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MCB Focus

Strengthening our competitiveness by modernising our infrastructure set-up amidst fiscal discipline

May 2017

MCB GROUP

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GENERAL REMARKS

In today's world which is changing and embracing 'new normals', there appears to be a renewed call for the 'old' public infrastructure investment rhetoric on the international scene, given the pivotal role it can play in catalysing growth, reducing income inequality and fighting poverty. As the situation stands in fact, the global investment gap for infrastructure is estimated at some USD 1 trillion per annum by the World Economic Forum. Regarding sub-Saharan Africa, the World Bank recently stressed that *"closing the infrastructure quantity and quality gap relative to the best performers in the world could increase growth of GDP per capita by 2.6% per year".* In addition, it has, in the case of developing countries, been argued that the need for renewed investments in infrastructure is all the more warranted on account of the non-negligible pressures being exerted by developments linked to demographic trends, urbanisation and climate change.

With respect to Mauritius, while it is comforting to note that the authorities have recognised the importance of infrastructure-upgrading, the aim, looking ahead, is to accelerate and deepen moves in this respect with a view to (i) providing a meaningful immediate boost to economic activity levels; and (ii) broadening the country's intrinsic capacity to achieve robust and durable productivity and efficiency gains that will underpin sound and high real GDP growth over the longer run. Specifically, whilst promoting fiscal discipline, the key objectives are to elevate the quality of the infrastructure set-up and widen the scope for further capacity building, alongside ensuring that investment is efficient enough so as to foster the commercial and financial viability of projects. Importantly, a key success factor is to deal with prevailing project execution challenges, alongside allowing for initiatives to be aligned with country intrinsic realities and socio-economic ambitions.

THE RECENT POSITIONING OF MAURITIUS

Over the past few years, the country found it challenging to uphold the momentum of its socio-economic progress, with the long-term potential growth declining and actual real GDP growth remaining in generally unfavourable territories. In particular, the resilience of the economy to external shocks and its ability to leverage avenues for activity growth have been stymied by deep-seated structural inefficiencies and bottlenecks, to some extent linked to the extensiveness and quality of public infrastructure levels. That said, whilst the viability of several undertakings remains to be ascertained, the authorities have, in recent times and as per the updated Public Sector Investment Programme, announced and made way for the execution of a series of infrastructure projects to combat constraints to activity levels and unlock productive capacity.

Box I: Overview of key recent/earmarked infrastructure initiatives

General remarks

The authorities have, lately, announced that the construction sector is set to take off as a result of the ambitious capital works programme planned over the next few years, with an aggregate amount of Rs 130 billion to be devoted to public infrastructure projects in coming years. Whilst awaiting for the upcoming National Budget, the following sections provide a non-exhaustive overview of some major infrastructure measures that have been earmarked by the authorities, including initiatives that are being or have been implemented in recent times.

Road network

- Some Rs 50 billion is projected to be invested in a new National Transport Network. In addition to the implementation of a new Road Decongestion Programme, a major component of the agenda is Metro Express project (that was officially launched on the 10th of March). This venture is characterised by an estimated overall projected cost of Rs 17.7 billion as per the Ministry of Public Infrastructure and Land Transport
- Towards the end of 2017, Rs 5 billion is targeted to be invested as part of the Road Decongestion Programme (see next page)

Electricity

- Four turbines, with a capacity of 15 MW each, are scheduled to be installed as part of the Saint Louis Power Plant Redevelopment Project. Two Combined Cycle Gas Turbines are also planned at Fort George to provide 70 MW additional capacity
- Regarding promotion of renewable energy, projects in the pipeline include (i) Rs 400 million allocated to increase the grid absorption capacity of intermittent energy; (ii) a second Wind Farm to be installed at Plaine Sophie; (iii) increased use of photovoltaic panels; (iv) undertakings meant to capitalise on the use of biomass for electricity production
- The authorities have set out to update the existing national Energy Action Plan 2011-2025 regarding energy efficiency and demand side management by incorporating new measures that are to be implemented over the short to medium term.

Water

- The Central Water Authority (CWA) has embarked on a pipeline renewal programme, which spans various regions
- Some Rs 35 million is being allocated to improve water distribution in hotspot areas around the island. Furthermore, the construction of the Bagatelle Dam is earmarked to be completed by June 2017, with a water storage capacity of 14 million m^3

Port

- A new Port Master Plan is being elaborated with the objective of transforming the port as a hub for container transshipment, bunkering petroleum products and a destination for home porting of cruise vessels
- Regarding the petroleum hub, identified projects include the Mer Rouge Oil Storage Terminal project and petroleum port at Albion

Telecommunications

- The Citizen Support Portal went live in May 2017. The objective of this online platform is to provide a better service to address complaints and queries of citizens. Lately, 350 free Wi-Fi hot spots have been deployed by Mauritius Telecom across the island
- A National e-Licensing Platform is earmarked to be set up by the Government. It will act as a one-stop portal for managing business licences lifecycle. It will also enable licence process automation, online payment of fees and issuance of electronic permits
- The authorities have displayed their intention of adopting dedicated measures to boost investment opportunities in the ICT-BPO industry, alongside transforming the country into an innovative and competitive digital economy for the benefit of all stakeholders

Box I: Overview of key recent/earmarked infrastructure initiatives (Cont'd)

Zoom on Road Decongestion Programme

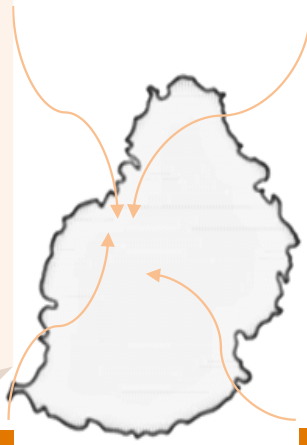
As spelt out in last year's Budget speech and recent pronouncements, the Road Decongestion Programme (RDP) features as a core component of the authorities' plan to lay the foundations for a high quality modern public infrastructure and transport system in Mauritius, by notably helping to alleviate the road traffic congestion problem, which is being aggravated by the increasing number of vehicles. In particular, the RDP, scheduled to be implemented over a five-year period, encompasses four key sub-projects, for an estimated total cost of around Rs 20 – 25 billion, that comprise, principally, the construction of main roads, highways, flyovers, viaducts and secondary roads as well as grade separation and link roads, as detailed in the illustrations below.

A1-M1 New Road

The A1-M1 link and bridge consists of an interchange on the A1 at Belle Etoile with a link extending over the Grand River North West and connecting the M1 at Soreze. This will allow motorists to head both North or South with the M1 or the Ring Road.

Port Louis Ring Road

In order to provide additional capacity into Port Louis from the South, the construction of a tunnel linking the Ring Road to Champ De Mars with an extension to the port (Mer Rouge) and further on to the M2 Motorway is planned.



A3-A1 Link Road

The new road will link Gros Cailloux to Coromandel to enable rapid connection of traffic from the West to the City Centre and to the North via the new A1-M1 Link Road

Grade Separated Junction at Phoenix

The construction of viaducts over the Jumbo & Phoenix roundabouts and the replacement of Dowlut roundabout by a direct connector between Port Louis and Curepipe are expected to ease traffic flow in the area

Sources: Ministry of Finance & Economic Development, National Assembly, Government of Mauritius and selected newspaper articles

KEY CHALLENGES MOVING FORWARD

Alongside embracing other policy measures and structural reforms – aimed, notably, at diversifying export markets and improving external competitiveness levels – it appears all the more essential for Mauritius to modernise its infrastructure set-up against the backdrop of the challenging economic context. In this conjuncture, the country is faced up with the challenge of ensuring that appropriate moves are adopted to meet this objective, which, therefore, implies finding fitting responses to the following key interrogations:

(i) What is the preferred way to prioritise and allocate resources for infrastructure spending?

(ii) What is the most efficient route to finance capital outlays, especially when considering the need to strike the right balance between scaling-up spending and maintaining fiscal soundness?

(iii) What are the optimal infrastructure pricing, maintenance and investment policies?

(iv) What are the roles and mandates of key institutions and stakeholders in ensuring that investment strategies are designed and implemented in the most judicious fashion?

(v) How do market and the political economy dynamics impact the productivity of public sector provision, alongside increasing the benefits that can be derived from private participation?

THE SCOPE OF THE REPORT

Fundamentally, this report attempts to identify ways towards ensuring that infrastructure spending acts as an influential gateway to bolster the country's socio-economic performance. To start with, the report appraises the significance of public infrastructure investment as a key enabler for stimulating nationwide economic expansion. After evaluating the main trends and figures relating to our physical infrastructure set-up as well as shedding light on implications of identified shortages, the report seeks to formulate broad strategies and policy priorities that can be taken on board. For the analysis, the document draws upon empirical evidence, statistical data and tried-and-tested international principles with the aim of identifying reliable channels for assessing and enhancing nationwide infrastructure network. However, the assessments undertaken to gauge the infrastructure positioning of Mauritius are subject to data limitations in some cases.

GENERAL SIGNIFICANCE OF PUBLIC INFRASTRUCTURE

INTRODUCTION

As per the standard definition by the OECD, public infrastructure is defined as the facilities, structures, networks, systems, plant, property, equipment or physical assets that provide public goods or goods that meet a politically-mandated and fundamental need that the market is not able to provide on its own. The services range from the traditional public-sector domains of defence, law enforcement, power generation, water, sanitation and transport to the social infrastructure, such as health care, knowledge and innovation. Overall, by virtue of its importance, public investment in infrastructure has a notable bearing on the conduct and location of economic activities. Besides, given its implications for social inclusion and environment sustainability, it influences the socio-economic behaviours and modes of living of populations.

SIGNIFICANCE

The success of the economic development process depends largely on the availability of resources and the existence of an enabling environment that, in turn, hinges, to a large extent, on the quality of the infrastructure set-up. Notably, infrastructure interacts with the economy through a web of complex relationships that is encapsulated by aggregate production, employment and wellbeing. Generally, better road, railway and port infrastructure reduce transportation costs, thereby boosting firm competitiveness, whilst a stable and cost-effective provision of energy and telecommunications has positive spill-over effects on production possibilities. In addition, improved access to infrastructure plays a complementary role in driving private capital formation, supports economies of scale, and fosters innovation. Beyond, the access to and quality of infrastructure influence the quality of life of the population as well as the productivity and the efficiency of the labour force. For instance, the capacity utilisation in the manufacturing sector is often attributed to the efficiency and effectiveness of the available infrastructure. Moreover, against the backdrop *inter alia* of the steady decline in public investment as a share of GDP across some advanced economies in recent years, evidence of infrastructure bottlenecks in emerging economies, and the sluggish global economic recovery, the G-20 has called for a ramping up of public investment in order to raise long-run economic growth.

Box II: Shedding light on the significance of upgrading infrastructure

The following is a summary of the views expressed by key international organisations in respect of the significance of public investment in infrastructure in underscoring socio-economic progress.

IMF

- Public investment supports the delivery of key public services and connects citizens and firms to economic opportunities. In fact, through the provision of both social and economic infrastructure, public investment can serve as an important catalyst for growth.
- An increase in public infrastructure investment affects the economy in three ways. Firstly, it boosts aggregate demand through the short-term fiscal multiplier. Secondly, it may also crowd in private investment, given the highly complementary nature of infrastructure services. Lastly, if properly formulated, more public infrastructure investment may enhance, rather than weaken, fiscal positions.

OECD

- Sound public infrastructure is a key driver of enhanced capacity for real economic growth, both in the short and long terms. Infrastructure networks reduce the effect of distance, help integrate markets, and provide the necessary connections to international markets, as well as enhance trade.
- What matters is having in place high-quality infrastructure that supports the delivery of effective public services. OECD stressed that quality infrastructure would provide a boost to future growth across advanced economies, notably by making up for the cuts observed in infrastructure spending in the wake of the crisis. Investment in infrastructure such as energy, water, transportation and communication technologies promote economic growth and help alleviate poverty and improve living conditions in developing countries.

