

Responding to South Africa's Infrastructural Challenges

CHAPTER 1



Responding to South Africa's Infrastructure Challenge

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1.1 Introduction

In 1994, the government inherited infrastructure that was generally in poor shape. “South African cities were characterised by dire housing and service backlogs, inequalities in municipal expenditure, the spatial anomalies associated with the ‘apartheid city’, profound struggles against local government structures, high unemployment and many poverty-stricken households” (Pillay et al., 2006: 2). Post-1994, concerted efforts were made to correct the infrastructure imbalances and to increase access to social and household infrastructure, through providing housing, schooling and health care, and electricity and water connections. Government’s strategies and plans have included the Reconstruction and Development Programme (RDP) in 1994, the Growth, Employment and Redistribution (GEAR) programme in 1996, the Accelerated and Shared Growth Initiative (AsgiSA) framework in 2006 (introduced as an extension of the GEAR programme), and the National Development Plan (NDP) in 2012. Key policies are contained within the Urban Development Strategy (subsequently published as the Urban Development Framework in 1997), the Rural Development Framework, the Green Paper on Development and Planning (1999), the Development Facilitation Act (No. 67 of 1995), municipal integrated development plans (IDPs) and the Breaking New Ground (BNG) housing policy (2004). These policies affect land availability and use, public infrastructure, housing markets and transport systems. In the 2015 State of the Nation address, the President did not deviate substantially from these policy directions and placed much focus on improving electricity and energy security. Issues relating to land redistribution and minimum wage legislation were reiterated along government lines, but little detail was provided on the longer-term funding of such projects.

Today, the main pillars of government economic policy, the New Growth Path (NGP), the Industrial Policy Action Plan and the NDP, are anchored in a significant ramping up of current and capital expenditure by the state. The government and state-owned enterprises (SOEs) allocated to infrastructure spending an estimated R642-billion over the last three years and about R827-billion over the Medium Term Expenditure Framework (MTEF) period (National Treasury, 2014). This is expected to contribute significantly to meeting the government job-creation targets of five million jobs in 2020 (NGP) and 11 million jobs by 2030 (NDP). Much is riding on state infrastructure spending being the solution to reducing poverty, inequality and unemployment and generating economic growth.

Infrastructure development is central to the NDP’s 2030 vision, and so high levels of investment in infrastructure will continue into the foreseeable future. The extensive infrastructure programme is aimed at rectifying inadequate and inefficient infrastructure, and improving and increasing the country’s infrastructure network. This infrastructure drive is propelled by economic growth imperatives and broader social concerns. In other words, the country faces a triple infrastructure challenge:

- To provide infrastructure that stimulates economic growth and job creation.
- To maintain existing infrastructure.
- To provide infrastructure and services to the poor in order to eradicate poverty.

There is also a sense that these challenges are moving targets. People migrate, and economic activity moves, yet infrastructure is locational and permanent, and so policy-makers have to guess the future. The South African Constitution requires the state to provide access to basic services for all citizens, which is reiterated in the NDP. However, the problem is the large “expenditure deficiency” to fill the desired levels of infrastructure necessary to meet these aspirations. This deficiency cannot be removed overnight, as the resources available are limited by the level and rate of growth of gross domestic product (GDP), as well as the national government’s ability to raise revenue through its tax instruments. Rather, what is required

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is the progressive realisation over a period of time (2030 in the case of the NDP) commensurate with the economy's ability to make the necessary resources available, and taking into account all other macroeconomic considerations. Moreover, the feedback effects of such a policy need to be considered, i.e. higher spending on infrastructure creates more human capital that may feed through into higher economic growth and per capita incomes, thus enhancing the economy's ability to realise the minimum standards.

This chapter stems from a hypothesis that the current infrastructure is both inadequate and inefficient to meet societal goals relating to economic growth, poverty, unemployment and inequality. One of the drivers of inadequate and inefficient infrastructure has been short-term capital constraints, but the question is at what long-term cost? As stated in the NDP, the government seeks to kick-start economic growth through infrastructure investment. In this regard, the chapter addresses five related aspects:

- The type of infrastructure, through providing a working definition and description of the current public infrastructure landscape patterns and highlighting their weaknesses/strengths.
- The spheres responsible for the different types of infrastructure, especially the role of subnational governments.
- Ways of funding the infrastructure.
- Reasons for infrastructure (by type) not delivering economic growth and jobs, given the present configuration.
- The conditions required for success.

Section 2 discusses definitions, classification and evolution of infrastructure, while Section 3 explores the institutional architecture underpinning public infrastructure. Section 4 highlights the broader economic and fiscal imperatives underpinning public infrastructure and its financing. Following from the analysis, Section 5 draws together conclusions and recommendations.

1.2 Understanding Infrastructure, Classification and Evolution

The idea of governments investing in public infrastructure to support production and trade (and thus growth and development) is well-established. The argument for public investment rests on the belief that resources allocated to investment translate into an equivalent value of public capital stock that, by lowering the cost of production or distribution, benefits the private sector and affects overall growth. Despite being typically only one-fifth to one-tenth of total spending, investments have a large multiplier effect² and so have a key role to play in the economy. Long-term growth is related to the size of the capital stock, which is simply cumulated investment. Investment spending is the conduit through which interest rates, and therefore monetary policy, affect the economy. A measure of investment is the amount of gross fixed capital formation (GFCF).³ Investment – in (capital) equipment and in new (technological and managerial) ideas – allows firms to incorporate new technologies and to reorganise production processes according to global best practice. Therefore, fostering a supportive environment for investment and innovation is central to having a dynamic and productive economy.

During the post-war years (1950s and 1960s), the economic models underlying the five-year plans and industrialisation strategies relied heavily on high levels of public investment. However, South Africa has certain weaknesses that hinder the effective use of resources for development. The country faces shortages in economic and social infrastructure, and government is expected to be the main player in closing these deficits, through enabling public policy, complemented by private investment and innovation.

While the term 'infrastructure' is widely used, especially in policy circles, surprisingly no standard, universally accepted definition of infrastructure exists, although numerous indicators for infrastructure do. Without a clear-cut definition of infrastructure, the process of making meaningful comparisons is complicated and does not assist effective policy formulation. The diversity within the three spheres of governments and public entities adds further complications.

Definitions and/or classifications are made with particular purposes in mind. The infrastructure classifica-

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² The multiplier effect describes how an injection into an economy, such as an increase in investment, creates a ripple effect that increases output etc. in an economy.

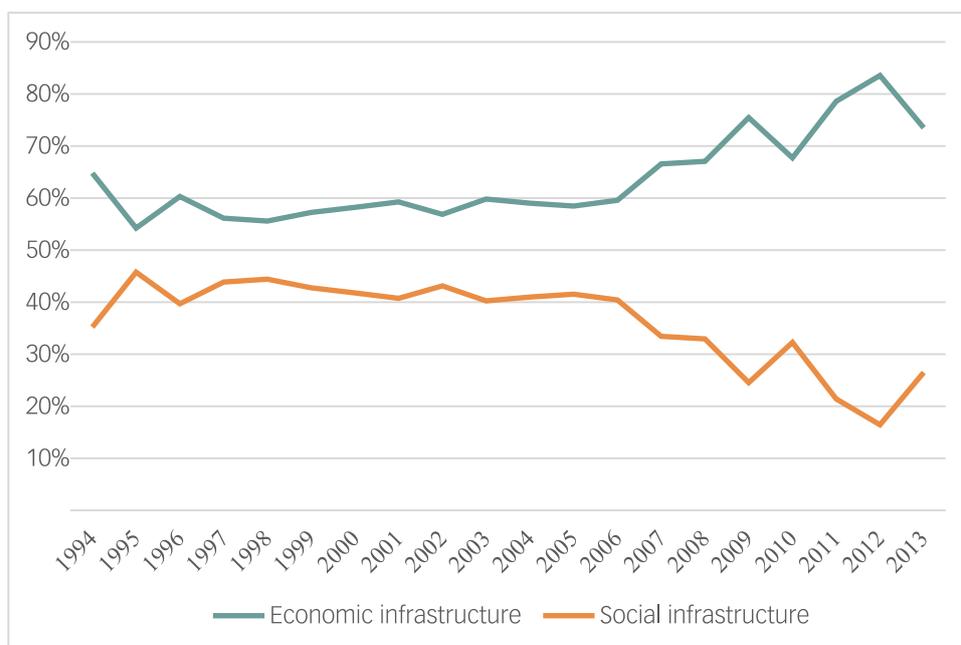
³ GFCF includes infrastructure investments, e.g. the construction of roads, railways, schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

tion implied by the literature shows a useful distinction between economic and social infrastructure. For the purpose of this Submission, infrastructure is used as a heterogeneous term, which includes physical structures of various types used by many industries as inputs to the production of goods and services. This description encompasses social infrastructure (such as schools and hospitals) and economic infrastructure (such as network utilities). Network utilities include energy, water, transport and digital communications, which are essential ingredients for the success of the NDP and, indeed, a modern economy.

