

RETHINKING INFRASTRUCTURE IN AFRICA: A GOVERNANCE APPROACH

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ABSTRACT

Infrastructure deficits have long been recognised as being central to Africa's developmental malaise. This paper looks at the state of the continent's infrastructure, with a focus on the actions that governments can take to spur its development. In other words, it attempts this analysis from the perspective of governance. By any measure, Africa is on average less well provisioned with infrastructural assets (roads, railways, power grids, communication networks, water and sanitation systems) than any other part of the world. Much of what does exist has been degraded by unsatisfactory maintenance. The most comprehensive estimate is that an amount of some \$93 billion annually will be needed until 2020 to achieve the necessary development. Funding continues to fall short of this, although the sums available are growing. Africa's governments, bilateral and multilateral donors and the private sector are all investing large amounts in infrastructure. Funding is no longer the defining problem in relation to Africa's infrastructure development, and questions of governance need to be accorded greater recognition. Studies demonstrate that gains are to be had through better project preparation, greater efficiencies and so on. Adequate maintenance is particularly important. These actions would help secure better infrastructure without significantly greater outlays. Achieving them would, however, require sometimes tough and politically unpopular decisions – making appropriate governance choices are therefore critical. Managing infrastructure construction and maintenance across borders is central to Africa's infrastructure needs. With so many countries landlocked, cross-border links are imperative for their economic fortunes. This is a complex issue, and resolving it demands that governments and regional institutions cooperate with one another, imposing another set of governance choices. The paper concludes by noting the need to shift debate around Africa's infrastructure to the governance obstacles it needs to confront. It suggests that governance action could be taken in seven areas to help achieve this: finance; policy, planning and project preparation; efficiency; the regulatory environment; private sector involvement; engagement of Africa's people; and a focus on regional integration.

ABOUT THE AUTHOR

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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
EAC	East African Community
GDP	gross domestic product
ICA	Infrastructure Consortium for Africa
ICT	information and communications technology
LAPSSET	Lamu Port Southern Sudan–Ethiopia Transport
NEPAD	New Partnership for Africa’s Development
OECD	Organisation for Economic Co-operation and Development
PIDA	Programme for Infrastructure Development in Africa
PPP	public–private partnership
REC	regional economic community
SOE	state-owned enterprise
UNICEF	UN Children’s Fund

INTRODUCTION

If Africa had the same basic infrastructure as developed countries, it would be in a more favourable position to focus on production and improving productivity for international competition. The structural gap in infrastructure constitutes a very serious handicap to economic growth and poverty reduction. Improved infrastructure, including the cost and reliability of services, would benefit both Africa and the international community, which would be able to obtain African goods and services more cheaply.¹

In today's world, infrastructure provides the foundations for successfully integrated societies and growing economies. Infrastructure – and specifically economic infrastructure, the concern of this paper, such as roads, railways, power stations and distribution grids, water supply systems and telecommunications networks – creates what Parag Khanna, the US scholar and futurist, has termed 'connectography'.² This is the web of connections that are altering the significance of geography and enabling ever-expanding links between governments, firms and people in different parts of the world, opening up opportunities in regional and global markets. They represent a precondition for full participation in the world of the future.

Africa's multiple infrastructure deficits have been a perennial concern in the conversation about its development prospects. This poses the inevitable question of what roles the continent's governments might play in overcoming them. In infrastructure, as in all public endeavours, governance matters.

This paper aims to examine the trajectory of infrastructure development in Africa, and what governments might do improve it. It begins with an overview of the state of infrastructure on the continent, and then looks at a number of themes in the provision of infrastructure. The conclusion suggests seven governance interventions that could drive infrastructure development more effectively.

UNDERSTANDING AFRICA'S INFRASTRUCTURE DEFICIT

For much of Africa, infrastructural development has proven elusive. While differences are evident across countries, the overall picture of the continent's infrastructure is one of pressing need. Quantifying the scale of these needs with precision is difficult, but a few commonly known indicators help to illustrate it.

Much is revealed in data on Africa's infrastructural shortcomings, as they relate to both physical assets and the access of Africa's people to roads, railways and power grids.

1 OAU (Organization of African Unity), NEPAD Framework Document, 2001, p. 21, para. 101.

2 Khanna P, *Connectography: Mapping the Future of Global Civilization*. New York: Random House, 2016.

Statistics collated by the African Development Bank (AfDB)³ indicate that less than half of the continent's population (43%) has access to electricity – around 600 million Africans and some 10 million small- and medium-sized enterprises. This lack of access is especially pronounced in the continent's rural areas, forcing people to burn plant matter and thus contributing to environmental degradation.

Only 68% of the population of sub-Saharan Africa has access to improved water supplies (that is, a source designed and constructed to afford protection from outside contamination) and a mere 30% to improved sanitation (mechanisms that hygienically remove human waste from human contact), according to data collated by the World Health Organization and the UN Children's Fund (UNICEF). The magnitude of these deficits is shown in sharp relief when compared to other parts of the world: in South Asia, also a region afflicted by widespread poverty and developmental gaps, some 92% of the population has access to improved water supplies, and 47% to improved sanitation. Going forward, climate change will necessitate better management of all available water resources. Africa's cities accommodate an ever-larger share of its population, so establishing effective sanitation infrastructure will be imperative for ensuring their habitability. As it is, data from UNICEF⁴ shows that, overall, Africa's urban centres are struggling to maintain the already inadequate levels of sanitation that do exist. Its data for sub-Saharan Africa in particular (the situation in North Africa is considerably better) shows only modest progress in the 25-year period between 1990 and 2015. Across sub-Saharan Africa over this period, access to improved sanitation rose by only 6% for the region (from 24% to 30%). Among rural dwellers, use of such facilities rose from 18% to 23% – noticeable but small – while the increase among urban dwellers was slight, rising from 39% to 40%. In some countries, such as Nigeria, an actual decline was evident among both urban and rural residents – probably as a result of rapid population growth and urbanisation without adequate investment to meet rising demand. As urbanisation accelerates, this will become increasingly challenging.

Africa's transport infrastructure is a particularly visible concern, and arguably more than anything else acts as a brake on the continent's economic development. While various estimates of its road density exist, it is apparent that it is inadequate for Africa's needs and falls well short of that in peer regions, in both extent and quality. As one study comments:⁵

Africa's national road density is substantially lower than that in other developing regions: only 204 kilometres of road per 1,000 square kilometres of land area, with only one-quarter paved, compared with a world average of 944 kilometres per 1,000 square kilometres, with more than half paved. That density is less than 30% of the next-lowest region, South Asia.

3 African Development Bank Group, *Tracking Africa's Progress in Figures*. Tunis: AfDB (African Development Bank), 2014, p. 48.

4 UNICEF (UN Children's Fund), 'Water and sanitation', 2015, <http://data.unicef.org/water-sanitation/sanitation.html>, accessed 1 July 2016.

5 Vivien F & C Briceño-Garmendia, *Africa's Infrastructure: A Time for Transformation*. Washington DC: World Bank & Agence Française de Développement, 2010, p. 212.

In the continent's rural areas, well below half of the population (some 43%) has access to an all-season road.

Rail transport is, if anything, even less developed. Its infrastructure – outside a few enclaves such as South Africa – dates from the colonial era, is geared for the export of its primary products, and has been accorded little attention in the post-independence era. Many rail routes are poorly maintained and able to carry only relatively lightweight rolling stock at slow speeds.

Together these backlogs place a crippling burden on African societies. Poor ground transport systems impose severe logistical bottlenecks on commerce, adding to the costs of moving goods. *The Economist* puts it like this: 'Transport is a perpetual problem in Africa. Potholed roads and missing rail links get in the way of economic growth. Intra-regional trade accounts for just 13% of total commerce, compared with 53% in emerging Asia.'⁶ Large items such as vehicles that would elsewhere be freighted by road or rail, need to be transported by air. Travellers with time-sensitive agendas may need to use air transport – a far more expensive and environmentally unfriendly means of travel – or factor extensive lead times into their plans where ground travel cannot be avoided, as in some of the continent's congested cities. In the more extreme cases, such as the Democratic Republic of Congo, the absence of a reliable ground transport system effectively fragments this enormous country, imposing de facto borders between its various regions.

The infrastructure deficiencies highlighted here – in relation to power generation, water and sanitation and transport routes – illustrate the formidable challenges confronting Africa.

QUANTIFYING THE DEFICIT

While the general inadequacy of Africa's infrastructure is universally acknowledged, measuring the scale of the deficit is necessary. Doing so makes it possible to plan with some accuracy for the required resources, and hence to understand the magnitude of the effort required to address it. Arguably the most comprehensive attempt to quantify the shortcomings of Africa's infrastructure was in a 2010 World Bank report. It estimated that over the ensuing decade (in other words, every year from 2010 to 2020), Africa would need to commit some \$93.3 billion annually. Of this sum, \$40.8 billion would be needed for electricity, \$9 billion for information and communications technology (ICT), \$3.4 billion for irrigation, \$18.2 billion for transport and \$21.9 billion for water and sanitation.⁷

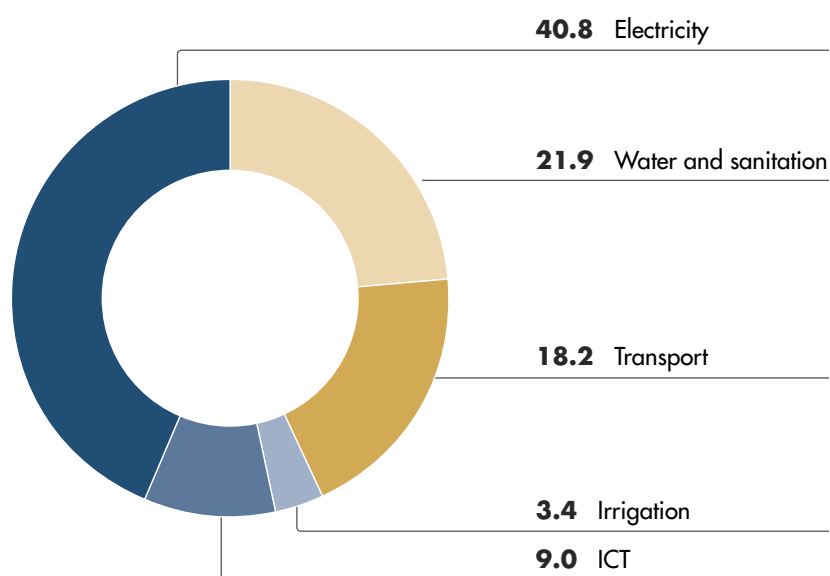
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6 Halfa W, 'Get a move on', *The Economist*, 16 February 2016, <http://www.economist.com/news/middle-east-and-africa/21571920-africas-booming-economy-needs-modern-trade-routes-get-move>, accessed 20 August 2016.

7 Vivien F & C Briceño-Garmendia, *op. cit.*, pp. 65–86.

It is important to note that this expenditure is not limited to the construction of new assets. Around a third of it would need to go towards the maintenance of new and existing infrastructure. This is critical, since the neglect of maintenance has been a major contributor to the dysfunctionality of much of Africa's infrastructure.

FIGURE 1 ESTIMATED FUNDING NEEDS FOR AFRICAN INFRASTRUCTURE, 2010 (\$ BILLION)



Source: Vivien F & C Briceño-Garmendia, *Africa's Infrastructure: A Time for Transformation*. Washington DC: World Bank & Agence Française de Développement, 2010, p. 74

This data, while somewhat dated, remains a common currency in literature and discussion around Africa's infrastructure needs. It provides a baseline of the resources necessary to meet those needs. Total existing spending in 2010 amounted to slightly under half of what is needed, at \$45.3 billion. Of this, around a quarter (\$11.6 billion) was devoted to electricity. Another \$9 billion went to ICT. Just under a billion (\$0.9 billion) was spent on irrigation. Some \$16.2 billion went to transport infrastructure and \$7.6 billion to water and sanitation.

Together, these figures give an indicative pattern. ICT has attracted the investment it needs, largely from the private sector, and is a success story in Africa's infrastructural

development (although it is projected to slow somewhat in coming years).⁸ Investment in transport infrastructure amounted to around 90% of the required quantum. In these two fields, Africa appears to be making the sort of progress that its aspirations demand.