WORLD BANK

- An adequate supply of infrastructure services is a key ingredient for economic development. Countries with sound public investment management systems tend to have even more private investment. New and upgraded infrastructure can help integrate poorer remote areas of a country and thus help them share in the benefits of growth for poverty reduction.
- Infrastructure is a space-shrinker that enlarges markets and lowers trade barriers. In urban areas, infrastructure contributes to widen the effective size of the labour and goods markets, thus helping to increase productivity and output.

Sources: IMF, World Bank & OECD

LITERATURE REVIEW

Neoclassical theory

The Solow Growth model developed in 1956 and the subsequent Solow-Swan model posit that technical change – i.e. productivity growth – is a key determinant of the growth of both output and per capita income in the long run. It stipulates that accumulation of capital creates growth in the long run as it embodies improved technology, under the assumption that capital is subject to diminishing returns in a closed economy. In addition, the models state that investment which boosts capital intensity plays a substantial role in generating growth. As per the theory, an increase in the stock of infrastructure would, therefore, increase the output of the economy. This builds on the Harrod-Domar model as shown below:

$$Y(t) = K(t)^{\alpha}[A(t)L(t)]^{1-\alpha}$$

Where Y_t is the total output, K_t is capital stock, L_t is labour and A_t represents technical progress or labour-augmenting technology

Endogenous theory

In this theory pioneered by Paul Romer (1990), infrastructure development is believed to support growth since it leads to an increase in the rate of technological change. In addition to the stock of public infrastructure capital which is expected to be a key driver of aggregate total factor productivity, the theory asserts that investment in physical and human capital will lead to economic growth by means of the development of new forms of technology and effective means of production. Infrastructure strengthens growth on account of increasing productivity and more attractive business activities associated with lower transport and production costs and market access facilities that offer diversification opportunities. All in all, infrastructure represents, if not the engine, then the 'wheels' of economic growth. In effect, the latter is viewed as an endogenous phenomenon which depends on the decisions of economic agents who craft 'technical progress' that become public goods (infrastructure) in the long run.

Other theories

As per the Theory of Stages of Growth, developed by Walt Rostow in 1960, an economy goes through five distinct stages of economic development, notably: (i) the traditional society; (ii) the precondition for take-off; (iii) the take-off stage; (iv) the drive to maturity; and (v) the age of high mass consumption. In the

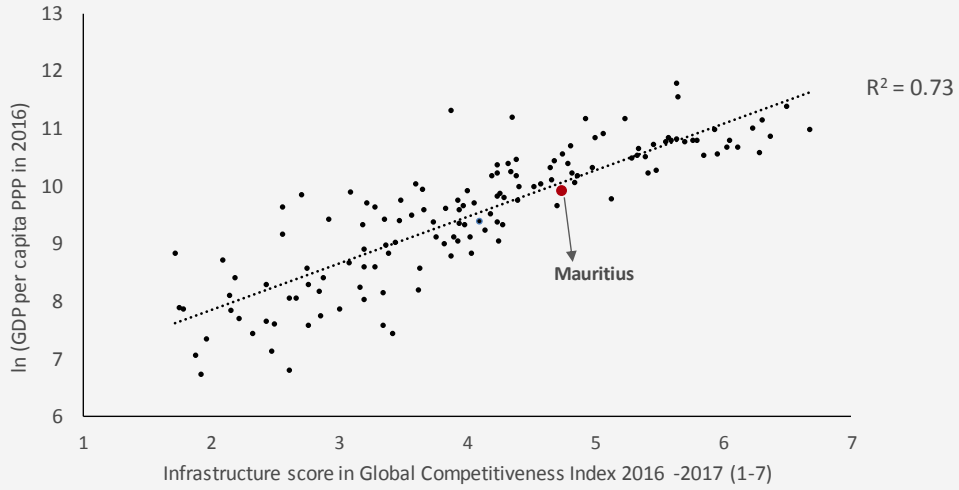
second stage, the economy is deemed to undergo a process of change for building up of conditions for growth and take off. In particular, one of the key dimensions to the transition relates to the need for infrastructure investment (especially relating to transport and communications), towards supporting the self-sustained growth of an economy. During the fourth stage, whereby a country is aspiring to reach the 'maturity stage', large-scale investment is deemed necessary, notably towards improving social infrastructure and developing world-class transport network, widely-available energy and sophisticated telecommunication facilities. At another level, the theory of unbalanced growth, which was markedly made popular by Hirschman in 1958, emphasises the pertinence of nurturing external economies that will induce private investors to invest. Such incentive is created through investment in social overhead capital (infrastructure) comprising all public services such as public administration, education, health, transportation, power, agriculture, industry, urban development, etc. without which it will be difficult for the economy to function. Given the limitation imposed by resource inadequacy, the theory argues that the best projects are measured by their marginal social productivity. Infrastructure is regarded as an inducement to directly productive capital and contributes to the growth and advancement of the entire economy rather than specific sectors.

EMPIRICAL EVIDENCE

Several nations have used infrastructure investments extensively as policy instruments and development programmes. In fact, Aschauer's (1989, 1990s) seminal works provided evidence that infrastructure investment positively and significantly affects productivity. In particular, he argued that public infrastructure spending on streets and highways, mass transit, water and sewer systems should be considered as a factor of production, along with labour and private capital, in the private sector production process. Moreover, as suggested by Barro (1990), public expenditure constitutes a trustworthy channel through which countries, regions and urban areas can promote growth. As such, some examples of important public investment drives include: (i) the substantial investments in physical capital – in terms, notably, of roads, ports and airports development – that preceded the high growth episodes observed in the East Asian economies in 1980s and 1990s, with a case in point relating to the Singaporean economy; (ii) the development of transport programmes in lagging regions of the northeast of Brazil; and (iii) the disbursement of around USD 3 billion in additional infrastructure spending by the Government of Egypt in 2013, as a key component of a programme that was, amongst others, projected to raise GDP growth by more than one percentage point. On another note, econometric analyses strongly support the notion of a significant positive relationship between infrastructure spending and income per head. In fact, infrastructure has been widely touted as a key catalyst in enabling developing countries to avoid the 'Middle Income Trap' and boost their income levels. In the same vein and as depicted in Figure 1 which is

based on a sample of 138 countries, a strong positive correlation is observed between infrastructure investment and a country's GDP per capita.

Figure 1 **Significance of infrastructure for socio-economic progress**



Notes:

(i) The overall infrastructure score ranges from 1 to 7, with 1 being the worst and 7 the best

(ii) The individual infrastructure scores of 138 countries are plotted against the log of their GDP per capita at PPP in 2016

Sources: IMF and World Economic Forum

Significance of infrastructure investment across groups of countries

Advanced economies

Aschauer (1989) found that the slowdown in private sector productivity in the US observed in the 1970-1980s was, to a large extent, associated with slower public capital accumulation. Herranz-Loncán (2007) assessed the impact of infrastructure investment on Spanish economic growth and found that the relevant impact was positive. Furthermore, statistical evidence for the United States showed that there is a direct positive link between infrastructure investment and GDP. For instance, for the 1950-79 period, growth in public infrastructure contributed almost one-to-one to economic growth. Égert, Kozluk and Sutherland (2009) found a strong positive influence of length of roads per capita on GDP per capita levels and short term growth in the United Kingdom and New Zealand. Abiad, Furceri and Topalova (2015) showed that, in a sample of 17 OECD economies since 1985, increased public investment raises output both in the short term and long run. As per the IMF, an unanticipated 1 percentage point of GDP increase in public investment spending raises the level of output by around 40 basis points in the same year and 1.5 percentage points after four years in advanced economies.

Emerging market and developing economies

Sahoo, Dash and Nataraj (2010) found that infrastructure development has significant positive contribution to economic growth in China. Granger causality test outcomes indicate that there exists unidirectional causality from infrastructure development to output growth and investment (public and private). Similarly, Sahoo and Dash (2009) found that infrastructure development also contributes positively to output growth in India. On another note, in addition to stressing the well-established links between infrastructure and economic development, a recent World Bank study – entitled 'Infrastructure Investment Demands in Emerging Markets and Developing Economies (EMDE)' and published in September 2015 – stated that infrastructure investment requirements to boost economic growth in EMDE countries is estimated at USD 836 billion, i.e. around 6% of GDP per year over the 2014–2020 period. With regard to the sub-Saharan African region, which faces non-negligible infrastructure gaps, studies focusing on the significance of infrastructure investment remain quite limited till date. Of note, Ayogu (1999) estimates an infrastructure-augmented production function using regional panel data from Nigeria and finds a strong association between infrastructure and output. Similarly, Onokoya, Salisu and Oseni (2012) employed a multivariate approach to study the impacts of infrastructure on economic growth in Nigeria using data that spreads over 40 years. The study found that infrastructure has a significant bi-directional impact on economic growth, directly through industrial output and indirectly through other sectors, particularly manufacturing, oil and gas, as well as services. Moreover, Calderón and Servén (2010) found that the quantity and quality of infrastructure have positive impacts on growth and the income distribution in sub-Saharan Africa.

Public investment efficiency and economic growth

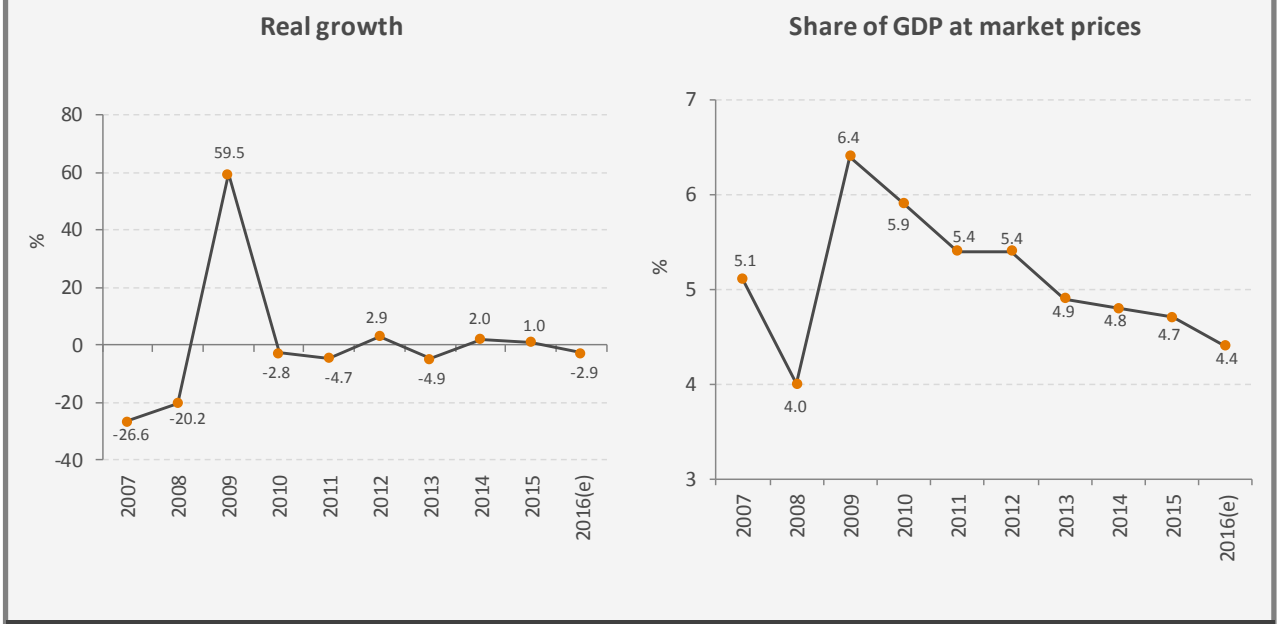
As stressed by the IMF, the economic and social impact of public investment critically depends on its efficiency. As per a study carried out by the Fund in 2014, the growth dividend from investment can be significant, but is limited when the investment process is inefficient. The Fund observed that investment shocks have a relatively bigger growth impact in advanced economies, with a higher degree of public investment efficiency increasing the level of output by 2.6 percent after four years. Moreover, Gupta and others (2014) present evidence that public capital—when adjusted for efficiency—is a significant contributor to growth. At the same time, Berg and others (2015) indicate that countries with low levels of public investment efficiency are likely to have particularly scarce public capital and, therefore, a higher marginal productivity of public capital than high-efficiency countries. As a result, the higher marginal productivity may offset any losses from lower levels of efficiency, such that the growth impact of higher investment spending is likely to be roughly invariant to the level of efficiency.