The South African Reserve Bank (SARB) publishes official infrastructure figures, specifically the economic infrastructure component of general government and public corporations.⁴ Statistics South Africa (Stats SA) publishes the national accounts data and, until the late 1980s and 1990s, published data relating to infrastructure (e.g. rail, roads, ports, air travel and telephones). In the South African national accounts, public economic infrastructure includes transport, communication, power, water and sanitation systems, while social infrastructure includes schools and hospitals.

As Figure 1 shows, between 2010 and 2013, economic infrastructure as a percentage of GFCF increased from 68% to 73%, while social infrastructure declined from 32% to 27%. The increased economic infrastructure took place in tandem with targeted growth in public infrastructure investment. However, the decline in social infrastructure's share of GFCF highlights the need for more social infrastructure investment, to address the above-mentioned developmental challenges.

Figure 1: GFCF by type of infrastructure



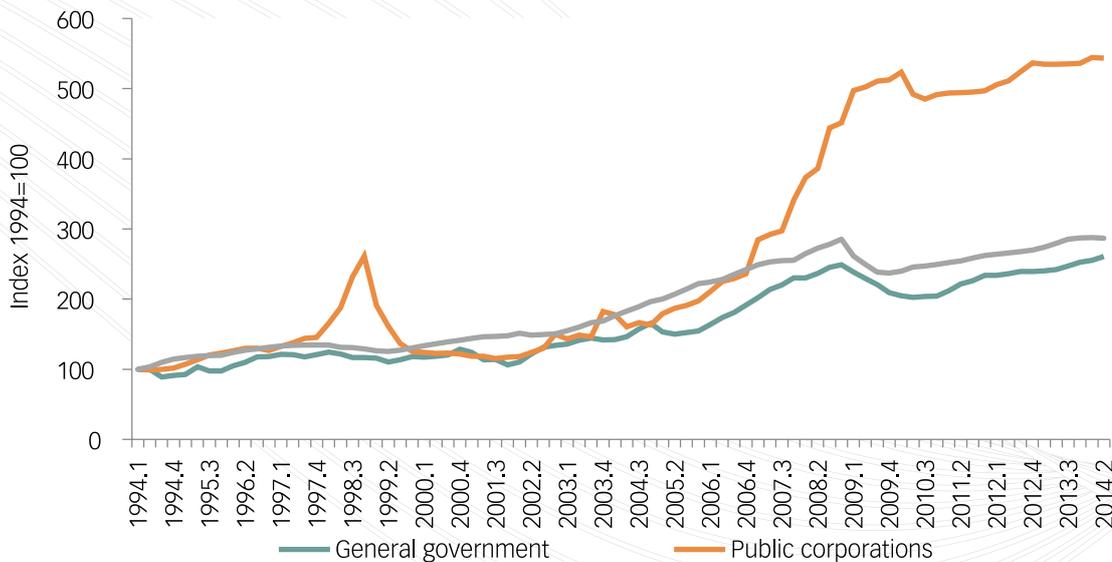
Source: Author's calculations based on SARB (2014).

Between 1994 and 2014, annual GFCF more than doubled in real terms (Figure 1). Prior to 1994, investment in infrastructure was generally very low (having peaked in 1976). During the GEAR era (1996–2002), public infrastructure investment fell from 8.1% to 2.6% of GDP, as the emphasis was more on fiscal discipline than increasing expenditure. With the AsgiSA plan in 2002, the infrastructure drive was couched explicitly in policy. Since then, GFCF has increased, even when GDP growth stagnated. Although private enterprise GFCF is highest in value, government GFCF has had the highest growth rates, especially public utility corporations (Figure 2). This surge in GFCF was driven by investments made by SOEs such as Eskom (for new power generation capacity) and Transnet (for upgrading and expanding rail and port facilities, and pipeline infrastructure).

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⁴ Examples of public corporations are Transnet (transport services such as rail and air), Eskom (electricity), and (until its listing in March 2003) Telkom (telephone services). These have been reclassified, from general government to public corporations.

Figure 2: GFCF by type of organisation (constant 2005 prices)



Note: the rates are seasonally adjusted, indexed 1994=100
 Source: Author's computations based on SARB (various years)

Table 1 (page 20) illustrates the real growth rates in infrastructure allocations by sector. A total of R813.1-billion is allocated to public infrastructure over the next three years (2015/16–2017/18). Of this, 77% is for the transport (R339-billion), energy (R166-billion) and water and sanitation (R117-billion) sectors. The upgrading of courts, police stations and correctional facilities is driving growth in the justice and protection services sector, while plans to modernise the electronic document management system used by the Department of Home Affairs explains much of the growth in the central government, administration services and financial services sector.

A concern is that Stats SA has stopped publishing certain data on infrastructure, while a number of implications have relevance for policy.

- Based on continued delays in key projects such as the Medupi and Kusile power stations, the Commission would advise caution over optimistic forecasts. To be reliable and realistic, budgets need to adequately factor in past performance when determining future projections.
- Given budget constraints and the need for infrastructure investments to provide value for money and efficiency, maintaining statistics on infrastructure utilisation is important. This can be done by creating an index of physical infrastructure capital stock, for example:
 - o Classroom or school building per capita, to gauge the need for additional buildings.
 - o Capacity use of railroad and road infrastructure, computed as different measures of rail infrastructure per ton of freight and road infrastructure⁵ (both paved and unpaved) per vehicle.

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⁵ Rail infrastructure measures include railway lines, locomotives and coaching stock.

Table 1: Real growth in allocations to public infrastructure investment by sector

	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
R billion	Outcome			Estimates		
Energy	75.1	69.5	69.2	71.1	56	39.2
Water and sanitation	22.6	26.2	34.8	37.3	39.8	40.3
Transport and logistics	69.5	76.4	93.7	104.3	113.5	121.4
Other economic services	8.9	11.8	17.5	15.4	15.5	14.7
Health	9.7	10.6	9.7	9.3	9.9	10.3
Education	9.8	12.3	13.5	14.5	14.5	14.8
Other social services	10.7	10.3	11.5	10.6	11.3	11.6
Justice and protection services	4.4	4	3.9	4.5	5.2	5.5
Central government, administration services and financial services	6.9	5.8	8.6	6.9	7.7	8.2
Total	217.7	226.9	262.4	274	273.3	265.8
Real year-on-year growth						
Energy		-10.40%	-3.80%	-0.50%	-23.50%	-31.90%
Water and sanitation		12.30%	28.10%	3.80%	3.70%	-1.60%
Transport and logistics		6.40%	18.50%	7.90%	5.70%	4.00%
Other economic services		27.60%	43.80%	-14.80%	-2.50%	-7.40%
Health		5.80%	-11.70%	-6.90%	2.80%	1.20%
Education		21.00%	6.00%	4.20%	-2.90%	-0.80%
Other social services		-6.90%	7.60%	-10.80%	3.30%	0.60%
Justice and protection services		40.80%	-6.50%	13.20%	11.00%	2.20%
Central government, administration services and financial services		-14.70%	43.10%	-22.00%	8.50%	3.60%
Total		0.90%	11.70%	1.20%	-3.10%	-5.30%

Source: Author's calculations based on National Treasury (2014)

1.3 Institutional Architecture Underpinning Infrastructure⁶

Public infrastructure attempts to address the twin aims of (i) increasing access for all citizens to basic services through extending or constructing new assets, and (ii) maintaining and/or replacing existing infrastructure. This section explores the nature of institutions relevant for infrastructure. Fiscal decentralisation and intergovernmental fiscal relations (IGFR) are inherently political processes, i.e. with multiple principal-agent layers, often riddled with internecine conflict and the possibility of local elite capture. In many cases, the paucity of institutional and financial capacities at the local level raises the threat of recentralisation i.e. central government intervention is seen as necessary to ensure that a modicum of results are achieved. It is contestable that the principal-agent model is in all instances the appropriate framework for considering intergovernmental incentive mechanisms. In a federation, the principal-agent model, at least in a constitutional sense, seems less appropriate because local governments are usually fiscally autonomous, rather than agents of the central government. Nevertheless, this model may still be appropriate in South Africa, which prides itself as a unitary decentralised state. The rest of this section proceeds on the basis of this understanding.