On the other hand, investment in irrigation infrastructure amounted to a little over a quarter of what was required. Investment in water and sanitation stood at around a third of the necessary amount. However, it is in the field of electricity infrastructure that the most glaring deficit is apparent. Expenditure is barely more than a quarter of the estimated need – to reach that level an additional \$29.2 billion would be required annually. Given that electricity is foundational to a modern society – to power the amenities of contemporary life, to enable economic activities and for maintaining living standards – this is a crippling burden on Africa's progress.

RESOURCING DEVELOPMENT

Dealing with Africa's infrastructural deficits demands – as is evident from the foregoing – significant flows of financial resources. With the 2010 study as a baseline, subsequent developments have been encouraging. A Brookings Institution report comments: 'In the five years since the study, the response in tackling the infrastructure gap has been unprecedented, especially in terms of increased financing.'⁹

This paper argues that Africa as a whole is enjoying considerable investment from a variety of sources: public finances, multilateral and bilateral donors, and the private sector. These investments are being made across the continent, with most countries and all sectors benefitting, albeit unevenly.

Data collected by the Infrastructure Consortium for Africa (ICA) – a collective of donor countries and agencies – helps to put this into perspective. In raw financial terms, overall financial commitments to infrastructural development amounted to some \$83.4 billion in 2015.¹⁰ This figure represents an increase over the commitments the ICA recorded for 2014, which stood at \$74.5 billion.¹¹ It was slightly below the figures recorded for 2012 and 2013, namely \$89.3 billion and \$99.6 billion respectively.¹² That these amounts, very substantial in themselves and representing the greater part of what was envisaged in 2010, were committed in spite of prevailing global economic difficulties only underlines the scale of achievement in mobilising resources. They represent both

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8 Adewumi B, 'ICT spending rises to \$110 billion in Africa – IDC', *Nigerian Tribune Online*, 4 October 2016, <http://tribuneonline.com/ict-spending-rises-110-billion-africa-idc/>, accessed 17 October 2016.

9 Gutman J, Sy A & S Chattopadhyay, *Financing African Infrastructure: Can the World Deliver?*. Washington DC: Brookings Institution, March 2015, p. 1.

10 ICA (Infrastructure Consortium for Africa), *Infrastructure Financing Trends in Africa – 2015*, 2016, p. 10.

11 ICA, *Infrastructure Financing Trends in Africa – 2014*, 2015, p. 9.

12 ICA, *Infrastructure Financing Trends in Africa – 2012*, 2013, p. 14; ICA, *Infrastructure Financing Trends in Africa – 2013*, 2014, p. 15.

the increased capacity of African countries to finance projects themselves, largely thanks to their extractive industries, and the growing interest among multilateral and foreign institutions (banks and governments) in sustaining and consolidating Africa's positive economic trajectory. Overall, they imply that the financial resources necessary for the continent's infrastructural development are substantively available.

That being said, analysis of this financing highlights some vulnerabilities and demands for future action. The mainstay of infrastructure spending is the domestic public sector, although significant dependency on foreign funding remains. Public spending by national governments in 2015 accounted for some 34.1% of total spending (or \$28.4 billion). In 2014 the equivalent amount was \$34.5 billion, or 45.9% (another \$9.1 billion, or 12.2%, was contributed by subnational governments).¹³

Funding from the public sector outside Africa – bilateral and multilateral sources – stood at \$47.5 billion in 2015, and accounted for around 57% of the total, although this was buoyed by exceptionally large commitments from China. In 2014 the equivalent was \$28 billion, or 37.5% of the total.

The large proportion of donor funding points to the positive response of foreign and multilateral institutions to address the continent's infrastructure challenges. Chinese investment has emerged as a particularly significant source over the past decade. In 2015 China announced investments totalling some \$20.9 billion, although the average level of actual Chinese investment in the five years to 2015 was \$13.1 billion. Transport appears to have been the greatest priority for China, with power gaining in importance in 2015. However, the global economic turbulence of recent years has highlighted the great potential and risks associated with dependence on external donor funding – since it is ultimately made available at the discretion of countries or institutions, it is inherently vulnerable to changing priorities and thus possible reduction or cancellation. A significant shift in Chinese investment areas and levels of investment is already perceived following its economic slowdown. Global measures to make these flows more robust and predictable may mitigate the risks, but cannot eliminate them. Indeed, the drop in commitments between 2013 and 2014 was attributed to a fall in investment from China, as it 'recalibrated' its support to African development as its own growth began to slow.

On the other hand, the scale of funding from Africa's public sector is evidence of domestic commitment. It should be noted, however, that these funds amounted to less than half of the baseline figure of \$93 billion. This is not dissimilar from the figures for 2012 and 2013, when public sector commitments stood at \$42 billion and \$47 billion respectively. The private sector is an important complement to this, although the amounts committed vary by year – projects with significant private sector involvement totalled \$7.9 billion in 2012, \$8.8 billion in 2013, \$5.1 billion in 2014 and \$8.5 billion in 2015. The actual contribution of private capital to these figures for 2014 and 2015 was \$2.9 billion and 7.4 billion respectively.¹⁴

13 ICA, 2015, *op. cit.*, p. 9. (Information on subnational funding is absent from other ICA reports.)

14 ICA, 2016, *op. cit.*, p. 52.



Chinese assistance has had a noticeable impact on Africa, as in the construction of a light rail system in Addis Ababa, Ethiopia

Source: Turtlewong, Wikimedia Commons, https://upload.wikimedia.org/wikipedia/commons/8/81/Addis_Ababa_Light_Rail_vehicle%2C_March_2015.jpg

A study conducted among prominent stakeholders in the infrastructure field by PriceWaterhouseCoopers found that nearly two-thirds regarded private sector funding as ‘critical’, while a further 30% thought it of growing importance. It also found that an overwhelming majority of respondents foresaw some degree of private sector involvement – direct funding, partnerships, debt and equity – being used in forthcoming projects.¹⁵ It should be noted, however, that private sector funding tends to be most readily available in good times, and tends to decline in times of economic contraction.

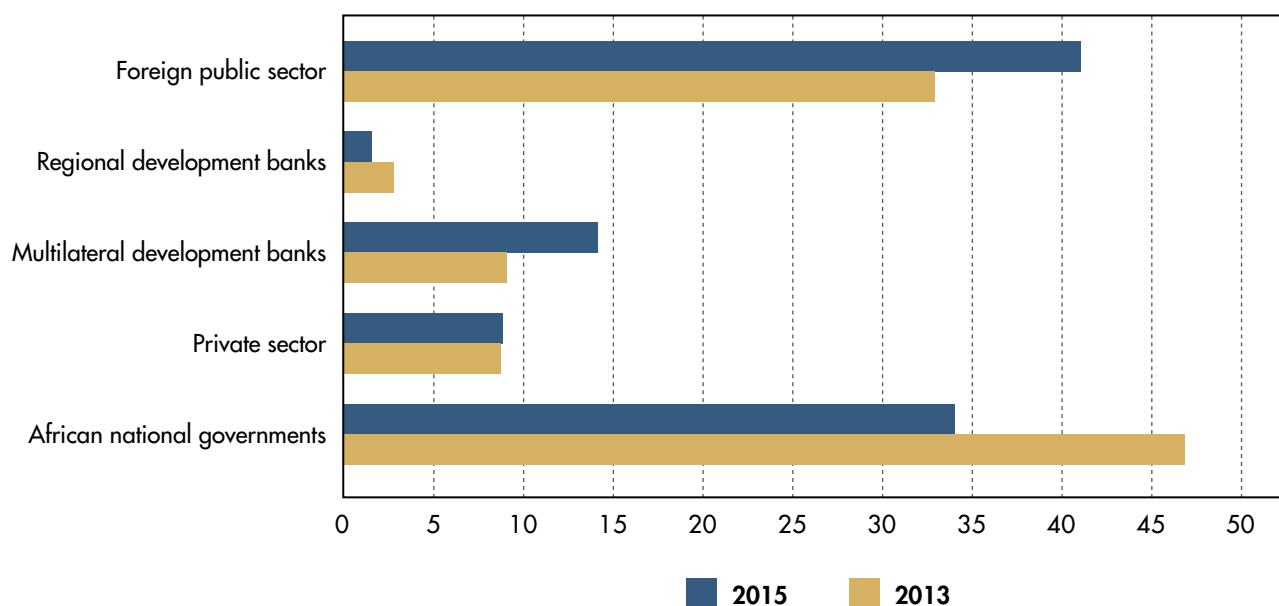
A large qualifier to all of the foregoing – a ‘wild card’ of sorts – is that the funding required to address the infrastructural requirements of Africa’s growing cities is poorly understood. As the Brookings study remarks: ‘[I]t remains a substantial blind-spot in the infrastructure dialogue in sub-Saharan Africa.’¹⁶

Ultimately, sustainable infrastructure development requires that an ever-larger quantum and proportion of spending on infrastructure be sourced from the African public sector and from the private sector. This overarching consideration helps to frame much of the continent’s response to its infrastructure challenges.

Figure 2 shows the composition of commitments to Africa’s infrastructure spend in 2013 and 2015. While different in detail, the broad funding patterns are similar. The bulk of funding is sourced from the domestic public sector and its foreign equivalent.

15 PWC (PriceWaterhouseCoopers), *Trends, Challenges and Future Outlook: Capital Projects and Infrastructure in East Africa, Southern Africa and West Africa*, November 2014, pp. 7–8.

16 Gutman J, Sy A & S Chattopadhyay, *op. cit.*, p. 3.

FIGURE 2 CONTRIBUTIONS TO AFRICAN INFRASTRUCTURE SPEND, BY SOURCE (%)

Source: ICA, *Infrastructure Financing Trends in Africa – 2013, 2014*, p. 15; ICA, *Infrastructure Financing Trends in Africa – 2015, 2016*, pp. 10–13

THE PUBLIC SECTOR

Using Africa's own resources for its development has long been an aspiration. This has both a moral and a practical dimension: it speaks to the desire for Africans to 'own' their endeavours and reduce the uncertainties inherent in relying on discretionary contributions from elsewhere. The need for domestic resource mobilisation has become even more important in the wake of the global financial turbulence of the past decade. The latter highlighted the risks of donor funding dwindling in response to adverse economic conditions,¹⁷ or changing fads and fashions in developed countries – although it should be noted that research from the UK's Overseas Development Institute suggests that donor funding is not in fact declining, and remains a significant source of funding for developing countries.¹⁸

17 Ogunleye EK & DA Fashina, 'The Imperatives for Domestic Resource Mobilisation for Sustained Post-Crisis Recovery and Growth in sub-Saharan Africa', Paper presented at African Economic Conference, Tunis, October 2010, <http://www.afdb.org/en/aec-2010/>, accessed 13 February 2016.

18 Prizzon A, Greenhill R & S Mustapha, *An Age of Choice for Development Finance: Evidence from Country Case Studies*. London: Overseas Development Institute, April 2016.

If one factors in the budget support received by some African countries, the extent of foreign funding in the continent's development efforts is also likely to be somewhat larger – and the actual scale of domestic resource mobilisation somewhat lower.

This in turn implies that domestic resource mobilisation remains a work in progress; further efforts are needed, particularly regarding raising revenue through taxes. A good yardstick for this is found in a 2011 study on achieving the erstwhile Millennium Development Goals. It argued that this would require that tax revenue be in the order of 20% of gross domestic product (GDP).¹⁹ It is fair to say that this would also hold true for the Sustainable Development Goals. While some African countries – chiefly in Northern and Southern Africa – achieve this, most do not. World Bank information shows that many African countries cannot even supply data on their tax take. The average for those that do (which tend to be the better performers) is around 13.5%. In the case of Nigeria, the World Bank estimates its tax to be equivalent to a miniscule 1.5% of GDP.²⁰

Expanding domestic revenue is a key challenge confronting many African countries. It demands establishing systems that can assess potential taxpayers accurately, collect and steward funds with integrity, and do so within an overall policy framework that balances the need for revenue with the need to promote economic activity, while also maintaining taxpayers' confidence that their contributions are prudently used.