DEPICTING AND ANALYSING KEY TRENDS AND DYNAMICS

Performance of key indicators

As a broad measure of infrastructure spending occurring in the country, public sector investment has witnessed a generally subdued and erratic evolution in recent years. Indeed, it has posted an annual average real growth of -0.4% during the past five years, with a non-negligible contraction being registered in 2016. Against this backdrop, its share to GDP at market prices has boarded onto a sustained downtrend over time and is estimated at some 4.4% in 2016, which is perceived as being far inferior to the advocated level to firmly accomplish our socio-economic ambitions. Overall, public sector investment has remained in generally unfavourable territories lately in spite of having constantly been hyped to provide important positive contributions to the economy given the significant range of sizeable assignments that have been lined up.

Figure 2 **Evolution of public sector investment**



(e) estimates
Source: Statistics Mauritius

Implementation rate of projected capital spending

While budgetary, project financing and strategic considerations could, at different periods and echelons, have played some part in influencing relevant dynamics, the country's protracted performance in terms of infrastructure spending can, to an evocative extent, be attributable to lingering project implementation impediments. The latter are deemed to have stemmed from capacity inadequacies on the technical and human resource sides, administrative bottlenecks as well as the prevalence of legal issues at the tendering and procurement stages of specific projects. As a result, a notable share of enunciated projects – with the Road Decongestion Programme being a key case in point – has, over time, not materialised in a prompt and comprehensive fashion. This under-spending can be substantiated by an appraisal of the Public Sector Investment Programme of the authorities, whereby there has, as per estimates released over the years, been a marked gap between initially projected and actual public sector capital spending.

Figure 3 **Public Sector Investment Programme**

Rs million unless stated otherwise	**2010**	**2011**	**2012**	**2013**	**2014**	**2015/16**
Budgeted spending *(as earmarked at the start of the fiscal year)*	24,024	25,790	27,184	28,639	26,810	27,102
Actual spending	17,869	21,000	18,223	26,298	17,447	15,888
Spending gap	**6,155**	**4,790**	**8,961**	**2,341**	**9,363**	**11,214**
Implementation rate	74%	81%	67%	92%	65%	59%
Spending gap as % of GDP	2.0%	1.4%	2.6%	0.6%	2.4%	2.7%
Memorandum items (Based on Central Government Capital Expenditure as per Consolidated Accounts)						
Implementation rate	*72%*	*75%*	*67%*	*88%*	*78%*	*69%*
Spending gap as % of GDP	*1.0%*	*0.9%*	*1.3%*	*0.4%*	*0.7%*	*0.6%*

Notes :

(i) The Public Sector Investment Programme (PSIP) provides a comprehensive view of the investment being planned by central government, local/regional authorities, parastatal bodies and public corporations over the following 5 years

(ii) The budgeted spending for each year is based on the figure released in the wake of the National Budget for that particular year, while the actual spending relates to latest updated estimate available from subsequent updates

(i) Actual PSIP figures are not available for the first semester of 2015 following the change in fiscal year

Sources: Public Sector Investment Programme, National Budget and MCB Staff estimates

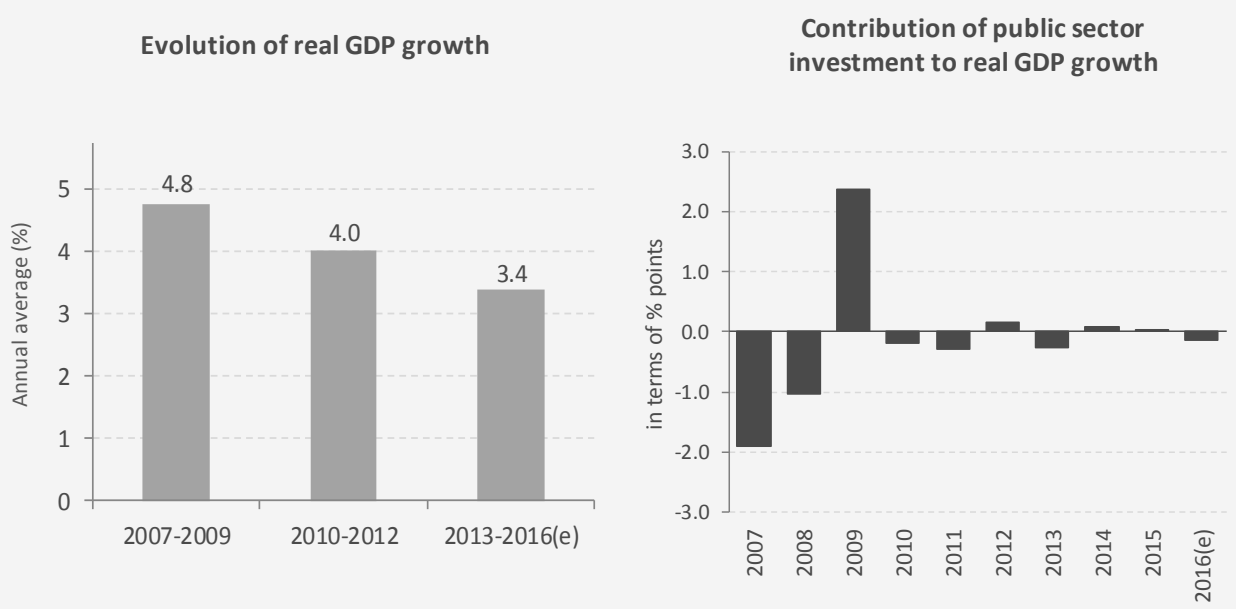
Implications for economic growth

In recent times, in addition to making allowance for the tepid global economic climate and the performances of specific economic sectors, the country's recent sub-par real GDP growth trajectory has, in an influential way, been attributable to the restrained evolution of investment, by means of its direct and spillover repercussions. In this respect, despite inroads made in remedying the situation, insufficiencies in terms of infrastructure outlays are deemed to have led to the persistence of structural bottlenecks during the past few years, which played some part in exerting strains on the productivity of human and physical capital. As depicted in Figure 5, in spite of a relative improvement noted in some respects in 2016, subdued trends have been witnessed in relation to nationwide labour and capital productivity, with the situation being quite worrying for export oriented manufacturing industries, while unit labour cost maintained its marked uptrend. Additionally, the entrenchment of supply-side inefficiencies linked to infrastructure inadequacies has been a key factor in inhibiting the attractiveness of our business environment. This contributed to constrain Mauritius in its quest to keep pace with competitor nations that expansively bolstered the conduciveness of their investment frameworks, thus impacting the relative attractiveness of our value proposition on international markets. Overall, infrastructure insufficiencies warrant attention as they threaten to play a non-negligible role in potentially embedding Mauritius into a vicious circle, with stifled investment resulting from hampered productivity and competitiveness levels likely to retard improvements in the quality of the business climate and future capital spending. If unaddressed or ineffectively tackled, such dynamics could push the Mauritian economy into a self-sustaining low-growth conundrum over time, with the challenge of quickly getting out of such a problematic situation likely to be quite a hard nut to crack for public and private stakeholders alike.

As regards 2017, our last MCB Focus edition has shed light on the projected upturn in public investment levels from the dimmed outcomes of recent years. Notably, it has been stressed that, in the wake of projects earmarked in the Public Sector Investment Programme, capital spending by the Government would post a relative upturn this year in line with the assumption of a satisfactory implementation rate for infrastructure projects. Yet, while this outcome is anticipated to underpin economic activities, uncertainties subsist as regards its eventual impact on real GDP growth. To start with, the effect on nationwide economic expansion would, this year, be somewhat restrained by (i) the foreseen high import content of the ventures; and (ii) the execution lead times of investment projects that can potentially generate major economic gains, with several key undertakings likely to be comprehensively put in train only as from 2018. Conspicuously, the projected baseline implementation rate of national projects – that has played an important role in the calculation of the real GDP growth prognosis for 2017 in the context of the last MCB Focus edition – warrants close scrutiny over time insofar as further delays with respect to the

pace of execution of identified ventures would potentially translate into a review of the economic growth projection for the year.

Figure 4 **Significance of public sector investment**



(e) estimates
Sources: Statistics Mauritius and MCB Staff estimates

Figure 5 **Competitiveness and productivity-related indicators**

Total economy

Indicator	Growth rate (%)		
	Annual average 2007 - 2016	2015	2016
Labour productivity	2.5	1.7	3.4
Capital productivity	-0.2	0.8	1.1
Multifactor productivity	0.8	1.1	2.0
Unit labour cost (in MUR)	2.9	1.0	3.2

Export oriented manufacturing enterprises

Indicator	Growth rate (%)		
	Annual average 2007 - 2016	2015	2016
Labour productivity	3.0	-1.3	-5.1
Capital productivity	4.2	0.3	-4.1
Multifactor productivity	3.4	-0.7	-5.0
Unit labour cost (in MUR)	3.5	5.3	6.7

Note:

The notable growth rate in labour productivity for 'Total economy' observed in 2016 reflects, to a large extent, the impact of a marked slowdown in the expansion rate of the labour input, on the back of a decline in the pace of employment creation.

Source: Statistics Mauritius

BROAD OVERVIEW OF INFRASTRUCTURE GAPS

General observations

In recent periods and as noted before, concerns have been raised in relation to the quality and adaptability of national infrastructure network. A general overview of related inadequacies is provided below:

- Sub-par quality and sustainability of the road network and wider transportation system;
- Apprehensions regarding the long term reliability of nationwide energy production and supply capabilities, especially given economic and viability considerations in light of rising demand;
- Shortfalls in the efficiency of water capture, storage, distribution and usage arrangements;
- Gaps prevailing with respect to the accessibility, affordability and robustness of Internet connectivity and telecommunication services, with international bandwidth deemed not sufficiently conducive and competitive to fully harness the growth potential of the industry;
- Limitations in respect of external trade facilitation and connectivity, in particular those relating to the availability of extensive and efficient seaport logistics and international air transport facilities;
- Insufficiencies with regard to solid waste management, with key apprehensions relating to the threat of environmental and health hazards such as the pollution of water resources and the degradation of the quality of breathable air in the surroundings amongst others;
- Inadequacies relating to wastewater management capabilities and the national sewerage system

International positioning of Mauritius

On the heels of the afore-mentioned dynamics, Mauritius has fared unfavourably on specific infrastructure-related indicators across key international performance indices, thus testifying, in some respects, to the sub-optimal standards of some national physical assets. Lately, as per EY's Africa Attractiveness Index 2017 – which measures investment attractiveness on the basis of short and longer-term metrics – Mauritius lost 3 places to stand at an unenviable 8th spot. Notably, the country ranked 8th across the 'Investment in infrastructure and logistics' pillar, which assesses the efficiency of infrastructure networks to support the effective functioning of the economy. Our positioning across other indices is illustrated as follows.

Box III: Specific shortcomings related to the country's infrastructure network

International indices provide insights into specific performance areas in respect of which the Mauritian economy is deemed to lag behind other nations with regard to the infrastructure set-up. For the sake of simple selection, only those sub-indices in respect of which the country's international rankings are at or above the 50th position have been chosen, while indices not deemed to yield a perceptible impact on the country's intrinsic capabilities have been disregarded.