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⁶Institutions are here loosely defined to encompass the sets of rules, procedures, organisations, relationships and incentives shaping interactions of all spheres of government, the private sector and households with public infrastructure.

1.3.1 Dimensions of institutional issues in public infrastructure

Before describing the institutions and their challenges, it is useful to discuss the seven key institutional dimensions of infrastructure development where alignment is needed.

- (i) Infrastructure development is underpinned by policy development, which stems from government's strategic goals and objectives, sectoral and regional investment priorities, etc.
- (ii) Capital investment planning, which determines which projects will be funded and who will build and operate them, as well as the financing and the building period. Some best practices for identifying infrastructure projects include using multi-year and annual investment planning that is periodically reviewed. Infrastructure projects are identified and prioritised according to economic, development and market needs. Projects are pre-screened in a standardised manner supported by due diligence studies. Planning, financing and construction of projects are integrated, and the decisions to build infrastructure are based on objectivity with limited political influence (Asian Development Bank, 2014).
- (iii) Regulation, enforcement and approval that must be exercised vigorously in the infrastructure development process.
- (iv) The actual investment, which comprises both capital and recurrent cost of building infrastructure, and involves exploring and identifying the appropriate mix of finance for infrastructure projects.
- (v) The design and construction of the projects, which in a planned economy is exclusively carried out by government entities and agencies. However, the function can also be exercised by private entities, through competitive bidding processes for public works projects.
- (vi) The operation and maintenance of completed infrastructure. In many countries, this function is performed by private management and service contracts, as an alternative to government.
- (vii) Monitoring, which tends to increase in importance as more other responsibilities are allocated outside of government. Essentially, monitoring consists of different phases that must be in line with the infrastructure project's life cycle and nature. The first phase of monitoring takes place during the project planning stages (i.e. environmental and economic assessment). The second phase entails expenditure monitoring, and the third phase consists of construction monitoring that considers aspects of quality. The last and most important phase is utilisation, where continuous maintenance and condition assessments need to be carried out. Most infrastructure also has a decommissioning phase, which deals with the disposal of the asset after its useful life.

Delegations, or responsibility for important aspects of public sector infrastructure delivery, are provided for in the Constitution, which assigns roles to each sphere of government through the system of inter-governmental relations. Schedules 4 and 5 of the Constitution bestow functional responsibility for the delivery of public services, including but not limited to infrastructure, to the three spheres of government as stipulated below:

National government. Schedule 4 defines the concurrent functions of the national sphere, which is responsible for promulgating national sector legislation and the government's policy agenda. It shares these functions with provincial government, in concurrent arrangements, for education, health, agriculture, public works, rural development, transport and human settlements. With regard to exclusive powers and functions, national government has "residual" or "plenary" powers, e.g. defence, the criminal justice system, home affairs and the tax system. It also determines overarching policy and sectoral regulatory frameworks, including setting norms and standards and overseeing the implementation of these standards and frameworks.

Provincial government. Schedules 4 and 5 define the functional responsibility of provinces. The majority of their assigned competencies are shared (concurrent) with national authorities, meaning that the performance of the provinces has a direct impact on the pursuit of national policy goals. Provinces also have exclusive provincial legislative competence, with jurisdiction over concurrent functional areas with national government as discussed above, as well as exclusive functional areas: e.g. sporting facilities,

libraries, museums, provincial roads and provincial planning. Although provinces are “distinctive”, they exercise their powers and perform their functions within the regulatory framework set by the national government, which is also responsible for monitoring compliance with that framework and, if need be, intervening when constitutional or statutory obligations are not fulfilled.

Local government. In giving effect to the constitutional provisions, currently assignment to local government is regulated primarily through the Municipal Systems Act (No. 32 of 2000), the Municipal Structures Act (No. 117 of 1998), the Division of Revenue Act, as well as various sector legislation supported by a range of norms and standards. Municipalities are primarily responsible for intergovernmental planning, and for the provision of basic services, such as water, electricity, sanitation, roads, refuse removal and municipal infrastructure. These functions are performed within nationally and provincially set regulatory frameworks, but municipalities are also expected to promulgate their own bylaws to regulate the operations of these key services.

The current state of play is that the revenue-, budgeting- and expenditure monitoring functions are located within national and provincial treasuries (although this is not always the case where public entities have been established). Strategic planning functions are typically located in the Presidency, the Office of the Premier or the Office of the Municipal Manager. Project planning and conceptualisation is located within the relevant sector departments, while project management functions are located either with sector departments or with special purposes departments, most notably the provincial departments of public works (DPWs). Inter or intra-governmental functional assignment requires extreme levels of coordination and cooperation between sector departments at all levels of the infrastructure development process. Historically, about 65% of national departments perform infrastructure-related functions, such as government buildings, bulk water resources, police stations, courts and prisons, electrification, and make infrastructure transfers to agencies and public entities. Implicitly, national departments are supposed to provide overarching sectoral infrastructure frameworks informed by the broader national policy. National policies provide the basis from which capital investment plans can be developed. However, with the exception of the Department of Transport, other national departments have not had national capital investment plans for many years.

Provincial departments mainly provide infrastructure related to schools, health, agriculture, provincial roads and public works. Ideally, provincial infrastructure development needs to be supported by the Provincial Growth and Development Plans (PGDPs), which in turn should inform the region-specific and sectoral capital investment plans. PGDPs tend to be high-level plans that are not always assimilated to sectoral or even local government plans. Local government is entrusted with the responsibility for municipal roads and storm-water, water distribution and wastewater collection and treatment, electricity distribution, street lighting, bus and taxi ranks, community halls, refuse sites etc. Similarly, local government has the responsibility to draw up capital investment plans in the form of IDPs. Since 1994, national and provincial spheres and entities have made concerted efforts to strengthen local-level governance through reforms to municipal boundaries, systems, structures and financial arrangements. Efforts underway, which have huge implications for infrastructure delivery, include demarcations, assignment of certain core urban build environment functions to municipalities (e.g. management of spatial planning and land use, human settlements and infrastructure services, and public transport), accompanied by the assignment of a range of local revenue sources to finance such activities.

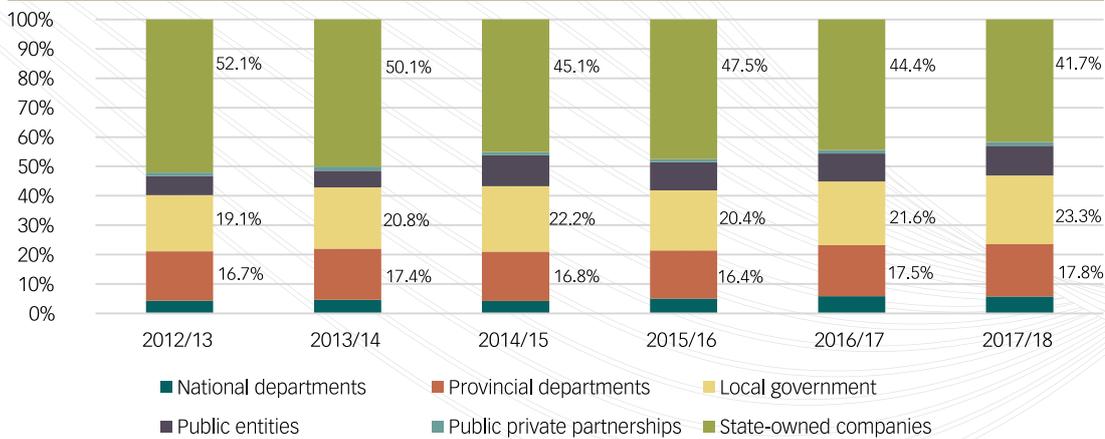
Infrastructure planning is further hampered by the existence of a large number of agencies and public entities that operate on business principles to support public infrastructure delivery. Examples of these entities include 17 water boards, the South African Roads Agency, the Trans Caledon Tunnel Authority, South African Rail Commuter Corporation, Transnet, Eskom, Telkom, Sentech, Airports Company of South Africa, Alexcor, DENEL, South Africa Post Office Limited and the Development Bank of Southern Africa. In most cases, these entities have their own long-term independent capital investment plans that are not necessarily aligned to the broader national, provincial and local policy frameworks⁷. This is especially true for their capital expansion plans, which tend to be geared towards projects with high economic rather than social returns. Conversely, many of these entities continue to rely heavily on transfers for bailouts, despite the availability of a wide array of revenue sources at their disposal, e.g. user charges, retained earnings, borrowing, transfers from oversight government departments, private-public partnerships (PPPs), concessions and sale of assets.