These are complex administrative and political tasks. They may also be difficult to achieve. African states frequently lack the necessary management and technical skills, and pathologies such as corruption taint their efforts. Where tax authorities present a credible threat to people or businesses that have not met their obligations, the likelihood of compliance tends to rise. Research in Ethiopia has shown the importance of strong administrative measures and the perceived legitimacy of the tax regime. Ethiopian business owners were found to be inclined towards compliance with their tax obligations, based on the perception of suffering a penalty (such as a fine or being audited) if they failed to comply – while the country's authorities were working on enhancing their capacity to enforce such compliance. Also important were the views of government probity that influenced business owners' attitudes: those who felt the government would use the funds well were more inclined to be positively disposed towards paying tax.²¹ The implications of this are clear: integrity and efficiency – or what might be described as 'good governance' – are essential to successful tax collection.

However, there are examples demonstrating that even unpromising environments can make great progress, given proper political commitment and the application of correct skills. In Burundi, for instance, tax reforms undertaken in the past decade have been credited

19 UNDP (UN Development Programme), *What Will It Take to Achieve Millennium Development Goals? An International Assessment*. New York: UNDP, 2010, p. 26.

20 World Bank, 'Tax revenue as % of GDP', <http://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS>, accessed 23 June 2016.

21 Yesegat WA & O-H Fjeldstad, 'Business People's Views on Paying Taxes in Ethiopia', International Centre for Tax and Development Working Paper, 43, 2016.

with an extraordinary increase in tax revenue.²² This involved moving from a fragmented system in which bribery and corruption were common practice to a consolidated tax administration – an autonomous agency, the Burundi Revenue Authority – that stressed the professionalism of its staff and attempted to insulate itself from sectarian pressure. Making this work demanded political commitment from the country's leadership, adequate funding and an updated legal framework. It also required leadership and communication in the face of entrenched interests that had been accommodated in the previous system, as well as explaining to ordinary people and the private sector why taxpaying was necessary.²³ However, recently tax collection has begun to fall in the midst of political instability²⁴ – a reminder that progress in building suitable institutions can rapidly be undone by failings in the overall governance or economic environment.

Enhanced revenue only provides the space for infrastructure spending. The actual dedication of resources to it is a function of fiscal allocations and the work of line departments or implementing agencies. Given the extent of poverty in Africa, and the numerous demands on public finance, it is by no means certain that infrastructure – and certainly not 'economic' infrastructure – will enjoy priority.

Two factors work against infrastructure's being accorded this importance: one is the constituencies that can be mobilised, and the other is the allure of large projects.²⁵ Both in Africa and in donor countries, constituencies agitating for social services tend to make compelling and emotive appeals. Social spending is, after all, intended to provide direct and immediate benefits to ordinary people. Outside the business community, few interests tend to view infrastructure as a priority. Where infrastructure projects are initiated, greater political advantage is invariably attached to sizeable, high-profile ones. These are also attractive for patronage purposes, if they can be directed to politically supportive businesspeople. Smaller projects and maintenance – both critical for overcoming the deficit – are less attractive.

Both the raising of revenue and its allocation are dependent on governance choices. Neither is an inherently natural decision, nor one inherently without adverse political consequences. They demand political resolution on the objectives involved, along with considerable diplomacy in making the case to their people. The quality of governance, in other words, will have an intimate relationship with the commitment of resources to a given country's infrastructure.

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22 *The Economist*, 'Collecting tax in Africa: Above the table', 26 April 2014, <http://www.economist.com/news/finance-and-economics/21601293-burundi-shows-how-african-countries-can-reduce-their-dependence-aid-above>, accessed 21 September 2016.

23 See Holmes K, Ndiokubwayo D & C Ruvakubusa, 'For Citizen and State: Reforming Revenue Administration in Burundi', Africa Research Institute Policy Voices Series, 2013.

24 *Reuters Africa*, 'Burundi's tax revenue falls in Q4 2015, political violence cited', 9 February 2016, <http://af.reuters.com/article/topNews/idAFKCN0V11CB>, accessed 21 September 2016.

25 Klass B, 'Paving the road to Africa's future', *Africa in Fact*, 31, April/May 2015, pp. 33–37.

THE PRIVATE SECTOR

The role of the private sector is – as a proportion of total expenditure on infrastructure – relatively modest. However, it has been touted as an important contributor to Africa’s infrastructural development.²⁶ According to one recent study,²⁷

[o]ver the past two to three decades, it has become clear that private participation unleashes the power of certain market mechanisms that can break down challenges to access. The private sector has a crucial role to play in infrastructure development in its ability to provide innovations in financing and technical solutions in these projects.

Private capital has found its way into infrastructural projects through portfolio investments and bonds, but the concern here is the more direct, ‘hands-on’ involvement of private business in funding or investing in infrastructure, typically (although by no means exclusively) through public–private partnerships (PPPs). In some respects, particularly ICT, the private sector has made a major impact – indeed, a substantial majority of investment from the private sector is committed to this sector. Interest has also been shown in energy and transport infrastructure.

However, private sector involvement has demonstrated clear limitations. It has tended to be focused on a small number of countries. South Africa and Nigeria, each boasting potentially lucrative markets, stand out as the only two countries in the sub-Saharan region that have received large investments outside the ICT sector – data presented in a 2015 report analysing infrastructure funding on the subcontinent indicated that they accounted for 80% of private sector investment in infrastructure, 95% in transport and 60% in ICT.²⁸

Private sector involvement has also been growing in power generation. Firms in the private sector have been constructing infrastructure to provide for their own needs (as in the case of some mines), as well as to sell to users. This includes considerable involvement by the private sector in providing renewable energy – sometimes on a small scale, to individual consumers. Transmission and distribution remain largely in the hands of government, although a few countries have brought in the private sector through concession agreements, management contracts and PPPs.²⁹

26 A good example of this is a study prepared by the AfDB on Nigeria, whose recommendations repeatedly called for private sector participation in the construction and management of assets. See AfDB, *An Infrastructure Action Plan for Nigeria: Closing the Infrastructure Gap and Accelerating Economic Transformation*. Tunis: African Development Bank Group, 2013.

27 Wentworth L & C Grant Makokera, ‘Private sector participation in infrastructure for development’, *South African Journal of International Affairs*, 22, 3, 2015, p. 327.

28 Gutman J, Sy A & S Chattopadhyay, *op. cit.*, pp. 18–20.

29 Van Niekerk S & D Hall, ‘Overview of energy in Africa’, Public Services International Research Unit, 2013; KPMG, ‘Power in Africa, sector report’, 2015, <https://www.kpmg.com/Africa/en/IssuesAndInsights/Articles-Publications/General-Industries-Publications/Documents/Power%20in%20Africa%20%20sector%20report%202015.pdf>, accessed 12 July 2016; Eberhard A *et al.*, *Independent Power Projects in Sub-Saharan Africa: Lessons from Five Key Countries*. Washington DC: World Bank, 2016.

An expanded private sector presence in funding infrastructure work on the continent holds great potential. The AfDB has attempted to cultivate it.³⁰ It is, however, important to recognise that the private sector will chiefly be enticed into this field by the prospect of returns on investment. Where governments are seeking buy-in from the private sector, this should be factored into projects from the outset. The extensive timeframes involved between investment and return (a factor in large projects, such as roads and railways) mean that a particularly ‘patient’ capital must be sought out. Moreover, because infrastructure projects are not always inherently financially profitable, approaches to the private sector must delineate the business benefits of involvements. ‘You have to make a business case to businesspeople,’ comments Peter Varndell, Director of Infrastructure at the New Partnership for Africa’s Development (NEPAD) Business Foundation.³¹

Inevitably, some projects (or even component parts of projects) will be more suited to particular funding streams than to others. Symerre Grey-Johnson, Head of the Regional Integration Infrastructure and Trade Division at the NEPAD Planning and Coordinating Agency, notes that drawing funding into infrastructure development demands that projects be examined carefully to determine what an appropriate mix of funding would be – whether private sector resources can be employed and, if so, how. This strategy is now being promoted by NEPAD.³²

A similar approach has been taken in South Africa’s Gauteng province. A dedicated agency exists to consider funding options for infrastructure projects. Projects are examined, and where interest may exist on the part of investors these may be put on the market. For example, the revitalisation of publicly owned inner city buildings in Johannesburg is being done in collaboration with the private sector. Some may be sold, others refurbished on the basis of PPPs.³³

While critics may suggest that private sector involvement in infrastructure development represents a retreat by the state in its responsibilities, in fact, the role of government and governance remains critical. As a previous study of PPPs by the South African Institute of International Affairs noted,³⁴ their success hinges greatly on strong administrative systems to support them. The ability to oversee and enforce contracts, for example, is critical. PPPs often involve complicated arrangements and can prove extremely costly if mishandled. The possibilities for unscrupulous operators in both the public and private sectors to exploit them for corrupt gain are an ever-present danger.

30 *Africa Confidential*, ‘Interview with AfDB President Donald Kaberuka’, January 2007, http://www.africa-confidential.com/special-report/id/13/Interview_with_ADB_President_Donald_Kaberuka, accessed 12 July 2016.

31 Interview, Peter Varndell, Director of Infrastructure, NEPAD Business Foundation, 14 July 2016.

32 Interview, Symerre Grey-Johnson, Head of Regional Integration, Infrastructure and Trade Division, NEPAD, 25 July 2016.

33 Interview, Tim Nast, Chief Director of Infrastructure Coordination, Gauteng Planning Commission, 26 March 2016.

34 Farlam P, *Working Together: Assessing Public-Private Partnerships in Africa*, SAIIA, NEPAD Policy Focus Series, 2005.



The Anstey's building in central Johannesburg was sectioned in 1995 by a non-profit organisation, becoming the city's first affordable inner city housing project

Source: I Pool

A study produced for the Organisation for Economic Co-operation and Development (OECD) provides the following illustration of the importance of capacity and competence on the part of governments entering into agreements with private sector service providers:³⁵

Poor capacity of agencies tasked with project preparation and roll-out is partially responsible for the failure of several attempts at PPPs and divestiture in the past. In Tanzania, for instance, the failure of the railway concession (signed in 2006) is attributed to poor risk-sharing in the contract design, which suggests that public authorities did not have sufficient resources and skills to adequately prepare the project and negotiate the concession contract. Low government support from the project development stage to the implementation period, and poor monitoring and evaluation systems, may also contribute to explaining the unsuccessful experiences of privatisation and PPP in the air transport sector (Air Tanzania Company

35 OECD (Organisation for Economic Co-operation and Development), *Policy Impediments to Infrastructure Investment and the Way Forward: Lessons Learned from Investment Policy Reviews in Countries from the Southern African Development Community*, OECD report to the G20 with contributions from the World Bank & UNCTAD, September 2013, p. 18.

Limited and Kilimanjaro International Airport). Likewise, in Mozambique, inefficiencies in the procurement process and poor capacity of procurement entities (including delays in procurement and payment, inadequate pre-tender investigations resulting in inaccurate tender documentation) have meant that PSPI [private sector participation in infrastructure] has seldom delivered the expected cost and efficiency gains.

The regulatory environment can greatly influence whether or not private investors are able or willing to participate in infrastructure provision

Furthermore, the regulatory environment can greatly influence whether or not private investors are able or willing to participate in infrastructure provision. Concerns tend to be two-fold, these being regulatory restrictions and regulatory record.³⁶ The first imposes limits on what the private sector is allowed to do. For example, business involvement in the power sector has been held up by restrictions on private power producers' linking into and contributing to Africa's national grids, along with various environmental and planning certifications (which in turn require interacting with multiple agencies, which may themselves experience function inefficiencies). In the financing sphere, the impact of the Basel III capital holding requirements, which demand that financial institutions hold larger amounts of liquidity than in the past, is projected to make lending for large, long-term infrastructure projects less feasible and attractive.³⁷ The second refers to the trust that has been created in the functioning and predictability of the regulatory system. As these have frequently not matured in Africa, investors may approach with caution.

Sound governance, therefore, is critical to attracting the private sector to infrastructural work. Grey-Johnson adds that a brake on funding Africa's infrastructure rollout is the lingering perception of the continent as a risky investment prospect. While this is increasingly at odds with Africa's current realities, it must be addressed.³⁸ Doing so will require redoubled commitments to ensuring good governance regimes – essential for securing investors' interests and providing the environment for economic growth that will help bring returns on their investments.

DEVELOPMENT BANKS

Development banks – financial institutions that provide capital and technical support for large-scale investment for developmental purposes – have made important contributions to infrastructure development worldwide for decades. According to the ICA, they contributed around 16% of total infrastructure spending in Africa in 2015.³⁹ Development banks, both multilateral (such as the World Bank and the AfDB) and subregional (such as the Development Bank of Southern Africa), occupy an important niche in countries'

36 Chaponda T, Nikore M & M Chennells, 'Effective Project Preparation for Africa's Infrastructural Development', Concept paper for 2014 ICA annual meeting, Cape Town, November 2014, pp. 30–31.