THE GLOBAL COMPETITIVENESS INDEX 2016 - 2017

Quality of Port Infrastructure	Available Airline Seat Kilometers	Quality of Electricity Supply	Quality of Air Transport Infrastructure
63rd	67th	50th	53rd

Overall Infrastructure Ranking
41st / 138 countries

THE GLOBAL INNOVATION INDEX 2016

	Overall ICT	ICT Access	ICT Use	Government's Online Service	E-participation
ICT	69th	59th	74th	68th	59th

	Overall General Infrastructure	Electricity Output	Logistics Performance
General Infrastructure	86th	74th	105th

Overall Infrastructure Ranking
66th / 128 countries

THE GLOBAL INFORMATION TECHNOLOGY REPORT 2016

Mobile Network Coverage	Int'l Internet Bandwidth	Fixed Broadband Internet Tariff
67th	71st	87th

Electricity Production	Individuals Using Internet	Households with Internet Access	Fixed Broadband Internet Subscriptions
77th	85th	67th	55th

Impact of ICTs on Business Models	Impact of ICTs on Organisational Models
66th	68th

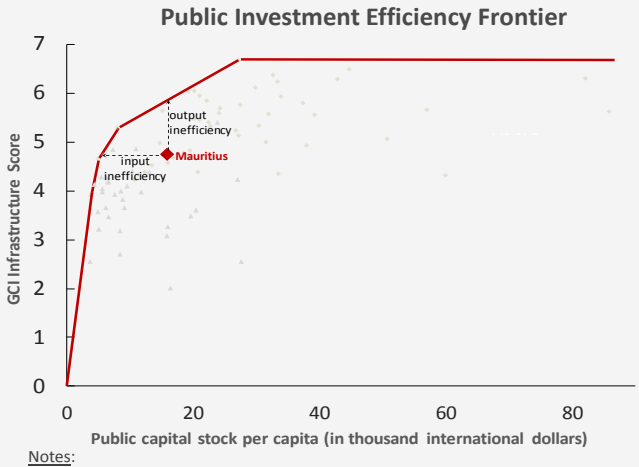
Overall Infrastructure Ranking
68th / 139 countries

Sources: World Bank, World Economic Forum, World Intellectual Property Organisation

Efficiency of investment

From another perspective, the efficiency of investment requires close monitoring. It can, notably, be estimated and scrutinised using the IMF methodological framework developed to this effect. The latter explores the relationship between the accumulated public sector capital stock per capita and indicators depicting the overall quality of and access to infrastructure. It leads to the formulation of an Efficiency Frontier, which shows the highest levels of infrastructure coverage and quality (output) at a given level of capital stock per capita (input). Input inefficiency is interpreted as the horizontal distance between a country's position and the frontier and shows the amount by which capital stock could have been reduced while leaving infrastructure output unchanged, while output efficiency – i.e. the actual efficiency gap – is measured as the extent to which output could have been increased while leaving input consumption unchanged. Leveraging IMF's afore-described principles, the performance of Mauritius and its international positioning is illustrated below. Using the Fund's dataset on public capital stock per capita and overall infrastructure scores from the World Economic Forum's Global Competitiveness Index, the efficiency gap between Mauritius and the most efficient countries with comparable levels of public capital stock per capita is estimated at 20%. This suggests, as per the IMF notion, that one fifth of the country's public capital stock is deemed not to have achieved its full potential, in terms of both quality and service delivery.

Figure 6 **Measuring the public investment efficiency gap of Mauritius**



	Mauritius	SIFIRE* Average	G7 Average
Public Capital Stock per capita	15,942	33,974	27,555
Efficiency Gap *(measured in terms of output)*	20%	15%	11%

**SIFIRE comprises Singapore, Finland and Ireland*

Notes:

(i) The Public Investment Efficiency Frontier has been elaborated by the IMF in the context of a paper titled "Making Public Investment More Efficient" in 2015 and covering over 100 countries

(ii) IMF generally considers three measures of infrastructure quality and access in constructing the frontier – (i) a physical indicator, which combines data on the volume of economic infrastructure (length of road network, electricity production, and access to water) and social infrastructure (number of secondary teachers and hospital beds); (ii) a survey-based indicator based on the World Economic Forum's survey of business leader's impressions of the quality of key infrastructure services; and (iii) a hybrid indicator, which combines the physical and survey-based indicators into a synthetic index of the coverage and quality of infrastructure networks

(iii) For the purpose of deriving the positioning of Mauritius in relation to the frontier and for the sake of simplicity, our model uses the overall infrastructure scores from the Global Competitiveness Index (GCI), which captures both infrastructure coverage and quality

Sources: IMF, World Economic Forum and MCB Staff Estimates

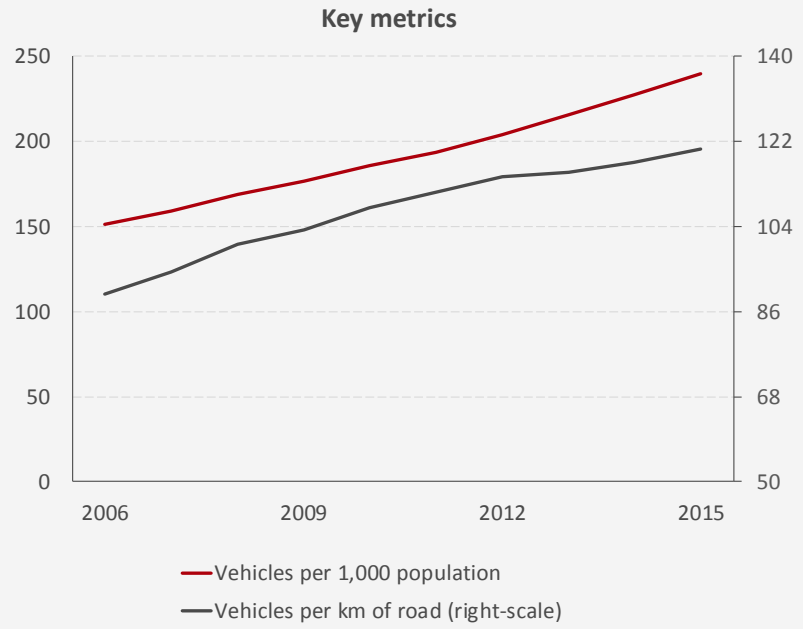
ANALYSIS OF CAPACITY ISSUES ACROSS SPECIFIC FIELDS

The following sections shed light on the extent to which key infrastructure has been stretched in recent times, with emphasis laid on the road network, electricity, water, port and ICT, given the perceived magnitude of impending capacity issues. While latest available data has been sought as far as possible, figures ending 2015 have been mainly used to analyse trends. Thus, evaluations should be treated with caution as they do not capture developments/initiatives unfolding afterward. That said, the analyses demonstrate that, notwithstanding supply-side improvements in some areas, infrastructure deficiencies have subsisted since the release of the 39th edition of the MCB Focus in March 2008 (titled 'Pepping up public infrastructure for enhanced economic activity') and when compared to the 2006 estimates leveraged back then. In fact, the report had highlighted that: "*Capacity utilisation in various key areas of the economy seems, of late, to have been stretched to rather uncomfortable levels by an expanding demand-led activity associated with the nationwide economic recovery process. While some segments are already bearing the brunt of infrastructure bottlenecks, others are anticipated to experience worrying capacity constraints in the foreseeable future if appropriate measures are not rapidly brought about.*" Additionally, the following sections highlight that, in the event of a no-change scenario, more prominent strains on the infrastructure network could eventually shape up.

Road network

On the back of expanding economic activities, urban development and sustained improvements in household living standards, the fleet of road vehicles has expanded at a sustained pace over the past decade, with the number of vehicles – excluding two-wheeled ones – per 1,000 inhabitants rising by over 58% between 2006 and 2015 to attain 240, which is equivalent to around 328 when considering only the 20 and above population. Coupled with relatively moderate extensions in road networks over this period, this situation has engendered a substantial aggregate increase of more than 34% in the number of vehicles per kilometre of road over the last decade. As such, with traffic volumes viewed to be diverging from sustainability levels, road congestion has, over time, turned out to be a notable obstacle to economic activity levels in Mauritius, owing for instance to high estimated business costs attached to lengthy transport delays. On an indicative basis and notwithstanding recent road extension headways, it is estimated that the length of the road network would, *ceteris paribus*, have to be enlarged by close to 70% over the next decade to accommodate the rise in the flow of vehicles, after assuming a non-deteriorating ratio of vehicles per road kilometre and a case whereby no additional modes of transportation are developed.

Figure 7 **Road density statistics**



Note: *The number of vehicles excludes two-wheeled ones*

Sources: Statistics Mauritius and MCB Staff estimates

Figure 8 **Required extension of road network (No-change scenario)**

	2006	2015	2020(f)	2025(f)
Estimated number of vehicles *(excluding two-wheeled)*	181,266	292,456	380,420	494,842
Required length of road (kms)	2,021	2,428	3,158	4,108

Assumptions:

(i) Constant number of vehicles per km of road and no alternative mode of transport is developed

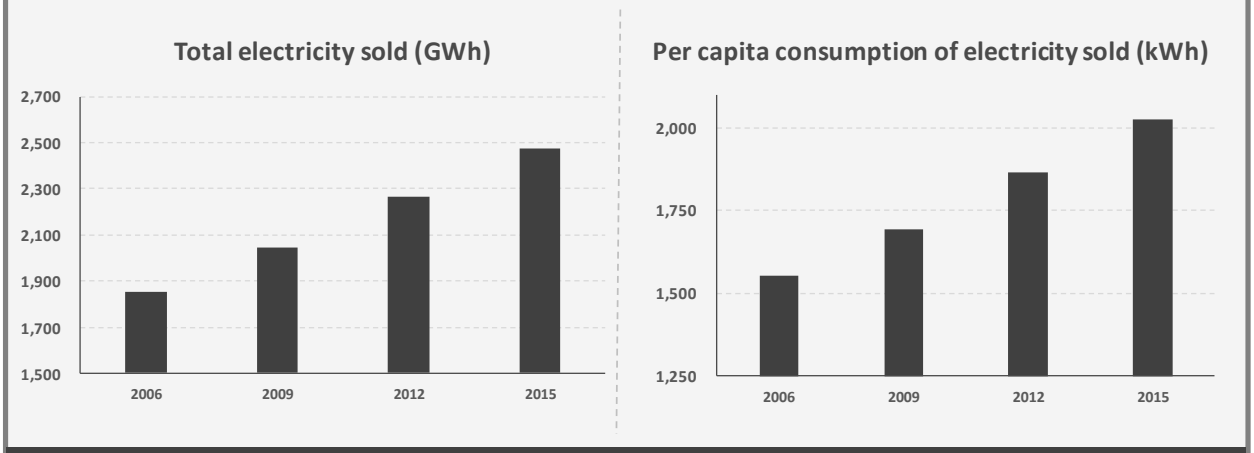
(ii) Forecasts are based on an annualised growth of 5.4% in vehicle fleet (as per historical trends for 2010-15)

(f) MCB forecasts
Sources: Statistics Mauritius and MCB Staff estimates

Electricity

Sustained growth of the Mauritian economy and rising living standards have translated into an appreciable increase in electricity consumption over time. Indeed, the total sale of electricity expanded by over 12% from 2011 to 2015, while per capita consumption of electricity sold increased from 1,816 kWh to 2,026 kWh.