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⁷ In fact, one of the greatest weaknesses of the IGR system is that it does not force coordination with these public entities.

The quality of governance and the institutional architecture have a major influence on public infrastructure outcomes. Government spheres and entities face a range of common challenges when managing public investment. The responsibility for investing in new and existing infrastructure is a concurrent function and lies with all three spheres of government, including state entities. Over the 2015 MTEF period, SOEs and local government account for just under 70% of all public investment in infrastructure (Figure 3).

Figure 3: Responsibility for public infrastructure spending



Source: Author's calculations based on National Treasury (2014)

The issue of concurrency lies at the heart of sharing responsibilities for public infrastructure across levels of government and entities. A major obstacle is the insufficient financial resources at subnational levels to finance and implement municipal investment plans. Furthermore, poor financial management performance and unmet service delivery targets associated with municipalities (and SOEs) bring into question their ability to effectively drive South Africa's infrastructure-led growth. The principle of self-determination at subnational level will always clash with the need for economies of scale and efficiency, and is something that fiscal decentralisation will have to take into consideration in the future. More asymmetric and differentiated approaches will be called for, and powers will need to be devolved according to the eventual economic benefit.

South Africa's other challenges, which impede the effective use of resources for development, include:

- Large infrastructure projects often require productivity improvements, life-cycle asset management and complex procurement processes, which can result in significant delays and cost escalation.
- Weak intergovernmental coordination processes, which can lead to delays in both project evaluation and project oversight and implementation.
- Allocating resources to a project is typically a multiyear commitment, which may pose particular challenges in a budget system that has insufficient capacity to spend effectively and given a lack of institutional mechanisms to ensure accountability in infrastructure delivery.
- Projects may also be driven by productivity improvements and use of ICT technologies that, if widely applied, may improve public infrastructure management but is not the case at this stage.

Project complexity, and weak management and accountability systems create conditions for corruption to flourish, often to the point where large volumes of public money are diverted to private accounts, without creating any public asset or reaping the expected benefits from the original project. This occurs when the procurement function (including planning and contract award/management) is a standalone process rather than a critical part of public infrastructure management.

Conceptually, integrating procurement with public investment should be about capturing the potential efficiency gains through coordinated management within a framework. A welcome step has been the

introduction of built environment performance plans in order to incentivise integrated planning and implementation within municipalities, as well as the implementation of government's infrastructure plan (a key priority over the medium term). More efficient procurement processes should be implemented, while ensuring adequate checks and balances are not compromised in the process. In this regard the Commission welcomes the release of the Supply Chain Management (SCM) Review by the Office of the Chief Procurement Officer (OCPO) and supports reforms proposed by the OCPO aimed at modernising SCM in the public sector, reducing corruption in both public and private sector, accelerating service delivery and reducing costs. Project management and infrastructure planning are two crucial areas for infrastructure development. In addition, procurement processes need to be integrated with upstream project planning and budgeting and downstream contract and project management coordination. Indeed, this integrated approach, which infuses performance within procurement, is better aligned to the evolving government-wide performance and outcomes-oriented approach. However, such an approach also requires high levels of coordination and skills.

Much will depend on the capacities available (or that can be developed) at the subnational level, through either learning by doing or sister/brother link-ups with more successful entities elsewhere in the country. South Africa's rapid urbanisation will be a key test of those capacities, especially with regard to urban infrastructure development, including transport, sewage, water and sanitation. IGFR are likely to work best when the central government takes an active interest in strengthening institutional frameworks at the subnational level, i.e. supervising programme implementation and holding subnational bureaucracies accountable. Good coordination will be needed among all spheres of government, and the establishment of the Presidential Infrastructure Coordinating Commission (PICC)⁸ in 2012 is a critical success factor in the roll-out of infrastructure in a coordinated and prioritised manner.

1.3.2 Recent changes to institutional architecture

Much of the ongoing work is aimed at addressing the problems confronting institutions responsible for infrastructure delivery. Current policy and strategy frameworks include the NGP, the NDP, the National Health Insurance (NHI), and the emerging Integrated Urban Development Framework (IUDF). All of these policies have implications for functions to be assigned to other spheres. The NDP is clear that each sphere of government must improve governance and the execution of their respective powers and functions, while the issue of how powers and functions ought to be managed is an ongoing requirement of the Medium Term Strategic Framework. In the same vein, policy work by the Department of Cooperative Governance has highlighted the importance of taking a more assertive approach to the intergovernmental management of powers and functions. For example, the 2008/9 Policy Review on Provincial and Local Government, the 2012 draft Green Paper on Cooperative Governance, the 2013 Draft Framework for the Assignment of Powers and Functions: a framework for differentiation, and Strengthened District Governance (2014).

From 2012, government began introducing measures aimed at incentivising proper planning and financing of provincial infrastructure. In the 2012 Medium Term Budget Policy Statement, the Minister of Finance made the following statement (National Treasury, 2012: 39):

Over the next three years government aims to achieve better value for money from investment in provincial infrastructure. A new approach to infrastructure conditional grants is intended to institutionalise proper planning. Provinces will be required to bid for these allocations two years in advance and financial incentives will be built into the grant for provinces that implement best practices in delivering infrastructure.

The approach is based on a diagnostic showing that poor planning is why infrastructure projects fail to finish on time and within budget. A performance-based funding mechanism is suggested for infrastructure conditional grants in the education and health sectors. This represents a move from paying out upfront formula-based allocations in accordance with a payment schedule that forms part of the grant conditions, to awarding allocations to appropriately planned infrastructure projects that are prepared by following best practices for infrastructure planning and procurement. The programme was implemented for the first time in 2013/14, when indicative baselines were determined for the 2014 MTEF based on the level of compliance with the requirements of the 2013 Division of Revenue Act (first approval process). Funds not allocated as part of the first approval process were considered for allocation as part of the second approval process in year two (2014/15). In 2014/15, provinces were required to bid for their 2016/17 infrastructure

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⁸ The PICC was created with the aim of improving the planning, coordination and monitoring of core infrastructure development in South Africa.

grant allocations (in education and health) two years in advance (i.e. in the approval process commenced in 2014/15). The performance-based system guidelines have been developed and cover the preparation, assessment and evaluation of the provincial infrastructure planning documents in line with performance-based conditional grant requirements as outlined in the 2014 Division of Revenue Act. Unsuccessful bids will not be partially or entirely funded, and unallocated funds will be pooled. Given that this intervention is new and a work in progress, judging its performance would be premature at this early stage.

As alluded to above, the establishment of the PICC represents an important recent step towards an integrated approach to policy, planning and delivery of infrastructure across spheres of government and sectors. In 2012, the PICC developed South Africa's first National Infrastructure Plan, which identifies 18 strategic integrated projects (SIPs). The SIPs are clusters of infrastructure projects considered as essential for promoting economic growth and supporting service delivery to the poor. They cover seven broad types of infrastructure: geographic, spatial, energy, social infrastructure, knowledge, regional integration, and water and sanitation (Table 2).