37 See Chan E & M Worth, 'Basel III and project finance', *Project Finance International*, 460, 29 June 2011, <http://www.linklaters.com/pdfs/mkt/london/A13781114.pdf>, accessed 12 August 2017.

38 Interview, Symerre Grey-Johnson, *op. cit.*

39 ICA, 2015, *op. cit.*, p. 12.

developmental programmes. That they are not limited by a national focus means that they are well placed to deal with cross-border projects. As one report put it:⁴⁰

Multilateral Development Banks occupy a unique position in infrastructure finance; they not only provide funding for infrastructure projects, but their transnational ownership structure and pan-regional perspective mean that they can provide an important bridge across a variety of market players and stakeholders.

While development banks remain important sources of funding and expertise for countries pursuing infrastructure development, the environment in which they operate has been changing in recent years. The importance of their role as external funders of the continent's infrastructure has to some extent been eroded by bilateral (specifically Chinese) funding for infrastructure. The entry into the financing space of the New Development Bank, associated with the BRICS, is another example of the changing environment. Finding means for established and new institutions to cooperate is a major strategic consideration, and a necessary one if Africa is to benefit optimally from their combined presence.⁴¹

Another area that requires attention relates to weaknesses and inefficiencies in Africa's development banks. Among these are 'bureaucratic and inflexible' loan approval processes and the banks' own financial management systems that do not work seamlessly with those of the countries they are assisting.⁴² Africa's subregional development banks pose another set of problems. A recent study argued that while they had the potential to contribute to the continent's infrastructure, their actual contribution was relatively small. Some of them lacked the capitalisation and capacity to make a large impact, and their activities were not being coordinated with one another. Their contribution to regional integration has also been limited.⁴³ Weaknesses on the part of subregional banks could be an especially serious problem, as these would intuitively be the institutions best placed to deal with the issues and contexts of their home regions. Indeed, the benefits of local knowledge are recognised by the AfDB, which has invested much in the decentralisation of its operations.⁴⁴

In sum, development banks are playing a significant role, but constantly need to reassess it in light of new developments. Smaller, subregional banks for the most part would benefit from greater capitalisation and measures to enhance their capacity and align their

40 William HK, *Financing Sustainable Infrastructure*, International Finance Development Club, Sustainable Infrastructure Group, 2014, p. 11.

41 Gutman J, Sy A & S Chattopadhyay, *op. cit.*, pp. 54–55.

42 Prinsloo C, *The New Development Bank: Towards Greater Efficiency*, GEG (Global Economic Governance) Africa Policy Briefing, October 2016, pp. 2–3.

43 Banda L, 'Study Report on the Assessment of African Sub-Regional Development Banks' Contribution to Infrastructure Development', African Development Bank Group, NEPAD Regional Integration and Trade Department & ICA, December 2015.

44 AfDB, 'Decentralisation roadmap', March 2011, <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/-Rev%203%20-%20Decentralization%20Roadmap-.pdf>, accessed 19 August 2016.

activities with regional economic communities' (RECs) integration agendas. African governments, as shareholders in these institutions, have an interest in seeing them operate optimally, and could assist in this by making additional funding available and lobbying for development banks to orient themselves more explicitly to assist in regional integration.



Source: <https://www.flickr.com/photos/clarasanchiz/16178168010/>
(CC BY-SA 2.0)

The headquarters of the African Development Bank, Abidjan, Côte d'Ivoire

IMPLEMENTATION AND MANAGEMENT

Funding is axiomatic to infrastructure; without it, infrastructure development is not possible. However, as the previous section has illustrated, funding is increasingly less of a barrier to developing the continent's infrastructure. Countries and their governments have access to a wider range of funding sources than in the past. Greater attention needs to be given to the construction and management of projects and their resultant assets.

Implementation and management challenges have been flagged in a number of studies, typically under the rubric of 'efficiency'. The 2010 World Bank study estimated that greater efficiencies in implementation and management could contribute some \$17.4 billion, or 19%, of the total requirement of \$93 billion to deal with Africa's infrastructure deficits.⁴⁵ The more recent work by the Brookings Institution emphasises it even more prominently. It notes that efficiency gains have not matched the successes in

45 Vivien F & C Briceño-Garmendia, *op. cit.*, p. 74.

funding – the question this raises is whether resources are being committed to optimal effect.⁴⁶ Comments Brookings’ Amadou Sy.⁴⁷

Most of the debate on infrastructure needs in sub-Saharan Africa focuses on financing issues. But there is evidence that efficiency, not financing, is often the barrier to investment. For example, the IMF estimates that about 40 percent⁴⁸ of the potential value of public investment in low-income countries is lost to inefficiencies in the investment process due to time delays, cost overruns, and inadequate maintenance. Those inefficiencies are the result of undertrained officials; inadequate processes for assessing needs and preparing for and evaluating bids; and corruption. Reducing inefficiencies could substantially increase the economic dividends from public investment.

Not to be underestimated is the importance of the broad strategic framework within which infrastructure initiatives take place. This might be described as the ‘big picture’. Infrastructure projects are frequently large, complex and expensive. Each will typically interact in some way with others, and some will be of greater overall importance than others. In many cases, countries have national plans to achieve overall visions for their societies, or strategies for the development of particular types of infrastructure. Infrastructure planners (in governments, development banks, etc.) need to ensure that infrastructure strategies are rationally conceptualised and planned, based on high-quality evidence. Once policies and plans are in place, they need to be followed and altered where evidence suggests they are impractical or the initial assumptions were incorrect. Simply ignoring them, or altering them impulsively – perhaps to accommodate special interests – introduces significant risks to the prospects for success. Given the deficit that Africa is attempting to overcome, and the limited fiscal space (progress here notwithstanding), having an appropriate strategy in place can be a great asset.

Good policy and good planning, for example, will take into account that facts of politics or technology can sometimes rapidly render the information on which decisions are taken obsolete. It is therefore important to be able to gauge when it is necessary to alter a project’s trajectories, and to be willing and able to do so – always keeping in mind the overall goals that policy and planning frameworks seek to address.

PROJECT PREPARATION

One of the key issues confronting infrastructural development is project preparation. Many potentially valuable initiatives experience extreme difficulty in moving from the design phrase to ‘bankability’ (that is, to bring their designs to a level of credible detail that would make them realistic and attractive prospects for investors, both public and private). Governments typically play a central role in project preparation processes. In this they may be assisted by multilateral development banks’ offering technical advice

The 2010 World Bank study estimated that greater efficiencies in implementation and management could contribute some \$17.4 billion, or 19%, of the total requirement of \$93 billion to deal with Africa’s infrastructure deficits

46 Gutman J, Sy A & S Chattopadhyay, *op. cit.*, pp. 41, 51–55.

47 Sy A, ‘Impediment to growth’, *Finance and Development*, June 2016, p. 27.

48 See IMF (International Monetary Fund), ‘Making Public Investment More Efficient’, IMF Staff Report, June 2015.

or funds to assist in the preparation process. Where infrastructure crosses borders, input from and cooperation with other states, as well as with the continent's RECs, are critical, as these have their own infrastructure plans.⁴⁹ The private sector, however, is seldom involved in project preparation; it is reluctant to risk its capital at this stage, as there is no guarantee of any return on investment.⁵⁰

Project preparation is complex and expensive. Recent estimates suggest that in Africa these costs can be equivalent to between 5% and 10% of capital expenditure

Project preparation is complex and expensive. Recent estimates suggest that in Africa these costs can be equivalent to between 5% and 10% of capital expenditure.⁵¹ It is invariably technically complex. It involves navigating multiple sets of legislation and regulation, and an understanding of engineering possibilities, and may also require competence in econometric modelling to make value-for-money predictions. Moreover, project preparation frequently involves political questions, making political support vital while at the same time avoiding political manipulation.

Problems in these fields include issues related to conceptualisation, for example not offering a credible set of financial estimates or failing to understand the engineering involved. They may also have to do with poor alignment of a project to other infrastructure initiatives, which might raise questions about the usefulness of the project. For example, a proposed railway line might stand to divert freight from existing roads, thereby rendering the latter underutilised and unproductive. Or proposed projects may not coordinate well with national budgeting cycles, which could make accessing sufficient funding over the duration of a project impossible to achieve. In political terms, a government might wish to define the terms of the project in a manner that will require the involvement of particular politically connected firms, or it might neglect to consult with affected constituencies about elements of the plan, such as the imposition of user fees.

In addition, infrastructure projects around the world are vulnerable to corruption. With large sums of money at stake, collusion between politicians and businesspeople is a danger. Dr Adam Elhiraika of the UN Economic Commission for Africa notes that corruption in infrastructure projects results in a misallocation of resources, sub-standard infrastructure, lost revenue and increased public spending, as well as reduced country competitiveness. While corruption is a problem throughout African society, infrastructure projects are particularly vulnerable. This is because they involve large sums of money; capacity shortages in African governments and the technical nature of these projects create opportunities for abuse; accountability mechanisms are often weak or compromised; and political interference is often brought to bear, precisely because of the scale of resources involved.⁵²

49 Chaponda T, Nikore M & M Chennells, *op. cit.*, pp. 8–11.

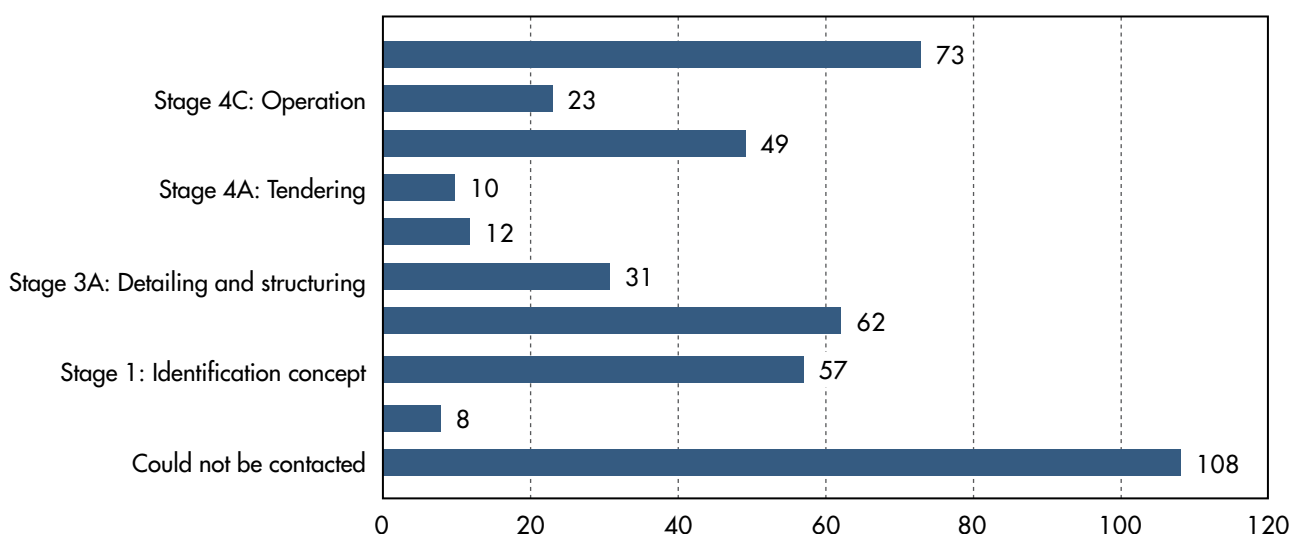
50 Markowitz C, 'Improving Infrastructure Finance for Low-Income Countries: Recommendations for the ADF', GEG Africa Policy Briefing, 3, November 2016.

51 Chaponda T, Nikore M & M Chennells, *op. cit.*, p. 6.

52 Elhiraika A, 'Corruption in Public Procurement: The Case of Infrastructure in Africa', Presentation at 'Governing for Infrastructure Delivery in sub-Saharan Africa: Overcoming Challenges to Create Enabling Environments' conference, Chatham House, London, 14–15 March 2016, <https://www.chathamhouse.org/sites/files/chathamhouse/Adam%20Elhiraika%20presentation.pdf>, accessed 16 September 2016.