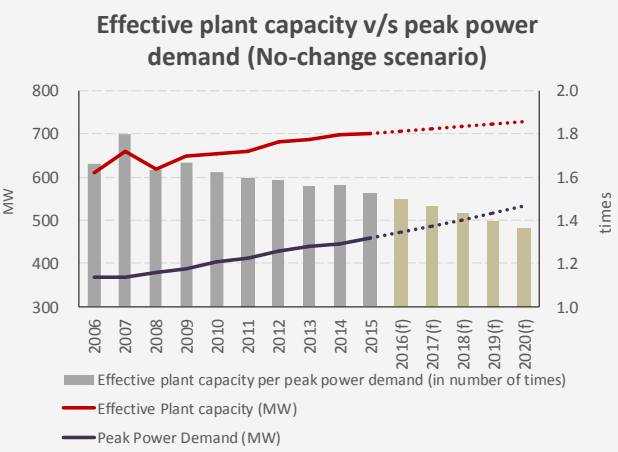
Figure 9 **Electricity sales**

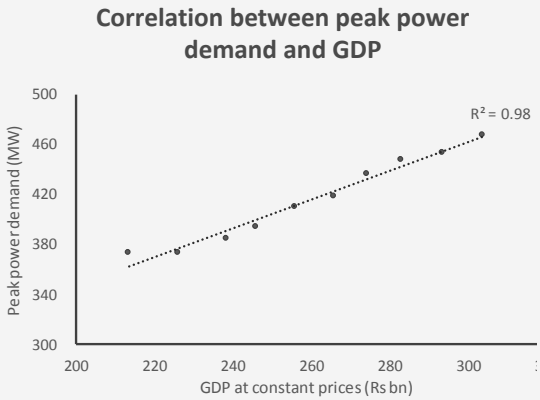


Source: Statistics Mauritius

Additionally, it can be observed that peak power demand in the country posted a double digit growth over the period. This has led to a sustained decline in the ratio of effective plant capacity to peak power demand, thus underscoring mounting capacity issues stemming from pressures exerted on the ability of power plants to supply energy above and beyond the average and normal requirement. This observation highlights the importance of boosting the supply of energy, the more so given that electricity consumption and peak power demand are expected to uphold their expansion path in the coming years. Actually, projections are that higher household income would uphold higher residential demand and that enlarged economic activity would spur industrial and commercial electricity use. As illustrated in Figure 10 and whilst it is worth highlighting that inroads have been made lately in upgrading the national supply base, these trends could, *ceteris paribus*, lead to capacity strains. This can be testified by the forecasted sustained decline in the ratio of effective plant capacity to peak power demand, after assuming that no major energy projects unfold in future years. On another note, the share of renewable energy production out of the aggregate electricity generation amount has continued to warrant circumspection, as testified by the mix thereof evolving only timidly in the recent years to stand at 23% in 2015. Overall, any delays in the setting up of new electricity generation plants as well as promoting the sustainability and reliability of energy production and delivery could restrain the ability of prevailing capital stock to keep pace with mounting demand pressures.

Figure 10 **Electricity capacity and demand**





Notes:

(i) Effective plant capacity refers to the actual production capacity of all plants combined.

(ii) Peak power demand is the power demand during peak times at which electrical power is expected to be provided for a sustained period at a significantly higher than the average supply level.

(iii) Forecast figures for effective plant capacity for 2016-20 are based on an annualised growth of 0.8%, in line with the historical equivalent for 2007-15

(iv) Since a strong positive linear correlation is observed between peak power demand and GDP at constant prices during the period 2006-15, forecasts for peak power demand for 2016-20 are based on the IMF projected figures for GDP over this period

(v) Inferences assume the other determinants of effective plant capacity and peak power demand remain unchanged over the period

(f) MCB forecasts
Sources: Statistics Mauritius and MCB Staff estimates

Figure 11 **Electricity generation by source of energy**

Energy distribution (%)	2006	2009	2012	2015
Thermal	44	37	38	38
Coal	34	39	42	39
Renewables	22	24	20	23
of which Bagasse	*19*	*19*	*16.8*	*17.0*
Hydro	*3.3*	*4.7*	*2.6*	*4.1*
Landfill gas	*0.0*	*0.0*	*0.6*	*0.7*
Photovoltaic / Wind	*0.0*	*0.1*	*0.2*	*1.0*
Total	**100**	**100**	**100**	**100**

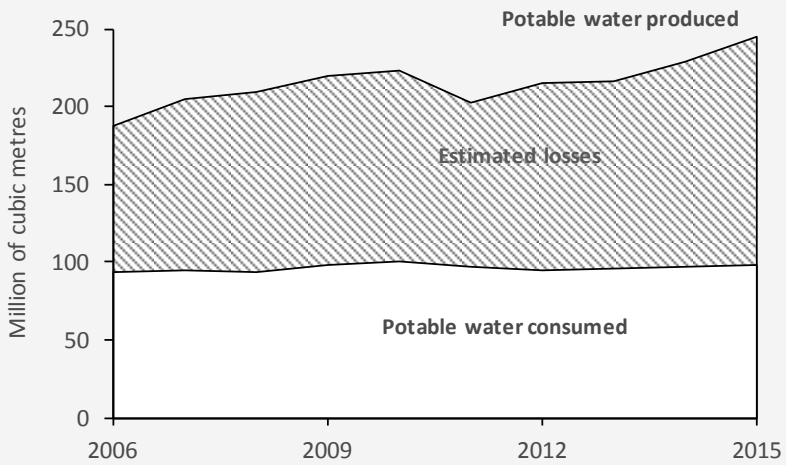
Note: *Thermal energy includes 'Gas turbine (kerosene)' and 'Diesel & fuel oil'*

Source: Statistics Mauritius

Water

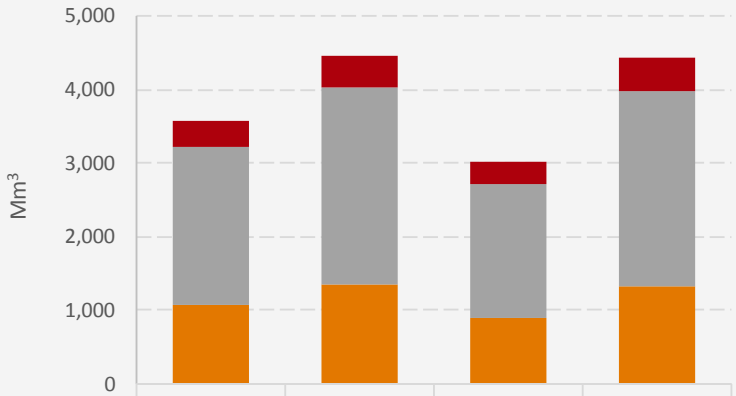
Whilst there has been a rise in demand due to population growth, industrial activity expansion and tourism development amongst others, insufficiencies with respect to water capture, storage and distribution have, notwithstanding headway made in some respects, prevailed in recent years. Notably, deficient water storage capacity has remained a somewhat serious hindrance to a satisfactory retention of rainwater. In 2015, Mauritius received 4,433 million cubic metres of precipitation (rainfall), with only 10% going as ground water. In fact, the proportion of total yearly rainfall lost through evapotranspiration averaged around 30%, while a non-negligible part of the near 60% share relating to surface runoff is deemed uncaptured by reservoirs and river-run offtakes – a problematic situation which tends to be under-emphasised in normal periods, but strongly felt in drought seasons given the ensuing unaccommodating water cuts. Whereas progress has been made in terms of installation of pipelines amongst others, the latter situation is deemed to have been exacerbated by an inadequate water distribution network as demonstrated by statistics to the effect that roughly 60% of water supplied is wasted on average presumably due to leakages in the delivery system and alleged water pilferage which, in addition to ensuing water shortages at consumer level, entail a significant loss of revenue to the Central Water Authority. Moving forward, the expected continuing increase in per capita income and economic development will potentially pose a challenge to the water sector in terms of the additional capacity requirements, should there be no material supply-side improvements.

Figure 12 **Estimated water losses**



Sources: Statistics Mauritius & MCB Staff estimates

Figure 13 Water balance



	2006	2009	2012	2015
Net recharge to groundwater	357	447	302	443
Surface Runoff	2,143	2,682	1,814	2,660
Evapotranspiration	1,071	1,341	907	1,330
Rainfall	**3,571**	**4,470**	**3,023**	**4,433**

Notes:

(i) Evapotranspiration: The volume of water that enters the atmosphere by vaporisation of water into a gas through evaporation from land and water surfaces and transpiration from plants.

(ii) Surface runoff: The flow of surface water, from rainfall, which flows directly to streams, rivers, lakes and the sea.

(iii) Groundwater recharge: Process by which water is added from outside to fresh water found beneath the earth surface

Source: Statistics Mauritius

Figure 14 Potable water requirements (No-change scenario)

In thousands of cubic metres	2006	2015	2020(f)	2025(f)
Domestic	73,158	75,056	78,755	82,637
Business & Commercial	n.a	13,475	15,244	17,245
Others	n.a	9,631	9,667	9,704
Total	**94,205**	**98,162**	**103,666**	**109,586**

Assumptions:

(i) Forecasts are based on the annualised growth of volume of potable water between 2012 and 2015

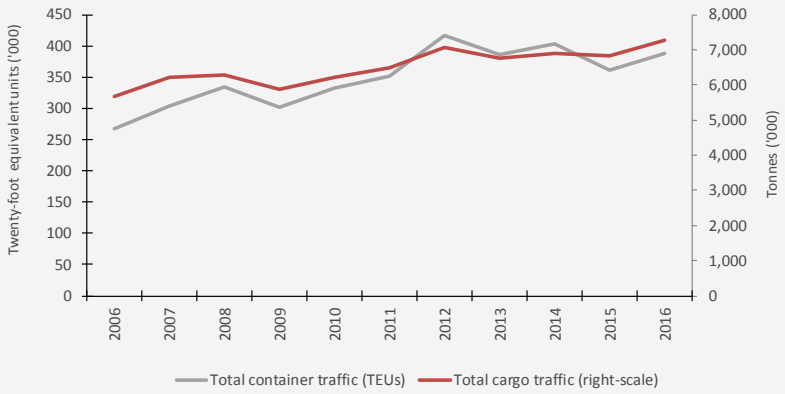
(ii) For 2006, no data is available for 'Business & Commercial' and 'Others' due to a change in nomenclature as from 2012

(f) MCB forecasts
Sources: Statistics Mauritius & MCB Staff estimates

Port

Over the past decade, the Port Louis harbour has benefited from capacity building measures, including the provision of integrated and modern berthing, institutional and logistics facilities towards effectively responding to the demand of port users, particularly in the Freeport zone. Against this background, the port has experienced a notable growth in the level of its activities. Besides, it is comforting to note that port productivity levels are estimated to have generally improved in recent times. Going forward, the national aspirations of igniting port competitiveness to increasingly greater heights and positioning it as a preferred regional destination for trade and other activities imply that decisive strategic directions be set and ambitious measures be adopted in order to, beyond existing and envisioned moves, buttress the extent and deepen infrastructure capacity as well as enhance the adaptability of services to market exigencies, alongside ensuring that amenities can duly respond to peak periods in container traffic activity.

Figure 15 **Activity at the port**



Source: Mauritius Port Authority

Figure 16 **Selected port productivity indicators (No-change scenario)**

Mauritius Container Terminal	2006	2009	2012	2015	2016
Average hours					
Pre-berthing delays per vessel	14.3	2.9	2.6	2.5	2.7
Average moves					
Per ship working hour (ship productivity)	24.1	36.5	36.8	33.9	40.6
Per gross crane hour (crane productivity)	15.9	17.1	18	20.3	19.9

Notes :

(i) Pre-berthing delays per vessel - Sailing delays in terms of hours per vessel

(ii) Crane Productivity – Number of moves per gross crane hour

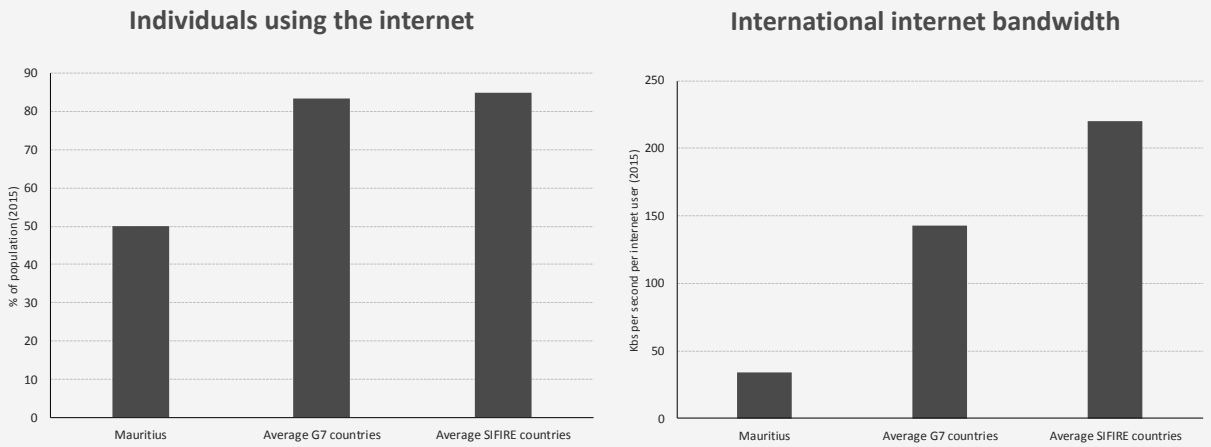
(iii) Ship productivity – Number of moves per working hour

Source: Mauritius Port Authority

Information and communication technology

Over time, the Mauritian economy made notable headway in promoting the ICT sector, alongside fostering the utilisation of modern and innovative technologies by households and businesses. Notably, in 2016, the ICT sector, whose real growth rate is estimated at 5.3%, made up for around 5.5% of GDP at basic prices. Besides, latest available information show that Internet subscriptions per 100 inhabitants rose from 29.5 to 66.6 from 2011 to 2015. However, concerns have been raised as regard the speed, reliability and cost of Internet connectivity in the country, particularly when compared to the relatively more favourable outcomes depicted abroad. These concerns have been viewed with particular attention as they threaten to adversely affect the dissemination of ICT usage across the country's social and economic spheres, while impairing the economy's competitiveness levels on export markets for telecommunication services.