Table 2: Strategic integrated projects driving the National Infrastructure Plan

Type of Infrastructure	Focus Areas of SIPs
Geographic	Unlocking the northern mineral belt, with Waterberg as the catalyst
	Durban–Free State–Gauteng logistics and industrial corridor
	South-eastern node and corridor development
	Unlocking economic opportunities in the North West province
	Saldanha–Northern Cape development corridor
Spatial	Integrated municipal infrastructure project
	Integrated urban space and public transport programme
	Agri-logistics and rural infrastructure
Energy	Green energy in support of SA economy
	Electricity generation to support socio-economic development
	Electricity transmission and distribution for all
Social infrastructure	Revitalisation of public hospitals and other public health facilities
	National school-build programme
	Higher education infrastructure
Knowledge	Expanding access to communication technology
	Square Kilometer Array and Meerkat projects
Regional integration	Regional integration for African cooperation and development
Water and sanitation	Water and sanitation infrastructure

Source: PICC (2014)

Much is riding on state infrastructure spending being the solution to reducing poverty, inequality and unemployment, and generating economic growth.⁹ The SIPs are expected to contribute significantly to meeting the job-creation targets of five million jobs by 2020 (NGP) and 11 million jobs by 2030 (NDP).

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⁹ In its drive to raise employment levels, the South African government has put in place a number of other policies and programmes, such as the Expanded Public Works Programme and the Community Works Programme, that also affect location and investment.

The Infrastructure Act (No. 23 of 2014) establishes the PICC in law and is intended to fast-track the implementation of government's Infrastructure Development Plan. The Act implies the centralisation of infrastructure delivery, which will create opportunities and challenges for the intergovernmental fiscal system. Without a doubt, coordination among the different spheres, departments and agencies responsible for infrastructure development must improve, as proposed by PICC. The establishment of the PICC signals the need to tackle the challenge of building and renewing infrastructure with innovative policy solutions, so as to prioritise projects and overcome coordination problems. For example, PICC could be extremely useful in making amendments to legal frameworks relating to urban infrastructure development and the land and housing market, in order to facilitate public-private arrangements and to improve the functioning and efficiency of government spheres. The PICC could help unblock bottlenecks so land can be released for infrastructure development. The PICC could be especially useful in dealing with the multiplicity of urban local agencies, which have inadequate revenue-raising and financial management capacities (poor credit worthiness, weak management systems, limited revenue raising powers), and coercing the New Development Bank (formerly referred to as the BRICS Development Bank) to play a prominent role.

The risk is that this national pre-eminence of PICC could lead to too much centralised decision-making around infrastructure. For example, it could affect subnational government's control over their specific SIPs budget and planning for revitalising public hospitals and other health facilities, the national school-build programme, integrated municipal infrastructure projects, and integrated urban space and public transport programme. Municipalities are the government sphere that has direct contact with people's needs, and so the PICC actions would have to be strongly aligned with municipal IDPs in order to be mutually reinforcing.

1.3.3 Summing up: challenges and opportunities

Several institutional issues hinder effective infrastructure service delivery, ranging from insufficient skills and capacity, to incomplete and fragmented delegations and accountability channels. These issues must be addressed. Otherwise, misaligned, unbridled and uncoordinated investment in infrastructure will persist, which will result in weakened benefits relative to costs, diminished multiplier effects on growth, and reduced returns on investment. Much will depend on the capacities available (or that can be developed) at the subnational level, either through learning by doing or sister/brother link-ups with more successful entities elsewhere in the country. South Africa's rapid urbanisation will be a key test of those capacities, especially with regard to urban infrastructure development, including transport, sewage, water and sanitation.

IGFR are likely to work best (i.e. in terms of impact on infrastructure provision) when the central government takes an active interest in strengthening institutional frameworks at the subnational level, i.e. supervising programme implementation and holding subnational bureaucracies accountable. Luckily for South Africa, a window of opportunity exists to build on initiatives like the PICC and to overcome the challenges of cooperation between approval authorities in different spheres, resulting in red tape and so forth. It is hoped that the PICC, together with the adoption of the National Infrastructure Plan, will not only improve decision-making in economic infrastructure sectors, but will also result in an integrated and sequenced programme delivered across sectors and spheres, in line with the NDP.

Efforts should not be aimed at recentralisation and increasing the general influence of the centre but at ensuring that subnational units are viable and able to provide services to the people. This approach will be in line with Section 156(4) of the Constitution and, in turn, assumes that the central government – the "principal" – is not only well-intentioned (i.e. follows legal/constitutional provisions) but also has the capacity to impose its (altruistic) will on subnational governments, which is an unlikely feat in many cases. This could be done by tangibly empowering provinces and municipalities to be central players rather than observers in the PICC, in particular with respect to spatial planning and land use management functions. Detailed delegations for concurrent functions need to be developed that specify aspects such as performance targets, delegation norms and standards, and requisite financial arrangements pertaining to each aspect of infrastructure service provision. The institutional challenges are to (a) ensure the PICC improves its capacity and capability to link the municipal, provincial and national infrastructure delivery budgetary processes, so subnational governments are appropriately represented in the national budget process; and (b) improve government's capacities, so that the forward-looking budgeting system and infrastructure allocations can be fully exploited.

1.4 Public-Private Partnerships and Infrastructure

In many cases, PPPs involve cooperation arrangements with government for delivering specified services that government pays for from its revenues. For example, a PPP in which a private sector firm provides the full administration of a prison but not the capital investment for constructing the prison. However, in the context of government debt financing, the relevant forms of PPP are those in which the private sector makes a significant capital investment that government would otherwise have had to make. For example, certain toll road projects, in which the investment in the road or major upgrade is funded from the balance sheet of the private sector participant. South Africa has had some long running experience with PPPs, starting with major successes in the 1990s with arrangements for national roads. Approaching the end of the 1990s, government started to expand this approach to other infrastructure sectors, with the aim of mobilising private-sector finance and capacity. In 2000, a PPP Unit was established in National Treasury to provide the necessary support to such agreements. Some of the notable infrastructure projects concluded through PPPs have been the Inkosi Albert Luthuli Hospital, Mangaung Prison, Universitas Academic Hospital and Pelonomi Private Hospital, Chapman's Peak toll road, the dti head office and the Gautrain.

1.4.1 The infrastructure context

In the context of infrastructure development, only a limited category of PPPs is applicable. An example that might have occurred in the early 2000s was the introduction of private sector firms to construct and operate electrical power stations. The firms would have funded and managed the power stations, while Eskom or an independent power purchaser would have drawn on the power generated at an agreed price. An applicable case would have been the possibility of a private sector investor taking up a 30% stake in the Kusile power station presently under construction. Such arrangements tend to apply more to state-owned public corporations rather than directly to central government itself. Nevertheless, certain cases may be applicable to central government, such as a PPP arrangement whereby a private sector firm funds and contracts a new office block to meet a government requirement, and government enters into a long-term rental lease for use of the offices.

An allied aspect is the degree to which government is willing to allow private sector firms to undertake activities that could be placed in either the state- or private realm. Government pursued various initiatives in the 1990s, whereby state-owned business-oriented activities were transferred to private sector parties. For example, the issue of shares in national telecommunications operator Telkom to private shareholders, and the sale of Iscor assets to the private firm which is now ArcelorMittal. However, from the early 2000s, national government made a deliberate shift in its stance, to refrain (by and large) from transferring such activities to private sector parties, and to concentrate on building up state-owned public corporations to undertake these activities. The government's stance limits the degree of possible funding alleviation that might result from placing more state-run activities in the private sector.

1.4.2 Possibilities and limitations

The possibilities for drawing private sector financing into state initiatives are therefore limited by the government's policy commitment to undertake such activities under state ownership. This appears likely to be the policy of the government under the ANC leadership for a number of years.¹⁰ Nevertheless, government might consider bringing in private sector firms in certain areas that would not represent too great a deviation from its policy stance.¹¹ One such example is road infrastructure, where forms of private sector investment may be achievable, despite recent resistance to the e-toll arrangements for the Gauteng freeways. Another example, which is clearly within government policy parameters, is the Independent Power Producer initiative being pursued by Eskom, in which private sector proposals are invited for certain forms of power generation. Private households could also be encouraged to do "meter reversing" by investing in solar, similar to what has been done with considerable success in Germany. Under these, the private sector parties provide the entire financing and enter into a supply contract, whereby Eskom or a sister central network operator purchases the power at a contracted rate. In a similar vein, private sector parties can undertake fuel pipeline projects; a few years ago, the state considered such a project before reverting to having Transnet undertake the project. Rail concessions, in which a certain rail line is operated by a private sector firm under contract to a state entity such as Transnet, have previously been contemplated and could again become a possibility. In this case, financing of rolling stock for the concession rail route would shift to the private sector firm. At present, Transnet is undertaking a massive acquisition of rolling stock on its own balance sheet, which is material enough to affect the country's public debt.