Peter Varndell points out that failings at the project preparation level can have an impact not only on the overall prospects for a given project's success but specifically on the appeal it might have to investors.⁵³ What might be a viable and necessary project might not have been crafted to a standard that would appeal to them, resulting in project failure due to lack of investor interest.

FIGURE 3 NEPAD/PIDA PROJECTS AT THEIR VARIOUS STAGES



Source: NEPAD Business Foundation, 'NEPAD Business Foundation overview', PowerPoint presentation, p. 13

Despite a growing recognition that project preparation requires greater attention, it remains a visible hindrance to implementation. An illustration: of 433 projects in the infrastructure initiatives associated with NEPAD or the subsequent Programme for Infrastructure Development in Africa (PIDA),⁵⁴ 235 (54%) remained in their formative stages – the largest number of these were in the 'concept identification' or 'pre-feasibility' stages, along with a substantial number that 'could not be contacted'.⁵⁵

53 See also Leigland J & A Roberts, 'The African Project Preparation Gap: Africans Address a Critical Limiting Factor in Infrastructure Investment', *Gridlines*, Note 18, March 2007.

54 This is a continental programme to create a 'vision and strategic framework' for regional and continental infrastructure. It is led by the AU Commission, the NEPAD Secretariat and the AfDB.

55 Although this does not necessarily mean that the project is stuck at an early stage, this is the implication – projects that are moving forward would most likely have established an

To correct this, the capacity of governments and government agencies to develop and prepare project designs must be improved. Fortunately, a range of project preparation facilities has been established, providing vital support mechanisms that countries can turn to. This does not, however, reduce the necessity of developing governments' in-house capacity. This in turn implies engaging the relevant expertise and putting adequate political support behind the institutions, teams and officials tasked with doing so.

Equally importantly, governments need to show robust political commitment to infrastructure projects. Making this commitment clear assures other parties and financiers that projects will be brought to a successful conclusion.⁵⁶ Demonstrable political commitment would also be a key element in encouraging private sector firms to commit themselves at this early stage of projects' lifecycles – while there would be no guarantees of returns on investment, the odds of this would seem greater if governments were enthusiastic about their infrastructure initiatives.

EFFICIENCIES

As noted above, efficiency gains – 'doing things better and smarter' – could yield significant benefits for the continent's efforts to deal with its infrastructure deficits. These gains could be achieved across four broad interventions, and would vary from sector to sector. The interventions are: reallocating resources, eliminating operational inefficiencies, ensuring better tariff cost recovery and raising capital expenditure.

Efficiency gains could be achieved across four broad interventions. These are: reallocating resources, eliminating operational inefficiencies, ensuring better tariff cost recovery and raising capital expenditure

What do these various interventions mean? **Raising capital expenditure** refers to better budgeting and planning, making funds available timeously and removing bottlenecks to spending. 'Leakages' in public spending (allocated funds' being diverted from their intended purposes) may also deprive infrastructure projects of a significant portion of their funding.

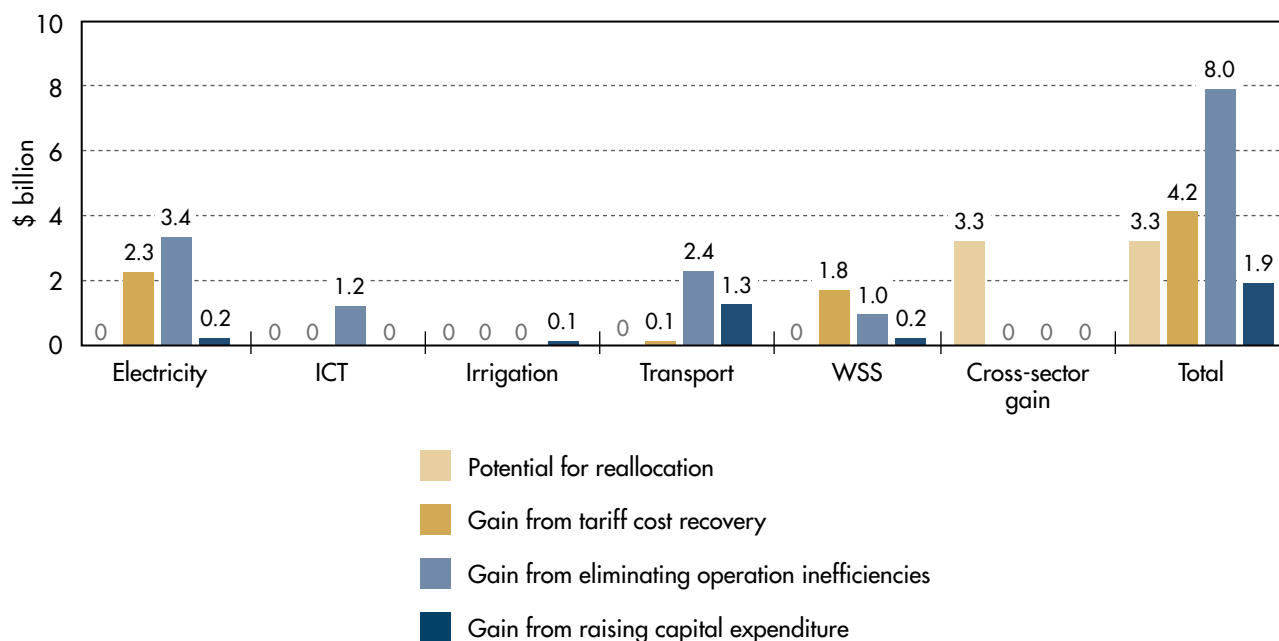
Operational inefficiencies involve unproductive expenditure, such as prices' being set below market rates (and not being high enough to compensate for services provided or enable new investment), overstaffing, losses due to poor maintenance and indifferent tariff collection. Overall, failings in this respect are by far the largest inefficiency with which the continent must contend. Arguably the most important issue here is maintenance, since rehabilitating derelict assets is far more expensive than paying for their upkeep. It has been estimated that every \$1 not spent in needed maintenance ultimately extracts \$4 from the economy.

Tariff cost recovery has frequently lagged where consumers are in theory to pay for services and, in many cases, tariffs charged have been set below cost recovery levels.

institutional presence, thus making them possible to engage with. It should also be noted that another 73 projects out of the 433 total were marked 'awaiting info'. It is not clear what their status is, but it is reasonable to assume that some proportion of these remain in the early stage.

56 Chaponda T, Nikore M & M Chennells, *op. cit.*, pp. 8–9.

FIGURE 4 DISTRIBUTION OF EFFICIENCY GAINS, 2010



Source: Vivien F & C Briceño-Garmendia, *op. cit.*, p. 74

This is particularly important in the electricity and water and sanitation sectors (indeed, the latter stands to benefit more from this than from any other efficiency-enhancing interventions).

Cross-sector gains stand to be achieved through the reallocation of resources from areas in which they are overcommitted (in practice, this means ICT) to those receiving insufficient resources.⁵⁷

With the partial exception of reorienting funding (cross-sector gains), achieving any of these depends on governance choices. Improving capital expenditure, for example, demands improving the functioning of state budgeting systems, and thus the capacity of the public service to prepare budgets, disperse and monitor funds, and so on. Tariff recovery, likewise, hinges on the decision to levy tariffs, to set them at a given level and then both the willingness and ability to attempt to collect them. As this will hit the pockets of citizens and business, it is likely to be a politically unpopular decision. A study

57 Vivien F & C Briceño-Garmendia, *op. cit.*, pp. 65–75.

by the OECD noted that a central part of infrastructure is choosing between legitimate competing interests.⁵⁸

For example, South Africa has seen much dissatisfaction over the introduction of electronic tolling (e-tolls) on the main road route between the major centres of Johannesburg and Tshwane. The roads had undergone major upgrading and, to pay for this and their upkeep, a private sector concession had been arranged to levy tolls on road users. This involved the electronic monitoring of vehicles passing through certain points, and levying corresponding payments on the owners of registered vehicles. The idea of being charged to use a facility that had previously been 'free' (and that was viewed as having already been paid for through taxes) was extremely unpopular and attracted vocal criticism from across society. It was even criticised by some within the government. Despite attempts to encourage payment – such as by lowering the toll fees – and threats of prosecutions for non-payment, most road users ultimately chose not to pay, and an activist group claimed in 2016 that around 90% of tolls had not been collected.⁵⁹

Adrian Kitimbo, of the Gordon Institute for Business Science, adds that two pathologies need to be combatted to secure efficiency gains. Firstly, there is the 'short-termism' inherent in many infrastructure projects. This refers to the rollout of projects that are neither well considered nor well executed but serve an immediate politically important need – such as a major conference – and are not built to last. Related to this is corruption. Infrastructure projects involve large sums of money, and are a tempting target for unscrupulous officials and contractors. This would manifest itself in inflated prices, sub-optimal use of materials, unnecessary features and so on. The cumulative impact is likely considerable.⁶⁰

The importance of this governance dimension is recognised forthrightly by the AfDB:⁶¹

The core issues are institutional in nature. Pouring additional funding into sectors characterised by high levels of inefficiency and low institutional capacity makes little sense. In order to promote a level of productivity among firms that is conducive to higher and sustainable economic growth, Africa needs to improve the capacity and efficiency of those institutions responsible for developing and managing infrastructure. The goal is not to reinvent existing institutions but to reform them and support their evolution.

While the need for better governance – and governance reform – has been central to thinking on the continent's future, records of achieving it have been mixed. This failure

58 OECD, Public Governance and Territorial Development Directorate Public Governance Committee, *Towards a Framework for the Governance of Infrastructure*, September 2015, p. 17, <https://www.oecd.org/gov/budgeting/Towards-a-Framework-for-the-Governance-of-Infrastructure.pdf>, accessed 19 June 2016.

59 Mzekandaba S, 'Over 90% of motorists do not pay e-tolls', IT Web, 26 January 2016, http://www.itweb.co.za/index.php?option=com_content&view=article&id=149257, accessed 20 June 2016.

60 Interview, Adrian Kitimbo, Researcher at the Gordon Institute of Business Science, 18 May 2016.

61 AfDB, 'An integrated approach to infrastructure provision in Africa', Africa Infrastructure Knowledge Programme, Statistics Department, April 2013, p. 16.

to match rhetoric with credible action, or to move from policy to implementation, has been a major concern in the discourse around African development.

Certainly, some innovative institutional reform has been attempted to deal with inefficiencies. One approach has been to assign particular infrastructure responsibilities to dedicated, autonomous agencies. The theory is that infrastructure would become, as far as possible, a technocratic responsibility insulated from politics, and could pursue the needed efficiencies more effectively.

This model is best represented by road funds and roads agencies. The former is meant to ensure a secure, predictable and ongoing stream of revenue for road maintenance, typically funded by some form of user charge such as a fuel levy. In practice, many road funds in African countries depend on government transfers, as fuel levies are set too low to fund their requirements. Measures also need to be taken to ensure that the funding raised for the road network is not diverted into general revenue pools – a political temptation. It is also meant to ensure an ongoing source of funding for maintenance. One extensive study of Africa's transport recommended that the institutional character and responsibilities of road funds be clearly demarcated in law, and that revenue from such a 'dedicated' source be paid directly to the fund and not to the central fiscus, where it might be diverted to other purposes.⁶²

Dedicated road agencies or road authorities (the latter being generally understood to exercise greater autonomy than the former) exist to manage countries' road networks. The exact role each is expected to play depends on national policy, but they are typically responsible for maintenance of the roads, and possibly for overseeing further development. Part of the rationale behind the establishment of these bodies is the lack of skills within the civil service, and the consequent recognition that infrastructure management may benefit from an institutional revamp.⁶³ There is some evidence to support the efficacy of these arrangements.⁶⁴ One study found that:⁶⁵

The advantages of establishing autonomous Road Agencies and independent Road Funds in Tanzania and Uganda include effective performance based structures not tied to civil service remuneration levels, accountability to management boards representing the public and private sectors, and priorities driven primarily by economic considerations.

However, these institutions are not free of problems. Even though retaining skills was a key reason for establishing such bodies, they often remain understaffed and struggle to

62 Gwilliam K, *Africa's Transport Infrastructure: Mainstreaming Maintenance and Management*. Washington DC: World Bank, 2011, pp. 38–43.

63 *Ibid.*, p. 44.