Figure 17 **Selected ICT indicators**



Sources: World Development Indicators & World Economic Forum

GENERAL REMARKS

With a view to scaling up both the level and quality of the country's public infrastructure network, wide-ranging moves are deemed necessary, underpinned by a systematic evaluation of the multiple challenges linked to the formulation and execution of policy initiatives. Essentially, alongside ensuring that ventures end up being financially and commercially viable, the underlying objective is to pave the way for associated socio-economic outcomes to be maximised for the well-being of end-users and citizens at large. Already, while an ambitious range of infrastructure-upgrading undertakings has, as underscored before, been pronounced by the authorities, it is creditable to take cognizance of the update of the Public Sector Investment Programme, with the latter acting as a potentially powerful tool for the proper scheduling and monitoring of projects across various fields and time zones. Yet, beyond national infrastructure planning, key success factors for achieving our growth aspirations can be put as follows: (i) expanding the scope and depth of infrastructure-upgrading endeavours; (ii) promoting the comprehensive and speedy implementation of capital projects; and (iii) enhancing the efficiency of infrastructure investment. That being said, in addition to catering for the alignment of projects with country realities and specificities, the realisation of the latter objectives will crucially hinge on the sensible and well-calibrated strengthening of the depth and adaptability of project implementation capabilities at both public and private sector levels, supported by the espousal of appropriate governance arrangements. Infrastructure governance, which covers the entire life cycle of the asset, commonly relates to the processes, tools and forms of interaction, decision-making and evaluation used by Government organisations and their counterparts with respect to making infrastructure services available to economic agents and the general public. Overall, the key moves that would help to meet the afore-mentioned objectives and requirements are spelt out in the following sections. A comprehensive overview of internationally-recognised frameworks, principles and practices aimed at improving the execution, effectiveness and efficiency of infrastructure investment is depicted in the Annex, after leveraging inputs gathered by the IMF, OECD and World Bank in this respect.

EXPANDING THE SCOPE AND DEPTH OF INFRASTRUCTURE VENTURES

In view of the multiplicity of challenges linked to the demanding operating context, the following steps could play a pivotal role in helping the country attain material economic gains: (i) broadening the range of intended projects across an extensive array of fields; and (ii) deepening the extent to which undertakings are scoped and structured, notably in terms of their technical, spatial and strategic reach, dimensions and coverage as well as their envisioned socio-economic influence and repercussions. As regards measures that are meant to improve the quality of the road network and alleviate traffic difficulties, the following could, beyond the Road Decongestion Programme and alternative modes of transport, be considered: (i) an

improvement of the quality and accessibility of the public transportation system, and (ii) the implementation of innovative land use strategies, notably the integration of sustainable transportation models into urban business development plans. Moving on, by virtue of its importance in supporting trade patterns and boosting economic activity levels, the development of the port can be furthered by endorsing the following moves: (i) formulating a more articulate institutional and legal foundation for underpinning long-term planning and prudent investment by economic partners involved; (ii) applying a broader range of innovative technologies where warranted by the market to improve the productivity of processes; (iii) providing integrated and more extensive facilities in relation to ship repair and maintenance, storage amenities, transit solutions, customs clearance, quarantine and other various types of automated practices; and (iv) forging carefully-determined strategic alliances with international shipping lines, renowned international port operators and national cargo handling corporations in order to exploit the highest levels of expertise and skills. The target is to position the Mauritian port as the most competitive port in the region, while fostering and securing its standing as a prominent transshipment and bunkering hub in this part of the world as well as upholding the sustained expansion of related industries such as the seafood hub, cruise tourism, and Freeport. In the same vein, airport services can be further enhanced by increasing the provision and quality of available facilities, especially those relating to aircraft repair, warehouse and cargo facilities.

With respect to ICT, specific policy areas that can be tapped into relate to the following: (i) formulating and applying ambitious measures to boost the utilisation of Internet by households, educational institutions, etc.; (ii) providing a more stimulating environment for the development of the high-end ICT-BPO sector; (iii) promoting the recourse, notably by the small and medium enterprises, to innovative technologies to help enhance the productivity and competitiveness of business operations; (iv) deepening initiatives meant to improve the digitalisation of services provided by the Government, which would help to improve the investment climate and enhance delivery of services to citizens; and (v) further developing the network of optic fibre cable and promoting competitive practices so as to increase the quality and reduce the cost of Internet connectivity. As per the World Bank in its recent report titled 'Reaping Digital Dividends: Leveraging the Internet for Development in Europe and Central Asia', *"Policies to increase internet access are necessary but not sufficient. Policies to foster competition, international trade and skills supply, as well as adapting regulations to the changing business environment and labor markets, will also be necessary. In other words, reaping digital dividends not only requires better connectivity, but also complementary factors that allow governments, firms and individuals to make the most out of it."* As regards water, the following would help to deal with capacity issues: (i) to significantly develop storage, distribution and usage capabilities, backed by dedicated initiatives to encourage households and businesses to undertake water harvesting and re-use of recycled water; and (ii) to strengthen the provision of water-related services and

infrastructure for agricultural and industry use. In the field of energy, the update and extension of national strategies in favour of accelerated electricity production will assist in generating additional physical capabilities and realising the country's energy security ambitions, backed by a watchful appraisal of the relevant socio-economic implications and the conduct of active consultations with relevant stakeholders. At the same time also, it appears essential that a national strategy for achieving a considerable and consistent improvement in the recourse to renewable energy sources be put into place, while actively assessing and supporting reliable private sector projects in this respect. There have, also, been calls for a clear calibration and synchronisation of initiatives meant to foster effective consumer demand management. In this respect, the adoption of incentives to promote the utilisation of more efficient electrical appliances and machinery by households and businesses is being viewed as a move in the right direction. Besides, building on headway achieved till date, a key move is to provide more flexible and straightforward access by economic agents to solar energy.

PROMOTING THE COMPREHENSIVE AND SPEEDY EXECUTION OF PROJECTS

After ventures are designed and formulated, the challenge for the authorities is to ensure that the full magnitude of initiatives being anticipated to generate noticeable outcomes is executed in a speedy fashion. Towards this end, a material strengthening of project implementation capabilities would go a long way in ensuring that relevant undertakings are conceptualised and initiated in the best possible circumstances and successfully monitored throughout their implementation. These can take the following forms: (i) broadening the skills and knowledge base of public sector employees and professionals involved in specific fields, notably relating to project design and implementation, the conduct of feasibility studies as well as the ability to assess, procure and monitor the most complex infrastructure activities; (ii) capitalising on dedicated technical tools, information technologies, and proven methodologies to widen and strengthen actions underpinning the initiation, monitoring and management of projects across space and time; and (iii) fostering the regular and in-depth compilation, dissemination and evaluation of statistics on the funding, scoping and application of projects throughout their life cycles. Towards those ends, an acceleration and broadening of envisioned public sector reforms would be of valuable assistance, with a key undertaking relating to the much-needed strategic re-engineering, operational rationalisation and merger of relevant institutions in order to promote efficiency gains. In another respect, further improving the quality of the public tendering and procurement systems would assist in fostering the effective management of public resources and stepping up the initiation and unfolding of projects. In order to meet this objective, the interventions that can be taken on board are as follows: (i) a reinforcement of administrative capacities; (ii) a more judicious and innovative delineation, streamlining and automation of the formal rules, processes and guidelines in place; and (iii) the forging of enhanced institutional coordination, synergy and interactions.

ENHANCING AND UPHOLDING THE EFFICIENCY OF INVESTMENT

Along with making sure that envisioned projects are put in place in an extensive and timely manner, a key success factor is to enhance the efficiency of investment in terms of the coverage and quality of the infrastructure assets. This would, in the first place, help to uphold the commercial and financial viability of projects as well as ensure that they are value for money. Simultaneously, more efficient spending would act as a stepping stone to accomplish more productive investments by means of higher economic growth, after notably positively impacting the quality of the business environment and stimulating investor confidence. As underpinnings and in tune with empirical evidence gathered globally, the desired strategic interventions that can assist in upholding the proper planning and allocation of investment resources are as follows:

- Formulating a robust underlying basis for investment selection
  - To base investment decisions on sound fiscal sustainability principles, with budgetary frameworks being supportive enough to achieve sustainable, stable and predictable levels of investment;
  - To, additionally, take on board the following factors for determining the right types, mix and levels of investment: the country's socio-economic development aspirations, the essential components and trade-offs of the ventures, the evaluation of prevailing infrastructure needs and complementarities across sectors and regions, and the preferences of stakeholders;
  - To identify projects which are acceptable and affordable to users and citizens; to allocate investment to the right sectors and fields of activity
- Fostering the judicious evaluation and profiling of projects
  - To instil greater discipline in appraising the various strategic and technical dimensions of projects by leveraging rigorous procedures, analyses and feasibility studies;
  - To ensure that undertakings are shaped up by realistic priorities, targets, objectives and expected end-results, after conducting an in-depth assessment of the potential long-term impact and risks of alternative spending patterns;
  - To adopt a holistic set of criteria and principles to shape up projects, backed by the consideration of the country's inherent realities and specificities
- Conducting a shrewd appraisal of the right type of investment modality
  - To prudently consider, after factoring in social equity considerations, the growing role that the private sector can play in providing infrastructures;
  - To increase the recourse to Public Private Partnerships (PPPs) to minimise cases whereby projects are afflicted by time delays, cost overruns, under-performance, and under-utilisation, alongside curtailing fiscal pressures off the authorities

Box IV: OECD - Modes of infrastructure delivery

Direct provision

Direct provision of infrastructure involves the government taking responsibility for all aspects of infrastructure delivery, including financing, construction and subsequent service delivery. This mode affords the government a maximum level of control over the infrastructure asset

Traditional public procurement

In the traditional public procurement mode, a government body contracts with private partners to provide infrastructure-based goods and services. The government will contract separately for the design, construction, operation and maintenance of infrastructure assets. Contracts are allocated using competitive tender processes in order to obtain the optimal bundle of quality features and price.

State-owned enterprises (in full or in part)

Infrastructure, particularly in network industries such as water, public transport and electricity is often provided by state-owned enterprises (SOEs) that are owned (fully or partially) by the government. The government may relinquish infrastructure investments to an SOE if the latter is able to raise finance independently, although the actual investment decision may still be subject to government controls if they have fiscal implications. This may be an efficient mechanism for the delivery of infrastructure, especially if the SOE is to be "corporatised" as an independent legal entity and subjected to commercial pressures. An efficient solution further calls for the state's roles as enterprise owner and regulator to be conducted separately.