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¹⁰The ideological driven "development state" agenda.

¹¹The problem with involving private sector firms is that you then need a strong, independent regulator, and regulatory capacity in South Africa is abysmally poor and prone to capture.

Transnet is investing R135-billion in rolling stock, while Eskom's investment in the Medupi and Kusile power stations is around R280-billion. A nuclear programme would add massively to this. If private sector parties met a portion of these investments, e.g. 30%, the debt financing required by government and its public corporations would be reduced by at least R100-billion.

1.5 Infrastructure Funding Approaches and Analysis

Infrastructure differs from other types of capital investments in various ways that are important for its funding:

- Infrastructure investments are typically big and capital-intensive.
- Infrastructure requires significant upfront funding, whereas the returns on the investment accrue over very long periods of time.
- Infrastructure investments typically generate positive externalities, i.e. more often than not, the social returns exceed the private returns of an infrastructure project.

Thus, the very nature of infrastructure provision means that capital expenditure generally occurs long before services are provided and charges can be collected. This time difference, between the infrastructure expenditure and the receipts, results in a funding gap that needs to be financed.

As a result, private financing and provision of infrastructure is difficult, which is why, historically, infrastructure investments have been provided by the public sector, public-private partnerships (PPP) or regulated private entities. Infrastructure investments are further complicated by the need to evaluate the broader social returns against funding costs and fiscal consequences. Infrastructure investments are not fundamentally aimed at boosting revenues and often have a high social return, which presents government with a dilemma (especially when the fiscal environment is deteriorating and the economy slowing down): the trade-off between positive social benefits and negative fiscal consequences. Equity and efficiency also need to be balanced, given the pressing need for economic and social infrastructure to support economic development in line with the NDP.

An enhanced institutional architecture is needed to govern infrastructure strategy, delivery and finance. Broadly speaking, investment in public infrastructure can be financed by:

- Public sector through revenues or savings, or
- Capital markets through borrowings or equity contributions from the private sector.

As shown in Table 3, there are three broad approaches to funding infrastructure: general budget appropriations, PPPs and development contributions.¹² Table 3 does not rank the different funding approaches but describes the most appropriate situation for each approach. The choice of a funding approach will depend on various factors, including the type and timeline of the infrastructure being funded, and the level of government or sector involved.

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¹² Development contributions as well as a number of alternative funding approaches to those outlined include (a) Specific-purpose securitised borrowing, (b) Certificates of Participation or lease revenue bond, (c) value capture levy, (d) specific purpose levies, (e) Growth area bonds and (f) Business improvement districts.

Table 3: Strengths and weaknesses of different funding instruments

Funding methods	Strengths	Weaknesses	Most appropriate situations
General budget appropriations	<ul style="list-style-type: none"> • Increased scrutiny, which promotes accountability and transparency for using public funds. • Low transaction costs compared to most other financing methods. 	<ul style="list-style-type: none"> • Cash available to build the asset is uncertain, as non-discretionary spending could take priority. • Inefficient, as may reduce incentives to explore other, more efficient funding options (e.g. user charges). • Full public funding could reduce scope to allocate project risks to those best able to manage them. 	<ul style="list-style-type: none"> • Depends on whether the project is funded through taxes, borrowings or user charges, and on willingness to pay for higher level of service.
Taxation revenue	<ul style="list-style-type: none"> • No impact on credit rating. • Fairest means of financing infrastructure, as national and provincial tax distributes the cost of infrastructure broadly. • Local government taxes can harness increased property value from infrastructure provision and spread costs across generations that benefit from the infrastructure (e.g. assuming rate hikes are permanent) and across all property owners within a specific area. 	<ul style="list-style-type: none"> • Taxes can distort economic outcomes and do not merely redistribute money and resources. • Tax has little impact on encouraging efficient use of infrastructure services. • Taxation revenue may vary according to government policies and macroeconomic conditions (e.g. business cycles). 	<ul style="list-style-type: none"> • Most suited for infrastructure projects with broad-based benefits that are realised over the short to medium term.
Borrowings	<ul style="list-style-type: none"> • Can be used to accelerate or bring forward delivery of key infrastructure projects. • Lower cost of capital compared to private sector financing. • Cost of infrastructure aligned more closely to the benefits that accrue over time, improving dynamic efficiency. 	<ul style="list-style-type: none"> • Can be used to accelerate or bring forward delivery of key infrastructure projects. • Lower cost of capital compared to private sector financing. • Cost of infrastructure aligned more closely to the benefits that accrue over time, improving dynamic efficiency. 	<ul style="list-style-type: none"> • Projects where benefits outweigh the costs (leads to improved macroeconomic efficiency). • Projects with long-term benefits, as debt can be viewed as a tax on the future generations (i.e. allows for benefits and costs to be matched over time). • Projects that cannot be done on a commercial basis and where debt can be funded from the operating budget.
User charges	<ul style="list-style-type: none"> • Equitable, as based on the user-pay principle to fund infrastructure. • Efficient, as encourages best allocation of resources through efficient pricing. 	<ul style="list-style-type: none"> • Demand for goods and services may vary from that anticipated, thus affecting financial returns. • Difficult to achieve efficient pricing: users charges are usually set too high (e.g. monopolies) to encourage optimal use, or too low to cover the cost of capital. • Possible high administration and political costs. 	<ul style="list-style-type: none"> • For projects where there is a link between the service provided and the fee charged for the service. • Some examples are road projects and maintenance funded through vehicle registration fees.

Source: Adapted by Financial and Fiscal Commission from Chan et al. (2009) and ACG (2011)

1.5.1 Modelling the impact of infrastructure investment

An important topic is the links between public infrastructure financing, growth and employment across the country and regions. Modelling the impact of scenarios on investment rates, growth and employment addresses the issue of how to finance the required infrastructure scale-up.

The simulated investment programme is split into three components (i) investment in government sectors (e.g. education, justice etc.) that increase the capital stock of public sectors, (ii) investment in infrastructure (e.g. roads, harbours, airports) that does not increase the capital stock of any sectors in particular and can be considered a public good, and (iii) investment in productive sectors (e.g. the energy sector) that increase the capital stock of a given sector.

The policy simulations thus take into account the effect of infrastructure investment on the *productivity* of other sectors. For example, the construction of a bridge is investment in infrastructure that will have an impact on other sectors, if the use of this bridge reduces travel time. Similarly, government investment in building a road or renovating a harbour will have an impact on other sectors, as their transport margins will decrease and they will be able to trade more using the same quantities of labour and capital. Government investment can also increase private capital stock. For instance, government investment in a nuclear plant increases the capital stock of the electricity/energy sector. The model allows the government to intervene in the public and private sectors of the economy.

A variant of the model is used to analyse how an increase in public investment affects *economic growth*. At its core is the Ramsey optimal-growth framework, oriented towards the constraints that government faces in financing infrastructure expenditures.¹³ Table 4 shows the impact of increasing public spending for three years (2015, 2019 and 2025) for three financing methods: direct tax, indirect tax and debt financing.

Table 4: Impact of increased public investment on macroeconomic variables (% deviation from BAU¹⁴)

	Direct tax financing			Indirect tax financing			Debt financing		
	2015	2019	2025	2015	2019	2025	2015	2019	2025
GDP	0.02%	0.15%	0.17%	-0.22%	0.16%	0.26%	0.02%	0.15%	0.17%
GDP deflator	0.02%	-0.34%	-0.27%	-0.22%	-0.33%	-0.25%	0.02%	-0.34%	-0.27%
Real GDP	0.00%	0.49%	0.44%	0.00%	0.49%	0.51%	0.00%	0.49%	0.44%
Real consumption	0.07%	0.30%	0.37%	-0.09%	0.23%	0.37%	0.07%	0.30%	0.38%
Real investment	-0.21%	0.89%	0.51%	0.46%	1.12%	0.79%	-0.25%	0.88%	0.51%
Debt	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.17%	-0.15%
Gov. expenditures	0.73%	0.07%	-0.07%	0.76%	0.06%	-0.10%	0.73%	0.08%	-0.08%
Increase in tax rate	0.34%	-0.03%	-0.11%	0.13%	-0.01%	-0.04%	n.a.	n.a.	n.a.