64 Gwilliam K *et al.*, 'Roads in Sub-Saharan Africa', Africa Infrastructure Country Diagnostic, Summary of Background Paper, 14, June 2008, p. 6.

65 Trademark Southern Africa, 'Tanzania, Uganda Roads Project Performance Assessment Report', 14 September 2011, <http://www.trademarksa.org/news/tanzania-uganda-roads-projects-project-performance-assessment-report>, accessed 9 March 2016.

retain skills.⁶⁶ There are also possible downsides to their autonomy. While shielding them from political control, autonomy can also shield them from accountability. And, as was seen in relation to the e-tolls saga in South Africa, executives of these agencies can be left to bear the brunt of public anger over what were fundamentally political choices for which they were not directly responsible.

Since much infrastructure on the continent is managed by state-owned enterprises, the manner in which they conduct their operations is of especial importance

Since much infrastructure on the continent is managed by state-owned enterprises (SOEs), the manner in which they conduct their operations is of especial importance. Not purely commercial firms, they are typically expected to execute developmental and politically sensitive projects, and often turn to government to provide financing should they face shortfalls. This has in many instances resulted in indifferent management and unsound decisions. Research⁶⁷ has pointed to the need for SOEs to be accorded clear mandates, to be professionally (rather than politically) managed, and to be subjected to the same regulatory discipline as other firms in the same field. Moreover, beyond setting legal or regulatory requirements to ensure probity – since the use of SOEs for patronage and their abuse for corruption are well-recognised problems – high standards of ethical conduct must be maintained at all levels, with the most senior executives and the boards being no exception.⁶⁸ In other words, to prompt greater attention to efficiency and effectiveness, the costs and incentives embedded within SOEs and within the political environment in which they operate need to promote ever greater degrees of accountability and probity.

INNOVATION

One fertile space for innovation and efficiency gains is in the adoption and adaptation of new technologies to deal with Africa's infrastructure needs. Nothing illustrates this better than the aggressive growth of ICT across the continent.

Historically, Africa has lagged badly behind most other regions of the world in the reach of telephony and communications infrastructure – particularly fixed-line subscriptions. However, the advent of mobile systems over the past 20 years has changed the dynamics on the continent. According to the International Telecommunications Union, between 2005 and 2015 mobile phone subscriptions in Africa rose from 12.4 to 73.5 per 100 inhabitants. Globally, penetration stood at 33.9 in 2005 and 96.1 in 2015. In other words,

66 Gwilliam K, *op. cit.*, p. 46.

67 See Corrigan T, 'Corporate Governance in Africa's State-Owned Enterprises: Perspectives on an Evolving System', SAIIA Policy Briefing, 102, September 2014.

68 One analysis captured the problem very well by noting that corruption often has less to do with formal systems than with individuals' choices: 'Most African state-owned enterprises operate within environments with elaborate supporting pieces of legislation in place as well as a high proliferation of oversight institutions. The failure of this set-up to combat fraud does not therefore result from a shortage of competence but rather from a deficiency of ethics in personal values.' See Mudunga P, 'An Analysis of the Poor Performance of State Owned Enterprises in Africa', Thesis, Eastern and Southern African Management Institute, April 2014, p. 13.

Africa is rapidly making up ground in ICT by adopting new-generation technologies. While penetration still trails the rest of the world, the magnitude of this gap has shrunk remarkably over the past decade.⁶⁹

Possibilities exist for new and maturing technologies to make an outsized contribution in other sectors. Renewable energy, for example, offers the prospect of diversifying the continent's energy mix, which remains heavily dependent on fossil fuels – over 80% of power on the continent is produced in this way.⁷⁰ Diversification is important as a means of expanding the overall amount of power generated and as part of a strategy of reducing greenhouse emissions. The use of other forms of generation is becoming more common, with hydropower contributing strongly in a number of countries, such as Ghana and Ethiopia.



Solar panels in Algeria form part of a renewable energy strategy. The use of new technologies will be a key part of overcoming Africa's infrastructural deficits

Source: Magharebia, <https://www.flickr.com/photos/magharebia/5263617050/> (CC by 2.0)

New technologies also create the intriguing possibility of thinking differently about the mode of infrastructure and associated service provision. Infrastructure has long been associated with bulk supply and large outlays, ultimately directed in some way by governments. While this remains true in many respects (road and railway developments

69 International Telecommunications Union, 'Key ICT indicators for developed and developing countries and the world (totals and penetration rates)', <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>, accessed 2 March 2016.

70 EIA (US Energy Information Administration), 'International energy statistics: Total primary energy production 2014', <https://www.eia.gov/cfapps/ipdbproject/iedindex3.cfm?tid=2&pid=alltypes&aid=12&cid=ww,r6,r7,&syid=2008&eyid=2012&unit=BKWH>, accessed 2 March 2016.

New technologies also create the intriguing possibility of thinking differently about the mode of infrastructure and associated service provision

demand such large expenditure), new technologies allow solutions in some fields to be conceptualised in localised, semi-autonomous settings. For example, solar power has been used to provide electricity to streetlights and automatic teller machines in Johannesburg.⁷¹ Many of Africa's homeowners have installed solar geysers and, less commonly, full solar electricity systems. Interestingly, it seems impossible to measure just how widespread private adoption of renewable energy is – its encouragement is a policy option that should be explored.

More pertinently, solar power presents possibilities to communities not connected to national grids, and where such connections are especially difficult. These include rural settlements and the continent's densely populated and growing informal settlements. Owing to costs and social sensitivities (how much is a government justified in spending to connect an isolated settlement, or whose shacks are moved to install cables in an informal settlement?), conventional infrastructure strategies may be poorly suited to the realities of much of contemporary Africa. This is finding its way into government thinking.

Much the same logic applies to sanitation. Waterborne sanitation systems may be associated with 'development', but they require extensive piping and use large amounts of water. Given the expected impact of climate change, the latter may become an increasingly scarce commodity.⁷² Alternatives that might prove more suitable include such options as ventilated improved pit latrines, urine diversion systems and eco-sanitation systems, which have the advantage of creating fertiliser from human waste.

Nevertheless, harnessing the promises of innovation has three closely related preconditions. The first is cost. While costs decline as technologies mature, they remain an obstacle. Chris Yelland, a South African energy expert, points out in relation to electricity that it is a pricy option to go off-grid. 'Home solar systems are an expensive solution. They could be to some extent subsidised, but at the end of the day, it's very expensive for what you get,' he remarks. He adds that, given Africa's realities – sparse populations in places, along with informal settlements – these outlays may in some instances simply be a cost that needs to be borne.⁷³ The second is an enabling regulatory environment: a central plank of any policy, and one that must be aligned to overall policy goals. Adopting new technologies may require regulatory changes. In the case of ICT, liberalisation of markets (chiefly for mobile services, less so for fixed-line) and the establishment of regulators

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- 71 Van Der Merwe C, 'Joburg suburb installs solar streetlights as part of regeneration plans', *Engineering News*, 11 April 2008, <http://www.engineeringnews.co.za/article/joburg-suburb-installs-solar-streetlights-as-part-of-regeneration-plans-2008-04-11>, accessed 26 February 2016; BusinessTech, 'South Africa gets first solar powered ATM', 9 November 2014, <http://businesstech.co.za/news/general/72742/south-africa-gets-first-solar-powered-atms/>, accessed 26 February 2016; Murugan S, 'Solar energy lights up Ekurhuleni's informal settlements', *Vukuzenzele*, June 2013, <http://www.vukuzenzele.gov.za/solar-energy-lights-ekurhuleni%E2%80%99s-informal-settlements>, accessed 26 February 2016.
- 72 This is recognised by the provincial government of Gauteng province, South Africa. See Gauteng Provincial Government, *Gauteng 2055: A Vision for the Gauteng City-Region*. Johannesburg: Gauteng Planning Commission, 2012, p. 133.
- 73 Interview, Chris Yelland, Managing Director at EE Publishers, 5 August 2016.

to manage them were indispensable steps in creating the environment for the sector to thrive.⁷⁴ The third is a willingness on the part of governments and citizens to challenge their own paradigms, and accept that new solutions might mean altering their views on how infrastructure is to be provided. Thus, government may need to accept that it is but one of a number of players – in many sectors the days of state monopolies, if not over, are numbered. Citizens, by contrast, must understand that infrastructure will not necessarily resemble the ‘modernity’ they had anticipated.

PARTICIPATION

Infrastructure is a means to developmental ends. Its utility needs ultimately to be measured against its contribution to the lives and well-being of Africa’s people – whether indirectly, in enabling investments that contribute to societies’ wealth and opportunities for employment, or directly, through making their day-to-day lives easier, healthier and more secure. Here again, governance must play a central role.

Given that large projects have an impact on the lives of surrounding communities, the need for public participation of some sort is widely recognised by both the public and the private sector. This is intended to provide citizens with opportunities for input; and in so doing to mitigate potential harm, to identify and exploit possible benefits and to provide legitimacy to the project. The importance of this has increased in recent years, as assumptions about the social role of business have grown.⁷⁵ In addition, the involvement of Africa’s people in their own development has been a staple of Africanist thinking, most recently in the continent’s 50-year blueprint, Agenda 2063.⁷⁶ Across the continent, mass participation endeavours exist – such as the Ubudehe investment scheme, and the Umuganda community service initiatives in Rwanda.⁷⁷ The importance of participatory processes is also recognised by the World Bank. It actively encourages the involvement of

The involvement of Africa’s people in their own development has been a staple of Africanist thinking, most recently in the continent’s 50-year blueprint, Agenda 2063

74 Williams MDJ, Mayer R & M Minges, *Africa’s ICT infrastructure: Building on the Mobile Revolution*. Washington DC: World Bank, 2011, pp. 71–122.

75 This is encapsulated in the slogan ‘People, Planet, Profit’. For a broad overview of this, with a particular stress on the situation in Southern Africa, see Corrigan T, *Getting Down to Business: Lessons from the African Peer Review Mechanism*, SAIIA Research Report, 17, August 2014.

76 For example, its vision of a future Africa includes the following: ‘Africa will be a continent where the institutions are at the service of its people – strong institutions in place to enhance citizens’ participation in development and in economic and governance management ... Institutions at all levels of government will have the capacity to prioritize, design, implement and monitor development activities in an accountable manner, and with full participation of people. In short the continent would be characterized by capable democratic and developmental states. Local level communities will not only be responsible for their local development but will also have their fair share of the exploitation of natural resources and will be using them for the benefit of all by 2025.’ AU Commission, *Agenda 2063: The Africa We Want* (Draft Document). Addis Ababa: AU Commission, 2014, p. 17.

77 APRM (African Peer Review Mechanism), Panel of Eminent Persons, *Country Review Report of the Republic of Rwanda* (Rwanda CRR), APRM Secretariat, June 2006, p. 109.

communities, and has devoted between 5% and 10% of its lending over the past decade to community-driven development initiatives.⁷⁸

Popular participation in infrastructure might build on these foundations, but would require a qualitatively greater level of engagement. The limited resources – in terms of both finances and capacity – mean that tapping the assistance of local communities could be a sound idea. This could take a prescriptive or coercive form, as in Rwanda. But following the overall democratisation trend on the continent, a model stressing persuasion and inclusion would be preferable. This will not be easy to do, since it requires skilful negotiating and stakeholder management strategies. Even identifying pertinent stakeholders can be fraught.

A key issue is involving communities in resource mobilisation. The payment of taxes, for example, would need to be clearly explained and justified. This would apply both to the intention behind raising revenue and to the manner in which it is collected. Communities, in other words, need to be able to ‘see their tax money at work’. Concurrently, communities must be willing (and able) to demand accountability. The mechanisms by which this could be achieved (and the inevitable hurdles and pitfalls) are beyond the scope of this study, but this would be an important means to ensure that funds dedicated to projects are in fact properly spent on them.

Communities can also contribute to the physical construction and management of assets. In some instances, proposed solutions will prove impossible without this. This is particularly the case with the new, localised solutions described above. For example, in Africa’s burgeoning informal settlements waterborne sewage systems are expensive and difficult to install, since doing so causes great disruption to residents’ structures. To successfully adopt alternatives, such as urine diversion systems or communal latrines, users will need to take some responsibility for the operation and upkeep of their assets.⁷⁹

There are numerous examples worldwide of successful infrastructure initiatives undertaken by communities. In many of the world’s poorer countries, including some in Africa, community endeavours have been an effective means of alleviating shortages of particular infrastructure assets – such as roads and bridges. These development initiatives have a particularly important impact on the lives and opportunities available to poorer members of the communities in which they take place.⁸⁰ Other examples of community

78 Salomonsen A & M Diachok, *Operations and Maintenance of Rural Infrastructure in Community-Driven Development and Community-Based Projects: Lessons Learned and Case Studies of Good Practice*. Washington DC: World Bank, 2015, p. 8.

