tools at their disposal, the level of training, and the opportunities available for continued professional development.

Community-level, civil society actors have an important role to play in the mitigation of development risk especially if national, city, and project level actors cannot be engaged or do not have capacity. In Nairobi, some neighbourhoods already have up-to-date local plans and zoning. These neighbourhoods have influential residents with the knowledge and power to prevent unsuitable development taking place. It is thus important for civil society actors and NGOs to explore what support can be provided to neighbourhood organisations for harnessing community potential.

Reputational and financial incentives

The long-term value of an expanded project brief that considers risk 'beyond the red line' needs to be clearly articulated, especially in the case of privately-financed projects where investor returns dictate decisions. Investment beyond the red line can lead to gains in local workers' productivity, reduction in 'lost time', and improved wellbeing resulting from safer environments. Globally, incentives exist for meeting sustainability criteria. Is it possible to

incorporate 'red-line thinking' criteria or adopt it as a parallel standard?

As land within Nairobi becomes more and more desirable there is the opportunity to demand that private developments are part of an inclusive, sustainable community project. The corporate social responsibility and public image of large corporations setting up business in East Africa is something which can be capitalised on by a growing civil society engaged in planning decisions.

Conclusion

Nairobi is continuing to develop at a rapid rate, underpinned by a fragmented planning process with critical gaps in the level of detail, particularly at the local level. These gaps are leading to a lack of integrated planning between large infrastructure projects and the needs beyond the red line of the project boundary. Those seeking to improve the consideration of risk beyond the red line of development need to identify actors at national, regional, city and community scale and support them through education and capacity building, while creating incentives for developers to embrace a fully holistic risk-sensitive approach. Together with regulatory, planning and policy reforms, consistent application of the key principles suggested above will help to ensure that future development benefits the city as a whole. Addressing the challenge of risk accumulation from large-scale projects will not be achieved through a single standalone solution, but through a series of interconnected actions that result in more robust systems, and changes in behaviour. These ideas are applicable not just to Nairobi, but to other cities across Kenya, East Africa and sub-Saharan Africa.

This briefing is based on the following report: da Silva, J, Birtill, K, Bristow, J, Candiracci, S, Charles, A, Ray, C, Saeed, S and Waters, J (2018) Risk beyond the red line: Urban risk and large scale infrastructure projects in Kenya. Arup, London. Available at: www.urbanark.org/risk-beyond-red-line-urban-risk-and-large-scale-infrastructure-projects-kenya

Authors

Lead author: Jo da Silva, Arup Fellow, Director of International Development and Global Sustainable Development Arup Leader and Founder
Andrew Charles, Senior Consultant, Arup International Development andrew.charles@arup.com
Kieran Birtill, Consultant, Arup International Development
James Bristow, Senior Engineer, Arup International Development
Caroline Ray, Regional Director, Arup East Africa

Notes

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Urban Africa: Risk Knowledge (Urban ARK)

breaking cycles of risk accumulation in sub-Saharan Africa

A three-year programme of research and capacity building that seeks to open up an applied research and policy agenda for risk management in urban sub-Saharan Africa. Urban ARK is led by 12 policy and academic organisations* from across sub-Saharan Africa with international partnerships in the United Kingdom.

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Contact: Mark Pelling
mark.pelling@kcl.ac.uk



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