Public-Private Partnerships and Concessions

Public-private partnerships (PPPs) involve private investors financing and managing the construction of an infrastructure asset, which they then typically operate and maintain for a long period, often extending to 20 or 30 years. In return, the private partner receives a stream of payments to cover the capital expense as well as the operating and maintenance costs. This payment stream may be derived from the national budget, user fees or a combination of the two. Private firms are responsible for financing, constructing and operating the infrastructure assets. Governments retain control over project selection, establish the framework conditions and retain some regulatory powers.

Privatisation with regulation

When conditions for a competitive market exist in a particular sector, private firms subject to the discipline of market forces may provide the most efficient mechanism for the provision of infrastructure. In this mode of infrastructure delivery, private firms are not only responsible for the financing and delivery of infrastructure, but they also make investment decisions relating to which infrastructure assets to build. There are many cases of privatisation of sectors with market failures, e.g. water and energy. When privatisation has been the preferred option, governments have in parallel strengthened regulatory oversight in the sectors at stake – this has been notably the case with the establishment of independent regulators in the energy and water sectors when systems have been privatised.

Source: OECD

Box V: IMF - Public and private roles in the provision of infrastructure

Public-private partnerships (PPPs)

When used effectively, PPPs can deliver substantial savings relative to purely public provision of goods and services. Under a typical PPP, a firm provides upfront financing, and designs, builds, operates, and maintains an asset in exchange for a combination of user fees and/or periodic payments by the government over the life of the contract.

Advantages of PPP

PPPs can offer significant advantages over traditional public procurement in terms of mobilising private financial resources and know-how, promoting the efficient use of public funds, and improving service quality. Although private financing is typically more expensive than government borrowing, a well-designed PPP contract can generate efficiencies that more than offset the higher cost of private capital by bundling the design, construction, and operation of an asset to incentivise the efficient, timely construction of high-quality assets, and the maintenance of and cost recovery from those assets over time.

Prerequisites for successful implementation of PPP

Not all investment projects can be effectively delivered using a PPP. The benefits of PPPs mainly arise from the government's ability to allocate risks efficiently between public and private parties to ensure the right incentives and reduce overall project costs. To do so, the outputs and the quality of services must be predictable and measurable for the duration of the project. PPPs in the IT or health sectors can be difficult, as the technological change is simply too rapid in relation to the typical length of a PPP contract. PPPs also require strong legal, policy, appraisal, approval, and monitoring arrangements to negotiate contracts and ensure that private partners meet their obligations.

Empirical evidence on effectiveness of PPP

Evidence of whether PPPs can provide infrastructure more efficiently than traditional public procurement is mixed. As discussed in Schwartz and others (2008) and Engel and others (2014), the benefits of PPPs vary significantly across projects and countries. For instance, in Australia, the rolling stock rail infrastructure project was procured as a PPP, with cost savings of around 30% relative to the public-sector comparator. Similarly, 5 PPP water projects in Singapore resulted in a lower-than-expected bid price, partly due to design innovations and the use of improved technology. However, in many countries, projects have been procured as PPPs not for efficiency reasons, but to circumvent budgetary constraints and delay the recording of the fiscal costs of providing infrastructure services. This has led some governments to proceed with low-quality and fiscally costly projects that would otherwise have been excluded from their public investment plans. In some cases, PPPs have also resulted in large fiscal costs due to poor contract designs, optimistic assumptions about revenues from user fees, and minimum income guarantees provided by the governments. For example, during the 2008 global financial crisis, Portugal was forced to renegotiate its road PPPs when the calling of revenue guarantees by private partners threatened its fiscal position. The complexities and interdependencies between large infrastructure projects can also make them poorly suited to PPPs. In Scotland, the Skye Bridge PPP project faced significantly reduced demand due to lack of coordination with other crossings, which resulted in the government buying back the whole project from the private partner.

Source: IMF

- To ensure that PPPs are suitably structured and applied, backed by a careful consideration of the following: (i) the size and financing profile of the investment; (ii) the enabling legal, regulatory and institutional environment; (iii) the market, economic and political economy circumstances of sectors involved; and (iv) the leveraging of robust risk-sharing arrangements for public and private sectors in order to identify, measure and allocate risks between them in a fair manner towards generating appropriate outcomes and rewards

- Unleashing and implementing projects in a coherent and flexible manner
  - To conduct active, regular and transparent consultations with economic and social stakeholders, to accelerate the critical assessment of infrastructure needs, pinpoint the existence of cross-border linkages and harness popular support for the opportune initiation of activities;
  - To leverage stakeholder involvement to critically and regularly re-adjust, if need be, the characteristics and implementation objectives of projects to ensure that these would have a financially-sound life span and produce the intended socio-economic benefits to end-users;
  - To take appropriate decisions relating to any prioritisation, sequencing or synchronisation of projects within/across fields, after making allowance for infrastructure and policy imperatives
- Exercising proper and systematic coordination and monitoring of unfolding projects
  - To adopt appropriate structural, institutional and regulatory frameworks, tools and instruments with a view to stimulating the sustainable and affordable development, coordination, monitoring and renewal of infrastructure across time-zones and levels of Government;
  - To conduct ex-post evaluations of outputs and outcomes of past projects to gather valuable inputs in order to design and appraise future projects

In current circumstances, the continuous enhancement of public investment management is all the more important in boosting the efficiency of capital spending in Mauritius. This is the case given (i) the relative technical complexity and sophistication of several projects; and (ii) the fact that apprehensions have been raised in several quarters as regards the end-user characteristics and attractiveness of specific investment undertakings. As a notable case in point, while there are strong and legitimate grounds for supporting the endorsement of alternative transportation networks, the following aspects call for close monitoring as regards the Metro Express: (i) the construction costs and completion time of related works; (ii) the energy requirements and broad-based maintenance expenses; (iii) the speed of moving from one place to another and the timeliness of the service; (iv) other commercial dimensions in terms of the pricing and quality of the service, noticeably in respect of passenger comfort and the availability of ancillary amenities; (v) the

savings linked to the project, for example vehicle cost and travel time savings; (vi) the opportunity cost of the venture in terms of the attractiveness, efficiency and affordability of alternative modes of transport development that can be envisaged; and (vii) the level of integrated development shaping the project, for instance in relation to the construction and positioning of passenger terminals as well as the cohabitation of the project with other initiatives to reduce road congestion and broaden the existing road network. Overall, given the sheer size of the project and the wide scale of its envisioned socio-economic ramifications, the carefully-led execution of the Metro Express project would be decisive in ensuring that the project be, in its entire shape and life cycle, commercially viable and financially sound. Importantly also when considering discrepancies linked to undertakings of broadly similar sizes on the worldwide scale, any slippages in connection to the expenditure and cost estimates that are being currently formulated by the authorities need to be guarded against to avoid undue strains on Government finances and the feasibility of the venture. Beyond that and towards fulfilling the full scale of national traffic alleviation requirements in an efficient and opportune manner, it appears essential that the full-fledged version of the Road Decongestion Programme be actively and expansively unleashed. For the programme to succeed, all key dimensions warrant attention, including (i) the elaboration of a well-defined and structured national plan for comprehensive road repair and maintenance, which is to be executed in tandem with road extension and transportation enhancements initiatives; and (ii) the recourse to broad infrastructure arrangements so as to equip wider road development moves with prominent constituents/underpinnings. A key example relates to phases 2 and 3 of the Ring Road project, which includes the construction of tunnel. The latter can, notably, help to alleviate the volume of traffic moving in and around Port Louis, including the port, as well as relieve traffic being destined to the north of the island. At another level, efficient investment is also, markedly, warranted in the energy field. Conspicuously, it can be stressed that national energy security imperatives would only be met if policy initiatives being put into place are: (i) made up of pragmatic measures; (ii) characterised by the application of modern and innovative technologies; (iii) influential enough to trigger heightened public consciousness on the importance of energy saving; and (iv) supported by the promotion of greater private sector participation in the production and distribution of electricity, especially as regards renewable energy.

CONCLUDING REMARKS

"The proof of the pudding is in the eating", says the proverb. Indeed for Mauritius, the economic stakeholders are, in current conjuncture and amidst a persistently demanding economic context, faced up with the formidable challenge of translating their reform and economic restructuring intentions into tangible realisations and outcomes. This is particularly applicable to moves envisioned to upgrade the quality of the national infrastructure set-up, insofar as they are viewed as a *sine qua non* condition for modernising the country's socio-economic apparatus as well as spearheading the short and longer-term national growth and prosperity to greater altitudes. Here, it can, for instance, be recalled that, the 2030 Sustainable Development Agenda of the United Nations had, amongst others, called for countries to develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all. As highlighted in the context of the formulation of the UN's Sustainable Development Goals, *"Investments in infrastructure – transport, irrigation, energy and information and communication technology – are crucial to achieving sustainable development and empowering communities in many countries. It has long been recognized that growth in productivity and incomes, and improvements in health and education outcomes require investment in infrastructure."* With respect to Mauritius, it can be argued that, coupled with the accomplishment of announced structural reforms aiming at boosting public sector efficiency, the comprehensive execution of ventures in the context of the Public Sector Investment Programme would, at a starting point, build the necessary resilience that will catapult the economy to a higher growth path and, eventually, boost our potential growth rate from the current levels of 4.0 – 4.2%. Moving beyond this threshold and increasing the potential real GDP growth rate of Mauritius to above the 5% mark would imply upholding and further deepening the country's infrastructure-upgrading momentum, duly complemented by the execution of an influential array of other structural measures that can dynamically address our structural shortcomings and strengthen our inherent ability to tap into growth-enhancing avenues.

However, as propounded across this report, meeting our infrastructure transformation aspirations is not an easy task, the more so given the prerequisite to preserve the soundness of the country's fiscal balance and debt metrics. Essentially, in addition to paving the way for undertakings to be executed in an opportune and extensive fashion, a key success factor is to ensure that investments incurred are efficient enough to, altogether, convincingly promote the commercial practicability and financial feasibility of relevant projects, alongside doing the needful to ensure that ventures kicking in are in tune with the country's inherent realities and socio-economic ambitions. Strikingly, as per the IMF in its report titled 'Why Public Investment Matters', the most efficient public investors get twice the growth 'bang' for their investment 'buck' than

the least efficient. Basically, this calls for the delineation and endorsement of thoughtful and robust principles and arrangements as well as the adoption of a holistic perspective to project selection and execution in order to make things work and work in the right direction. To take an example, while the materialisation of other specific projects would command a relatively more careful inspection and evaluation of relevant dimensions and expected outputs, it appears that there is a clear-cut and immediate case for the accelerated and full-fledged implementation of the Road Decongestion Programme (RDP), as spelt out across public announcements made by the authorities. In fact, the RDP can legitimately position itself as an influential leeway to straightforwardly deal with high volume/concentration of traffic in specific agglomerations and help to considerably alleviate current and evolving road congestion problems and dynamics, alongside providing a perceptible boost to the performance of the construction sector and the nationwide economic expansion. From a wider angle, the major road development initiatives being unleashed call for close monitoring and nurturing to prevent any escalations of costs and expenditures that could impair the country's budget balance and public sector debt, alongside impairing the internal rate of return and 'value-for-money' attractiveness of relevant ventures. As stressed before, ventures would only meet established targets if their relevant components are judiciously profiled, structured and financed, with the recourse to private capital and service deliveries to be of commendable assistance in this respect.

"Action is eloquence" claimed William Shakespeare. As for Mauritius and amidst the exigencies generated by the testing economic landscape, the opportunities for capitalising on infrastructure-upgrading moves as a game-changer for long-term socio-economic progress are vast, whereas related challenges, although significant, can be overcome. On this note, it is hoped that the forthcoming National Budget will, alongside duly focusing on other growth-enhancing strategies as well as promoting sound fiscal and debt metrics: (i) re-affirm and outspread its focus on comprehensively boosting public and private investment over time; and (ii) devote a preeminent attention to the acceleration of nationwide infrastructure spending that will serve as a strong and durable edifice to promote the structural transformation of the country and modernise the economy. Right now, the time is, indeed, right and ripe for a meaningful national infrastructure push to transform our aspirations into reality. However, only decisive, ambitious and collective actions would help to achieve more, better and smarter infrastructure, while dynamic collaboration between public and private stakeholders would be key in energising the country's potential and tracing the road to success!