79 South Africa, Department of Water Affairs and Forestry, *Sanitation Technology Options*, 2007, http://www.susana.org/_resources/documents/default/2-1433-booklet5technologyoptionspdfanlage.pdf, accessed 16 February 2016; Günther I et al., *When Is Shared Sanitation Improved Sanitation? The Correlation between Number of Users and Toilet Hygiene*, Swiss Federal Institute of Technology Zurich, Research for Policy, 2, 2012.

80 Wong S, *What Have Been the Impacts of World Bank Community-Driven Development Programs? CDD Impact Evaluation Review and Operational and Research Implications*, World Bank Working Paper, 69541. Washington DC: World Bank, 2012.

mobilisation have been identified in developed countries: in Germany, for example, citizen groups can take an active role in financing their own renewable energy supplies.⁸¹

Communities can thus be agents of their own development. Direct community involvement helps to compensate for the lack of financial resources available in such environments. Properly harnessed, it could be a potent driver for infrastructure in Africa, at least on a local level. The prospects for this would be significantly enhanced by paying attention to governance and policy issues. For example, can these localised initiatives be integrated into countries' overall infrastructure plans? This would in turn imply assistance from government or the agency responsible for infrastructure, to ensure that local infrastructure development conforms to required national standards and connects properly with the country's other assets. A community-constructed rural road would thus need to be built to satisfactory technical standards to handle traffic and would need to intersect with other roadways.

Equally important is the management of the project at the point of its implementation. Managing funds and arranging materials and ongoing maintenance after completion – essentially, reproducing the issues germane to the governance of all infrastructure projects – are critical. For this reason, the World Bank identifies as vital to their success the establishment of appropriate institutional arrangements (operation and management committees) to oversee community-driven projects.⁸²

CONNECTING ACROSS BORDERS

One of the most significant obstacles to Africa's developmental prospects is its fractured political geography. With many countries sparsely populated, development requires cross-border integration to achieve markets of scale. Moreover, 15 of the continent's 54 states are landlocked. As many African countries do most of their trade with markets outside the continent, their economic health depends on whether they can access other countries' road networks and ports in good order. Regional integration has featured strongly in African political discourse since independence, but it has been persuasively argued that this needs to take a new direction: rather than a focus on institutions, it needs to be directed to the practical matter of infrastructure and security.⁸³

81 Yildiz Ö, 'Financing renewable energy infrastructure via financial citizen participation: The case of Germany', *Renewable Energy*, August 2014, pp. 677–685.

82 Salomonsen A & M Diachok, *Operations and Maintenance of Rural Infrastructure in Community-Driven Development and Community-Based Projects: Lessons Learned and Case Studies of Good Practice*. Washington DC: World Bank, 2015, p. 45. It is important to note that institutional arrangements represent only one of a number of elements in the success of community-driven infrastructure projects: others include building proper capacity, financing and suitable handling of technical issues. The study presents other factors for consideration, such as the nature of the infrastructure being contemplated.

83 Draper P, 'Rethinking the (European) Foundations of Sub-Saharan African Regional Economic Integration: A Political Economy Essay', OECD Development Centre Working Paper, 293, September 2010.

An immigration point on the border between South Africa and Lesotho. Cooperation between African countries in infrastructure projects needs to be encouraged



Source: <https://www.flickr.com/photos/markturner/2124703109/> (CC BY-NC-SA 2.0)

Indeed, connections across borders are now intrinsic to emerging forms of economic, social and cultural interaction. This reduces the importance of both physical and political geography and opens up new opportunities, provided the enabling systems – physical infrastructure and public policies stressing openness and innovation – are in place.

At the core are transport corridors. Properly harnessed, they could prove transformative to Africa. The AfDB offers the following observation:⁸⁴

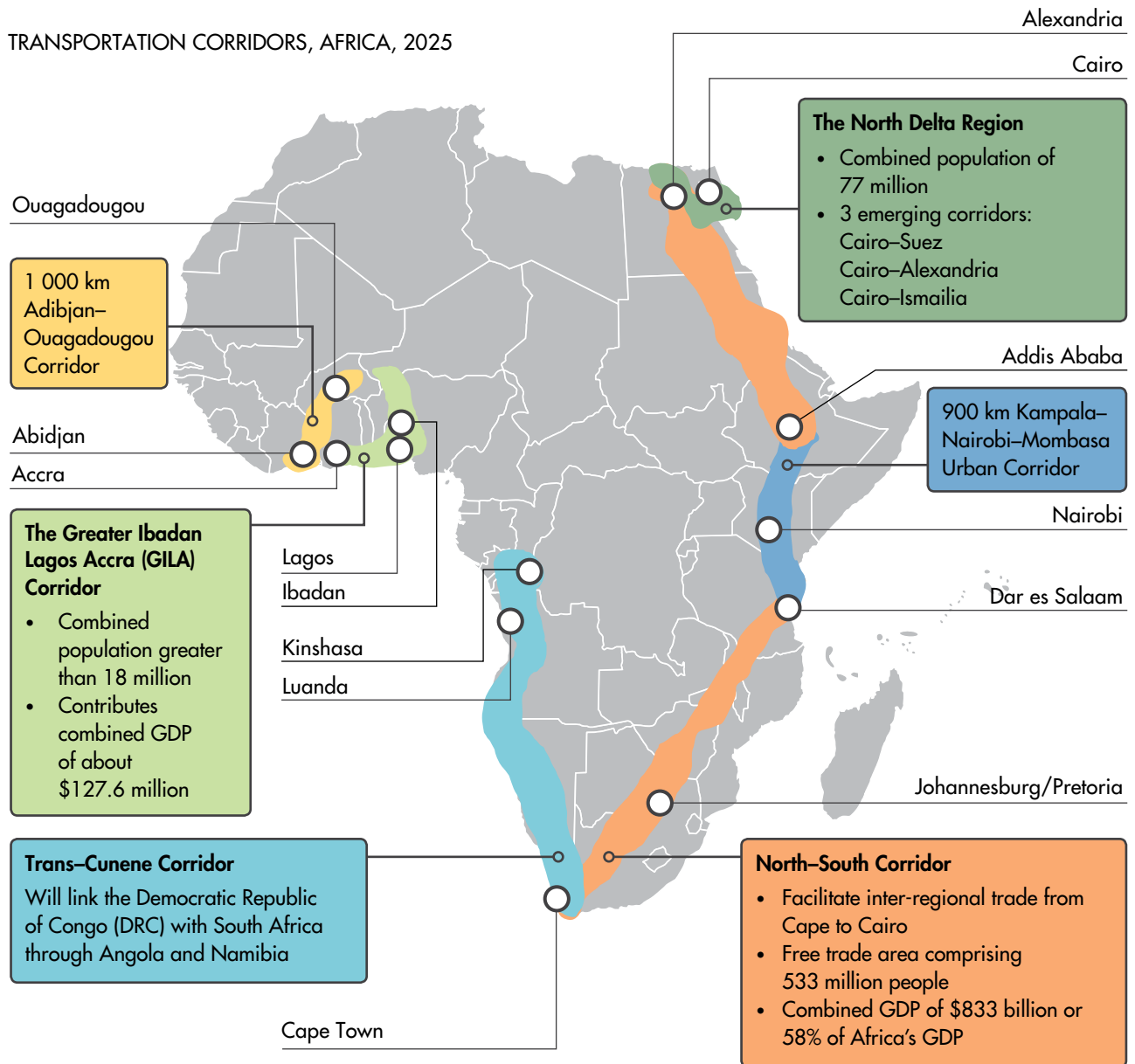
Transport corridors can accomplish much more than linking point A to point B. With the economic corridor concept, Africa's transport corridors can not only facilitate regional integration and trade but can also reduce poverty, particularly in catchment regions. Planners can achieve this by carefully coordinating the social, economic and physical development of the corridors and their surroundings. Strategic planning tools are essential to this process, as is close cooperation among the countries concerned, which must harmonize their policies and their social and economic strategies and address other common issues.

Africa is seeing the emergence of a series of 'mega-corridors'. The largest of these will ultimately stretch from the north, originating in Cairo and Alexandria, through the east in Dar-es-Salaam and terminate in the south, in Cape Town. Another will connect Cape Town to Kinshasa, moving along the west coast of the sub-continent. A third, anchored on Lagos, connects several large centres in West Africa.

These mega-corridors are complemented by and will need to be integrated into in-country corridors. Although conceived at national level, they can expect to benefit from through traffic originating elsewhere. For this reason, cooperation with other countries is essential.

84 Mulenga G, 'Developing Economic Corridors in Africa: Rationale for the Participation of the African Development Bank', AfDB Regional Integration Brief, 1, April 2013, p. 7.

FIGURE 5 MEGA-CORRIDORS IN AFRICA



Source: James M, *Urbanisation and the Implications for Africa*, Slideshow Presentation, 7 June 2013, <http://www.slideshare.net/FrostandSullivan/frost-sullivan-mega-trendsurbanisation-city-as-a-customermanijames>

A good example is the Lamu Port Southern Sudan–Ethiopia Transport (LAPSSET) Corridor. Combining roads, railway lines, airports and oil pipelines, it would stretch from Lamu port on Kenya’s coast to Nakodok on the border with South Sudan and Moyale on the border with Ethiopia.

Cross-border projects suffer from the complexities inherent in coordinating the activities of independent countries. Where projects are being undertaken by states, cross-border projects require that they harmonise their efforts towards common goals

Cross-border projects suffer from the complexities inherent in coordinating the activities of independent countries. Where projects are being undertaken by states, cross-border projects require that they harmonise their efforts towards common goals. Where commitments by any party waver, the viability of projects may be imperilled. In the case of LAPSSSET, decisions by Ethiopia and Uganda to opt for pipelines through Tanzania and Djibouti respectively (rather than via the Kenyan infrastructure) have introduced just such doubts about the project.⁸⁵

Where projects are undertaken by the private sector the complexities may be even greater, as implementation requires adhering to different sets of regulation at different points in a given project. For example, the MainOne fibre-optic cable running between Portugal and West Africa had to traverse 15 countries' waters, meaning that simply gaining the requisite permissions was an enormous task.⁸⁶

Continental initiatives such as NEPAD and the RECs have attempted to provide some direction to Africa's cross-border projects. There is some dispute as to what they have achieved. One perspective argues that their key importance is in sparking and directing discussion on the part of national governments and RECs about infrastructure development.⁸⁷ Grey-Johnson notes that the NEPAD Agency has been instrumental in identifying the key priorities in infrastructure master plans prepared by the various RECs, integrating these into PIDA, and prioritising projects. It has further used its convening power to bring together country leadership, financiers and the private sector with a view to getting proper support (not least financial commitments) for such projects.

The continent's RECs have also have also attempted to spur infrastructure development. One example of this is SADC's Southern African Power Pool, to coordinate the energy supply across the region. Another is the North-South Corridor, a cooperative project between SADC, the Common Market for Eastern and Southern Africa and the East African Community (EAC), which aims to establish transport linkages across Southern and parts of Eastern Africa. While cross-border infrastructure is clearly an imperative of the RECs, their actual capacity to act as drivers is variable. The EAC and ECOWAS, for example, have achieved a degree of capacity and influence, which includes having made

85 Achuka V, 'Kenya to soldier on even as partners in LAPSSSET pull out', *Daily Nation*, 6 March 2016, <http://www.nation.co.ke/news/Kenya-to-soldier-on-even-as-partners-in-Lapsset-pull-out/1056-3104914-2mkaoy/index.html>, accessed 2 October 2016; Mwitia M, 'Rival projects and lack of goodwill delay LAPSSSET', *The Star* (Kenya), 15 March 2016, http://www.the-star.co.ke/news/2016/03/15/rival-projects-and-lack-of-goodwill-to-delay-lapsset_c1313030, accessed 2 October 2016.