Source: Author's calculations based on South African dynamic CGE model

In the short term (2015), to finance the additional spending, government will need to raise income tax by 34%. If government chooses to finance new spending through indirect taxation, an additional tax of 13% on all commodities will be necessary to keep the deficit constant. Impacts on real GDP in the short term are negligible (0% in 2015) but are positive in the medium to long term (increased 49% by 2019). This is because spending on investment leads to increased infrastructure and economic output. In fact, under a rigid deficit, taxes would eventually go down, as a result of greater production in the economy.

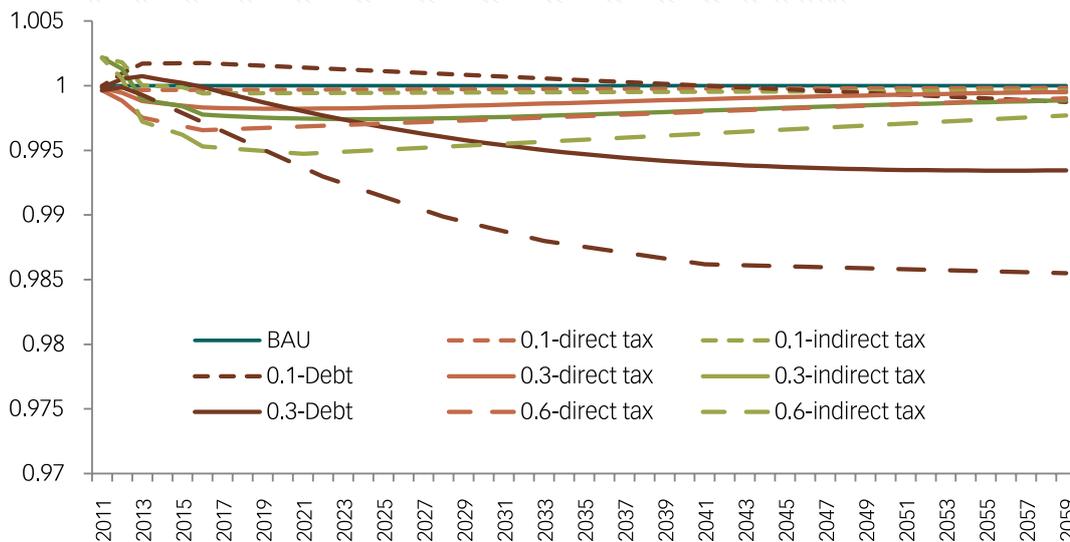
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¹³ For more details, refer Mabugu et al. (2013).

¹⁴ BAU = Business As Usual in macroeconomic terms is here taken to mean the natural trend of the economy and economic policy.

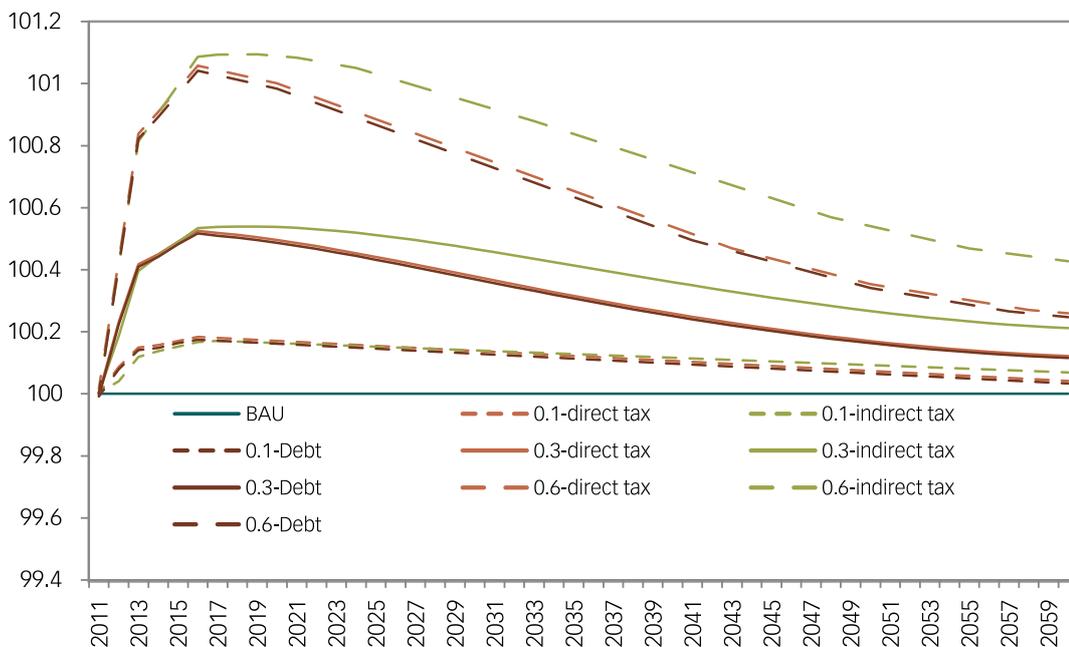
To examine the sustainability of increasing public spending, the debt-to-GDP ratio was calculated over the next 60 years (Figure 4). As the GDP grows over time, a constant deficit translates into an improvement of the ratio. More surprisingly, the greatest improvement happens in the debt-financed scenario. If tax rates are kept the same throughout the period (2011–2059), government revenues increase in the longer term, allowing for a smaller deficit in the future. To test the robustness of these findings, the simulation was run again to see how increased public investment affects GDP under the three financing methods, using values of 0.1, 0.3 and 0.6 for the impact such expenditures have on total factor productivity in South Africa (Figure 5). Whatever the financing method used, the results are similar for all three values (within a range of less than 1%).

Figure 4: Impact of increased public investment on debt-to-GDP ratio (BAU = 100)



Source: Author's calculations based on South African dynamic CGE model.

Figure 5: Impact of increased public investment on GDP (BAU = 100)



Source: Author's calculations based on South African dynamic CGE model.

In the current constrained fiscal climate, it is very tempting to treat public investment as an “adjustment variable”. As finances are tightened, cutting public investments may be seen as a viable fiscal consolidation effort. However, as shown here, public investment represents a growth-enhancing form of public expenditure, and so by reducing public investment at a time of sluggish growth is potentially costly.

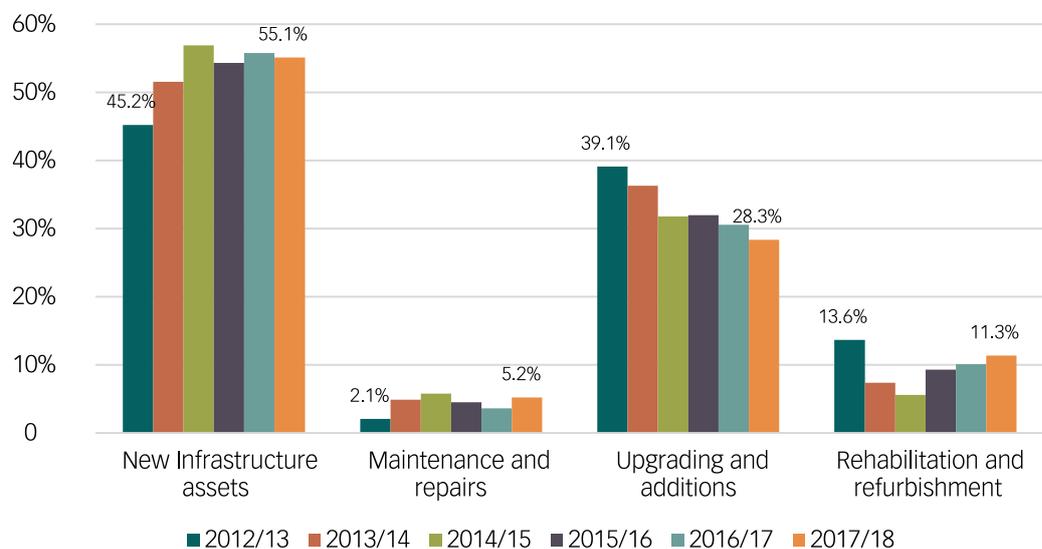
The focus now moves to government infrastructure spending and the effect of alternative financing arrangements on employment, both in the short and longer term. The investment plan discussed above is not able to generate sufficient activity in the economy to reduce unemployment substantially. When the increased infrastructure investment is financed through an increased deficit, GDP improves and unemployment reduces. When financed by tax increases, the implications for unemployment diverge. Financing the investment through increased VAT is pretty harsh on the economy, as everyone is affected, and is not “pro-poor” because all households (including the poor) are hit by an increase in VAT. An intermediate solution could incorporate a combined burden sharing between households and firms. Alternatively proceeds from a VAT increase could be recycled back directly to poor households as discussed in Mabugu et al. (2015). These findings have immediate policy implications.