86 Alli A, '3 things you must know about cross-border investments in Africa', devexImpact, 10 September 2014, <https://www.devex.com/news/3-things-you-must-know-about-cross-border-investments-in-africa-84307>, accessed 2 October 2016.

87 Interview, Adrian Kitimbo, Researcher at the Gordon Institute of Business Science, 18 May 2016.

some contribution to infrastructure development. The Economic Community of Central African States, by contrast, has done very little to advance any sort of integration.⁸⁸

The problems that dog Africa's RECs (some more than others) fall largely within the governance ambit. Whatever the putative influence of the RECs, they are no more effective than the political commitment and administrative and financial capacity of their individual countries. Thus, Dr Donald Kaberuka of the AfDB once commented that several projects supported by the bank – he mentioned the Gambia Bridge, linking The Gambia and Senegal, and the Kazungula Bridge between Botswana and Zambia – were languishing less because of a lack of finance than because of a lack of political will.⁸⁹ To this should be added the need for capacitated bureaucracies to handle the policing and regulatory issues that will arise in cross-border initiatives.⁹⁰

Prof. Lyal White, Director of the Centre for Dynamic Markets at the Gordon Institute of Business Science, suggests that development banks might be well positioned to spur cross-border infrastructure development. He argues that these institutions have unique vantage points to understand the importance of such projects, the ear of African countries, and the ability to mediate the funding.⁹¹ Properly capacitated, subregional development banks would be well placed to perform this role.

Ultimately, however, cross-border infrastructure is likely to depend on the choices that national governments make. Well-formed policy is a non-negotiable, but in no small measure these choices turn on the political commitment governments are able to muster, and their willingness to subordinate national interests to broader regional systems of connection and cooperation.

CONCLUSION

This paper has sought to establish an overview of the progress that Africa is making – or failing to make – in dealing with its infrastructure deficits. Its specific interest was to examine the governance dimensions of infrastructure provision. Several implications present themselves.

The quality of the governance of infrastructural endeavours is clearly an important determinant of their success. The ability to accurately identify needs, raise resources,

88 See Corrigan T, *Puzzling Over the Pieces: Regional Integration and the African Peer Review Mechanism*, SAIIA Research Report, 18, January 2015.

89 African Development Bank Group, 'Slow implementation of infrastructure projects constrains intra-African trade, says AfDB president', 2 February 2012, <http://www.afdb.org/en/news-and-events/article/slow-implementation-of-infrastructure-projects-constrains-intra-african-trade-says-afdb-president-8808/>, accessed 5 August 2016.

90 Hagerman E, 'Challenges to Regional Infrastructure Development', Paper prepared for the Development Bank of Southern Africa, July 2012, p. 19.

91 Interview, Prof. Lyal White, Director of the Centre for Dynamic Markets at the Gordon Institute of Business Science, 18 May 2016; Email, Prof. Lyal White, 27 May 2016.

prepare plans and see them executed, and maintain assets after they have been constructed, depends on the capacity of governments and state institutions to function at a minimal level of effectiveness – governance need not be stellar but it should be satisfactory, or what has been described as ‘good enough’. Absent this, infrastructure development risks becoming mired in political favouritism, in self-interest from all participants and in corruption, and to emerge with assets of poor quality that may not address countries’ actual needs.

Recognition of the importance of governance is also an opportunity to shift public conversations around Africa’s infrastructure, which have tended to be dominated by issues of funding. While this does remain a real problem, it is no longer the defining problem. Indeed, it is possible to argue that what one study called ‘the unfinished agenda’⁹² of governance and administration has displaced funding as the central obstacle confronting infrastructure development. Or, as an extensive analysis of the transport sector in Africa put it: ‘Whatever the mode of transport, however, the most serious impediments are administrative.’⁹³

Better governance would, in any event, have the collateral impact of making funding more accessible. Key here is dispelling the risk perceptions. Grey-Johnson argues that in this regard African governments could ‘do more’.⁹⁴

Recognition of the importance of governance is also an opportunity to shift public conversations around Africa’s infrastructure, which have tended to be dominated by issues of funding

Beyond governments, numerous institutions – national, regional, continental and global – have been established to manage infrastructure development. In conception they are for the most part suitable for their tasks, although in practice they suffer from capacity and resource weaknesses that are not dissimilar from those of Africa’s states. They require good internal governance. The use of autonomous agencies to handle infrastructure appears to be a good model to follow, although they would still need government support (not least with political support for their work), appropriately skilled staff and the financial resources to undertake their work. Development banks, likewise, have an extremely important role to play, but sometimes suffer from inadequate capacitation and capitalisation. They also need to be encouraged to cooperate with one another and contribute to cross-border integration agendas. If governments could make the resources available, they could encourage the development banks in this regard.

Perhaps most importantly, successfully and sustainably developing Africa’s infrastructure demands high-quality planning, across assets’ entire lifespans, from planning through to long-term maintenance. As has been seen, much could be achieved with the resources available to Africa if they were deployed more efficiently. Doing so will demand that appropriate choices are made by governments and other agencies involved in infrastructure provision. The effort involved in achieving them should not be taken lightly. As one study cautioned: ‘Efficiency gains are neither easy to achieve nor always free. Substantial

92 Gutman J, Sy A & S Chattopadhyay, *op. cit.*, p. 51.

93 Gwilliam K, *op. cit.*, p. 9.

94 Interview, Symerre Grey-Johnson, *op. cit.*

efforts and political will are usually needed for the needed reforms. Significant up-front investments may also be required, even if they eventually pay for themselves.⁹⁵

The extent to which such gains can be made again depends significantly on the extent to which they are prioritised by governments, SOEs and implementing agencies involved in infrastructure provision. Yelland remarks that the failure to implement the efficiency-generating reforms (such as introducing a real energy market) proposed in South Africa's Energy White Paper in the 1990s owed much to resistance from stakeholders benefitting from the existing system – and to some extent from sheer ideology.⁹⁶ Being willing to take the necessary steps can be politically treacherous.

A particular priority needs to be accorded to maintenance. Arguably nothing poses a more insidious threat to Africa's infrastructure efforts than failing to keep in good order what has already been built. Not only does this undermine the effectiveness of assets that are so neglected – in terms of roads becoming impassable, or pipes losing water through leaks – but it also imposes heavy costs later when they must be rehabilitated.

Finally, Africa has benefited from innovative thinking on its infrastructure. The possibilities for this with technological progress are enormous. But Africa is not well endowed with the institutions necessary to do this. Prof. White remarks:⁹⁷

We need to bridge the divide and impasse between the political talk and the planning around this. Much of the thinking around cities, for example – including African cities – is being done abroad. African cities are a frontier of infrastructure development. Where is the domestic thinking around Africa in Africa? Much of it is very specialised. In Latin America we have whole institutes devoted to it, planners, architects brought together.

These sentiments are echoed elsewhere, for example, in commentary about urban planning and architecture in Africa.⁹⁸ It would be to the continent's benefit if greater capacity in these fields were available.

Ultimately, then, overcoming the continent's broader governance challenges – making the continent's states capable, accountable and developmentally oriented, as has been pledged in Agenda 2063 and in the development plans of its various countries – will be central to dealing with its infrastructural backlogs. The prospects for Africa's infrastructure development hinge greatly on the governance choices the continent and its individual countries make, and the governance capacity that can be brought to bear to make it possible. Enhanced governance and the future of Africa's infrastructure endeavours are

95 Fay M & M Toman, 'Infrastructure and Sustainable Development', in Fardoust S, Kim Y & C Sepulveda (eds), *Postcrisis Growth and Development*. Washington DC: World Bank, 2011, p. 345.

96 Interview, Chris Yelland, *op. cit.*

97 Interview, Prof. Lyal White, *op. cit.*

98 Watson V & B Agbola, 'Who Will Plan Africa's Cities?', Africa Research Institute, 12 September 2013, <http://www.africaresearchinstitute.org/publications/who-will-plan-africas-cities/>, accessed 21 September 2016.

intimately connected, with the former potentially a major accelerator of the latter. It is imperative that Africa recognises this connection.

RECOMMENDATIONS

FINANCE

It is apparent that finance, while remaining a hindrance of some magnitude, is no longer the defining problem. Greater financial commitments would be useful and need to be sought. In particular, long-term, 'patient' capital is needed. Such sources as African pension funds are important but underutilised. Bridging the residual funding gap is likely to be a function of demonstrating improved governance in providing investors with the stability and security they crave.

POLICY, PLANNING AND PROJECT PREPARATION

Proper planning within the context of well-considered policy is critical. This applies whether a project is national, cross-border or even subnational in nature. Clarity on what practical goals it will fulfil is important, as is a clear understanding of how it will interact with other infrastructural assets. It will frequently be necessary to prioritise. Not all projects may be viable at one time, and some may have an outsized impact. These are fundamentally governance and political questions and must be handled as such.

Capacity constraints within governments, SOEs, agencies and even potentially supportive institutions such as think tanks and universities must be acknowledged as a problem. These constraints undermine the whole ecosystem of ideas that might generate innovative and workable infrastructural solutions. Policymakers, think tanks and academic institutions should reflect on how this might be altered.

FOCUS ON EFFICIENCY

A key game-changer is the prospect of efficiency gains. Studies show that much of the continent's infrastructural shortfalls are owing to inefficiencies that consume resources unproductively. Achieving (or even identifying) them demands considerable technical and administrative capacity, which would in many cases need to be developed. It will also demand political commitment, as efficiency gains can carry political costs – as when employees must be dismissed from service to deal with overstaffing, or funds are saved rather than spent to provide for maintenance.

Infrastructure assets need to be monitored for wear and tear and to have their maintenance schedules observed. Equally important, the funds to conduct this must be made available. This has often not happened, leading to progressive degradation or repeated emergency appeals by infrastructure operators for funds from government. Grey-Johnson suggests that maintenance should feature as a distinct item on budgets, forcing needs to be properly considered in advance and introducing an element of transparency in operation. Where

infrastructure is managed by concessionaires, conducting maintenance must be written clearly into contracts.

AN APPROPRIATE REGULATORY ENVIRONMENT

Ongoing regulatory reform is important. Once again, this must be part of a broader policy thrust. Advances in technology mean that prevailing assumptions and the regulatory systems that went with them become obsolete. Regulations need to take account of this. Crucially, the experience of the ICT sector shows that the private sector – when permitted – can make a great deal of headway in infrastructure. The regulatory environment should protect public interest, but should be open and welcoming towards innovators.

INVOLVING THE PRIVATE SECTOR

The private sector, in Africa and globally, has a lot to offer the continent's infrastructure agenda. It has shown an interest, but needs more incentive. Reforming the regulatory environment to make it attractive for private sector operators (or even to allow them to enter particular sectors) is a key first step, and an obvious one for policymakers. Government must also show commitment to its infrastructure development programme. Above all, both government and the private sector should seek common ground for mutually beneficial partnerships (although not collusive relationships), which would be a major developmental boon for the continent.

ENGAGING WITH AFRICA'S PEOPLE

The engagement and participation of Africans in development endeavours must be encouraged. To bring about the transformation of the continent's infrastructure requires, for example, that resources are mobilised on the continent itself. Building the revenue systems for this will mean making arguments to Africa's people. Likewise, the disruption that infrastructure projects are likely to cause (frequently, if not invariably) needs to be explained and the buy-in sought of those affected.

A sense of ownership of countries' assets is also important to spur popular demands for transparency, which is an important tool for combating the corruption and mismanagement that has been associated with some of the continent's infrastructure efforts.

Doing so is all the more important in view of the growing openness and democratisation (albeit incomplete) that has been taking place on the continent over the past three decades. Infrastructure needs to be understood as the inventory not of a country but of the country's people.

FOCUS ON INTEGRATION

Cross-border projects remain a key hope for the continent's future development. More than any others, they demand the full range of political, administrative and diplomatic

skills that governments can muster. Africa, which since independence has proclaimed the importance of unity, needs to demonstrate it in the infrastructure field.

This can be assisted by robust multinational institutions – whether continental bodies such as NEPAD, RECs or development banks. Africa’s record on fostering such bodies is mixed. A rethinking of their role, refocusing them on practical matters such as infrastructure, would benefit Africa. Meanwhile, its individual countries, realising that what is at stake is nothing less than the developmental prospects for themselves and the continent as a whole, must be willing to cede a measure of their sovereignty in exchange for the cooperation that is necessary for cross-border development.

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