The modelling results show a strong relationship between economic growth and public infrastructure investment financed through debt. Ultimately, bridging the capital finance gap will require accelerated economic growth. Once growth gets going, financing a higher level of service provision will become self-financing, as infrastructure that supports accelerated growth will lead to government receiving higher taxation revenue. This suggests a sequencing that runs from debt to infrastructure, to growth to tax revenues, and eventually higher service provision. In the short term, the scope appears limited for expanding national grants through aggressive tax reforms that raise available revenue, but will become feasible again after accelerated economic growth.

There are few simple answers to South Africa’s weak economic growth rate and associated unemployment and poverty rates. The core requirements for more rapid and sustained growth are greater saving, investment, more productive use of capital by better skilled workers, and moderate unit labour costs. The issue of productivity is crucial. Higher labour productivity will increase the labour intensity of the economy as a whole. However, to get stronger growth in productivity requires wide-ranging changes to policies and incentives, including better management, skills development, research, etc.

Finally, maintenance and efficient use of existing infrastructure might be more important than building new infrastructure but is often assigned less priority. Figure 6 shows that by the end of the 2015 MTEF period, 55% of resources allocated to infrastructure investment will be for new infrastructure. The balance is allocated to repairing, rehabilitating and upgrading existing infrastructure.

Figure 6: Share of infrastructure spending by type



Source: Author’s calculations based on National Treasury (2014)

Whereas spending on repairs and maintenance only reaches 5.2% by the end of the medium term, this does reflect an increase relative to the 2.1% allocated in 2012/13. Existing public capital stock is degrading rapidly, while the three spheres of government rush to identify new infrastructure investment projects. Unlike politically visible expenditure items, such as public sector wages, maintenance can be deferred (initially) without obvious signs of deterioration. However, if maintenance continues to be postponed indefinitely, the structural integrity of the asset declines quickly. Therefore, closing the “infrastructure gap” entails more than simply increasing new public investment. The failure to address this “recurrent cost”, or deficient operations and maintenance expenditure problem will have powerful macroeconomic consequences, especially for the sustainability of growth and jobs.

1.6 Emerging Messages and Recommendations

In concluding the arguments above, three issues associated with public infrastructure and South Africa’s unitary decentralised fiscal system emerge. First, how to ensure an institutional architecture that enables a certain level of services to be provided to the population and ensures resources do not leak. This requires stronger institutions at the subnational levels, as well as capacity for communities to exercise collective action in demanding services and in holding governments at all levels accountable. The analysis pointed to strengthening accountability frameworks and building requisite capacity/skills. In addition, maintenance programmes are lagging behind. The recommendations proposed here are crucial to respond to a rapidly changing world where skills, flexibility, openness and receptiveness to technological change are becoming ever more important for prosperity.

The second issue relates to how to finance the required infrastructure scale-up. Like in other developing areas, there is shortage of capital finance available to fund public infrastructure at all levels.¹⁵ Resource constraints will, therefore, require trade-offs between competing national goals. Some scope does exist for spheres of government and their entities to expand their own financing of capital expenditures through improved operating performance. Options previously discussed by the Commission include improvements in expenditure efficiencies informed by ongoing expenditure reviews, debt collections efficiencies and so forth. Private funding will need to be sourced for some of the required infrastructure investments, although this needs to be better managed to avoid the negative experiences of Gauteng e-toll roads and electricity generation. The relationship between economic growth and debt-financed public infrastructure investment is strong at the national level and should be explored as an option. Ultimately, bridging the capital finance gap will require accelerated economic growth. Once growth gets going, financing a higher level of service provision will become self-financing, as infrastructure that supports accelerated growth initiatives leads to government spheres receiving higher taxation revenue returns. This suggests a sequencing running from debt to infrastructure to growth to tax revenues and eventually higher service provision. The issue of contribution to factor productivity is crucial. Infrastructure delivery has been driven mainly by a basic services equity approach rather than an economic growth stimulation approach. There needs to be a stronger emphasis on the economic role of infrastructure and a recognition that not all provinces have the same growth potential. At this stage, the scope appears limited for expanding national grants through aggressive tax reforms to raise available revenue but will become feasible again after accelerated economic growth.

The third issue related to intergovernmental transfers and revenue assignments is to reiterate that self-determination at the local level as a principle will always clash with the need for economies of scale and efficiency. In the future, fiscal decentralisation will have to take this fundamental challenge into consideration and allow for “alliances for success”, for example with respect to tourism development. More asymmetric and differentiated approaches will be called for. Powers will need to be devolved according to the eventual economic benefit – the question will be whether political devolution without the economic counterpart is worth pursuing at all. There might be no desire or need for blanket devolution, and decentralisation (with appropriate levels of assignments and access to resources) must be designed accordingly.

There is a pressing need to harness the power of public infrastructure, given its importance for national development and regional performance. With uncertain future economic prospects and tight fiscal conditions, public infrastructure must be better managed, to achieve the highest value for money and the greatest growth impact from spending public money. Improving the quality of investment governance can help, especially through coordinating investments and building capacity within subnational governments. Levels of public investment are limited by fiscal constraints, and so efficiency needs to be maximised

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¹⁵ This is obviously at the aggregated level and at the individual level may not be so, for example existence of rollovers at subnational level. There is also shortage of infrastructure delivery capability such that if we increased the finances it would still not be absorbed.

through better economic growth and investment spending. Added to these challenges is that of corruption in public procurement and investment. Nevertheless, despite the challenges, South Africa has many assets that can be mobilised to its advantage. These include a resilient people, a world-class constitution, a NDP that sets the broad direction for the way forward for infrastructure development and its alignment within the country's 2030 vision. This chapter argues that South Africa should build on these strengths and, at the same time, address the inadequate institutional structures that have deterred long-term investment to support future prosperity. It has provided some direction on the areas of reform that could generate the strong growth, employment and poverty reduction outcomes.

With respect to creating conditions for the future prosperity of all South Africans from infrastructure-led growth, the study recommends that Government:

1. Develops the National Infrastructure Plan's funding strategy, so that the plan is fully funded to ensure projects are delivered on time and in accordance with the plan. Additional funds need to be raised to cover additional costs of all existing and future infrastructure plans. This has to be done in a sustainable and affordable way, and ensure that such expenditures required for the future operations and maintenance of these assets are catered for.
2. Redesigns capital conditional grants by (a) allowing for payment of infrastructure upstream costs of provinces and municipalities (e.g. a special fund for feasibility and pre-procurement studies), (b) making capital grants pledgeable, where an authority has adopted a well-founded and approved long-term capital strategy, and (c) extending the existing incentive/support for long-term capital planning by provinces and municipalities
3. Raises public debt, aggressively using available borrowing space, to help finance deserving and rigorously appraised infrastructure plans (e.g. based on performance and governance profiles). Municipalities should seek to expand debt financing of capital expenditures, with due regard for prudential benchmarks and ratios to ensure sustainability. The increase in debt levels should not trigger a review of the country's credit rating: well-planned and executed infrastructure ultimately pays its way through higher economic growth, and hence the country need not suffer a credit rating downgrade related to such funding mechanisms.
4. Improves acceptability of the user charge principle for higher levels of infrastructure services by (a) using equitable sharing (conditional and unconditional grants) to demonstrate better efforts being made to balance consumer's affordability to pay increased service charges (i.e. water, electricity, transport etc.), (b) undertaking transparent and robust willingness to pay (WTP), (c) making available better data on WTP and affordability, and (d) developing costing models for various services and impacts to demonstrate how such charges could/should be calculated (also determines appropriate level of service)
5. Ensures infrastructure procurement planning, contract award and management work in tandem at the highest strategic level with other elements of infrastructure management to raise efficiency. This can be done through ensuring that all conditional capital grants should not just give money, but make sure from a human resources perspective that the requisite procurement and engineering skills are there.

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