J. Gilbert Gnany

Chief Strategy Officer May 18, 2017

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ANNEXES

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ANNEX I:

IMF - Public Investment Management Assessment Framework

Introduction

As stressed in a recent policy paper entitled "*Making public investment more efficient*", IMF has developed a new Public Investment Management Assessment (PIMA) to assess the quality of public investment management practices. The PIMA basically evaluates 15 key 'institutions' that constitute a subset of the broader framework of budget institutions that govern the public financial management process. The aim is shape and positively influence the planning, allocation, and implementation of public investment.

Stage 1 - Planning

Definition: Efficient investment planning requires institutions that ensure public investment is fiscally sustainable and effectively coordinated across sectors, levels of government, and between public and private sectors

Sub-indicators:

- **Fiscal principles or rules** which ensure that overall levels of public investment are adequate, predictable, and sustainable;
- **National and sectoral plans** which ensure public investment decisions are based on clear and realistic priorities, cost estimates, and objectives for each sector;
- **Central-local coordination** arrangements that integrate public investment plans across levels of government, provide certainty about funding from the central government, and ensure sustainable levels of subnational borrowing;
- **Management of public-private partnerships**, which ensure effective evaluation, selection, and monitoring of PPP projects and liabilities; and
- **Regulation of infrastructure companies**, which promotes open and competitive markets for the provision of infrastructure services, objective pricing of infrastructure outputs, and effective oversight of infrastructure company investment plans.

Stage 2 – Allocation

Definition: Allocation of capital spending to the most productive sectors and projects requires a comprehensive, unified, and medium-term perspective to capital budgeting, as well as objective criteria and competitive procedures for appraising and selecting particular investment projects

Sub-indicators:

- **Multi-year budgeting** that provides transparency and predictability regarding levels of investment by ministry, program, and project over the medium term;
- **Budget comprehensiveness** that ensures that all public investment, regardless of the funding channel, is authorised by the legislature and disclosed in the budget documentation;
- **Budget unity** that ensures that decisions about individual projects take account of both their immediate capital and future operating and maintenance costs;
- **Project appraisal** that ensures that project proposals are subject to published appraisal using standard methodology and taking account of potential risks; and
- **Project selection** that ensures that projects are systematically vetted, selected based on transparent criteria, and included in a pipeline of approved projects.

Stage 3 – Implementation

Definition: The timely and cost-effective implementation of public investment projects requires institutions that ensure projects are fully funded, transparently monitored, and effectively managed

Sub-indicators:

- **Protection of investment** that ensures project appropriations are sufficient to cover total project costs and cannot be diverted at the discretion of the executive;
- **Availability of funding** that allows for the planning and commitment of investment projects based on reliable forecasts and timely cash flows from the treasury;
- **Transparency of budget execution** that ensures that major investment projects are tendered in a competitive and transparent process, monitored during project implementation, and independently audited;
- **Project management** that identifies an accountable project manager working in accordance with approved implementation plans, and provides standardized procedures and guidelines for project adjustments; and
- **Monitoring of public assets** that ensures assets are properly recorded and reported and that their depreciation is recognized in financial statements

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ANNEX II:

OECD - Effective Public Investment Across Levels of Government – Principles for Action

Introduction

In a report entitled "Effective public investment across levels of government", the OECD lists 12 Principles for action categorised under 3 pillars that represent systemic challenges to public investment:

Pillar 1: Co-ordination challenges: Cross-sectoral, cross-jurisdictional and intergovernmental co-ordination is necessary, but difficult in practice. Moreover, the constellation of actors involved in public investment is large and their interests may not be aligned.

Pillar 2: Sub-national capacity challenges: where the capacities to design and implement investment strategies are weak, policies may fail to achieve their objectives

Pillar 3: Challenges in framework conditions: Good practices in budgeting, procurement and regulatory quality are integral to successful investment, but not always consistent across levels of government

Principle 1 - Invest using an integrated strategy tailored to different places

Rationale

- To link investments to the specific needs of each region or locality
- To join up related investments across policy sectors
- To invest on the basis of well-informed and evidence-based strategies

Solutions

- ✓ Mobilise local and regional knowledge to design
- ✓ Seek complementarities among sector strategies via inter-departmental/ministerial committees and programmes, harmonisation of programme rules or joint investment pools across public agencies/ ministries
- ✓ Review policies at an early stage to ensure that the impacts on different types of regions and localities are adequately considered
- ✓ Generate and use spatially-relevant data for investment planning

Pitfalls to avoid

- x Copy another region's strategy without adaptation to regional social and economic development needs
- x Elaborate a vague investment strategy that doesn't clarify priorities
- x Ignore the positive or negative impacts of public investments from one policy area to another

x Plan investments ad hoc and outside of a particular strategy

Principle 2 – Adopt effective instruments for coordinating across national and sub-national levels of government

Rationale

- To bridge a series of fiscal, information, or policy gaps that may occur across levels of government
- To identify joint investment priorities and minimise the potential for investments to work at cross-purposes

Solutions

✓ Develop integrated national strategies with clear long-term goals for public investment

✓ Use contracts/formalised agreements between levels of government

✓ Ensure co-financing arrangements between levels of government

✓ Formalise consultation of sub-national governments in the development of national plans

✓ Establish platforms for regular inter-governmental dialogue

✓ Institutionalise the dialogue of national representatives in regions with respective sub-national authorities

Pitfalls to avoid

x Under-estimate the co-ordination challenges at stake at all stages of the investment cycle

x Engage in co-ordination with other levels of government too late in the investment decision-making process

x Multiply co-ordination bodies without clear value added in the decision-making process

x Create a proliferation of inter-governmental contracts that are complicated to manage

Principle 3 – Coordinate horizontally among sub-national governments to invest at the relevant scale

Rationale

- To reduce duplication of unsustainable investments due to inter-jurisdictional competition
- To promote economies of scale
- To manage positive and negative spillovers among neighbouring regions

Potential solutions

✓ Provide relevant incentives to enhance cooperation across jurisdictions through mergers or collaboration such as: (i) establishment of joint authorities (ii) co-ordinated investment strategies

- ✓ Develop adequate governance systems for metropolitan areas: (i) urban rural partnerships (ii) platforms for cross-jurisdictional dialogue and co-operation, including cross-border mechanisms when adequate

Pitfalls to avoid

- x Invest without considering the investments in, or impacts on, neighbouring areas
- x Create a mechanism for horizontal collaboration with duplicative functions for existing sub-national governments
- x Force collaboration where fiscal incentives are not aligned

Principle 4 – Assess upfront the long-term impacts and risks of public investment

Rationale

- To identify social, environmental and economic impacts and ensure value for money
- To explore alternatives to investment and assess long-term operational and maintenance costs in infrastructure investment
- To measure different types of risks

Potential solutions

- ✓ Use technically sound appraisals, with more rigorous assessment for larger or risky projects
- ✓ Inform partners about the appraisal results
- ✓ Take advantage of external expertise
- ✓ Use independent assessments of ex ante appraisals
- ✓ Circulate guidelines for project appraisal at all levels of government

Pitfalls to avoid

- x Succomb to optimism bias in the design/selection of projects
- x Focus on the cashflow projections only, neglecting other economic, environmental and social costs or benefits
- x Ignore new information that changes the investment approach after a decision has been made
- x Under-assess alternatives to investment

Principle 5 – Engage with stakeholders throughout the investment cycle

Rationale

- To better meet citizens' needs and enhance trust in government
- To benefit from civil society and citizens' inputs in priority-setting and impact assessment
- To prevent capture by special interest groups

Potential solutions

- ✓ Develop and implement a stakeholder engagement plan, tailored to the size of the investment project
- ✓ Make investment information publicly available in a timely, visible and simple way
- ✓ Ensure engagement procedures are transparent and consistent with the OECD Principles for Transparency and Integrity in Lobbying

Pitfalls to avoid

- x Disappoint residents if engagement process poorly managed
- x Involve stakeholders too late in the investment project
- x Involve only a limited set of stakeholders

Principle 6 – Mobilise private actors and financing institutions to diversify sources of funding and strengthen sub-national capacities

Rationale

- To bridge the infrastructure financing gap
- To benefit from the private sector's expertise and financing
- To develop public-private partnerships (PPP) at the sub-national level, with careful consideration of the risks involved
- To enhance new or innovative financing arrangements for sub-national public investment

Potential solutions

- ✓ Create specific agencies for joint borrowing
- ✓ Co-ordinate decisions regarding Public Private Partnerships (PPPs) with the budget process
- ✓ Mutualise capital funding or guarantee funds to facilitate access to finance
- ✓ Use PPPs with careful attention of potential adverse effects and be consistent with OECD recommendations on the Governance of Public Private Partnerships
- ✓ Base decisions about PPPs on value-for-money compared to traditional procurement
- ✓ Properly account for and disclose all costs, guarantees and other contingent liabilities of PPPs in budget documents
- ✓ Ensure financing arrangements reflect capacities for effective public investment management at subnational level (in particular small jurisdictions), with bottlenecks identified and clear guidance on steps to address them

Pitfalls to avoid

- x Develop sophisticated financial arrangements, with no guidance for sub-national governments
- x Use PPP as a way to hide bad financial health off balance sheet

x Mobilise private actors' financing and neglecting the additional expertise they may bring

Principle 7 – Reinforce the expertise of public officials and institutions involved in public investment, notably at sub-national level

Rationale

- To address the increasingly complex tasks linked to public investment
- To develop institutional capacity and professional skills for better investment decisions, in particular in small sub-national governments
- To enhance sub-national government access to skills and external support

Potential solutions

✓ Pool expertise across jurisdictions in areas of needed expertise (e.g. PPP, procurement, regional development agencies)

✓ Use joint e-government platforms to narrow gaps in capacity across regions or localities and facilitate peer learning

✓ Identify the most important challenges for subnational capacity building for investment

✓ Accompany decentralisation reforms with policies to strengthen sub-national capacities for investment

✓ Distribute guidance documents in areas such as planning, project appraisal, procurement, or monitoring and evaluation

✓ Adopt open, competitive and merit-based hiring for areas of needed technical expertise

Pitfalls to avoid

x Recreate needed expertise in every jurisdiction, regardless of scale and cost effectiveness

x Outsource all competencies resulting in a minimum level of in-house skills

x Experience high turnover of staff in teams involved in public investment

Principle 8 – Focus on results and promote learning from experience across levels of government

Rationale

- To focus on investment outcome goals and pursue them throughout the investment cycle at all levels of government
- To monitor the implementation progress of projects
- To promote learning from experience and previous mistakes
- To allow for some flexibility and reconsideration of initial priorities, to adjust to evolving priorities and context throughout the investment implementation

Potential solutions

- ✓ Use monitoring systems to track performance, emphasising progress toward outcomes
- ✓ Develop indicators that are relevant (linked to national and regional objectives), valid (measure the constructs of interest), reliable, and useful (provide actionable information for administrators and policy makers)
- ✓ Establish a manageable set of common indicators for sub-national reporting and develop "bench learning" practices among SNGs
- ✓ Require and/or co-finance ex post evaluations
- ✓ Incorporate lessons identified into subsequent investment decisions

Pitfalls to avoid

- x Require sub-national governments to report back on too many different indicators
- x Change too frequently indicators, not allowing subsequent evaluation and effective learning processes
- x Gaming indicator systems and thus not achieving the desired outcomes

Principle 9 – Develop a fiscal framework adapted to the investment objectives pursued

Rationale

- To define appropriate intergovernmental fiscal arrangements which determine to a large extent sub-national government financial capacity to invest
- To encourage sub-national governments to play an active role in investment and development
- To align priorities across levels of government

Potential solutions

- ✓ Link the use of earmarked and matching intergovernmental grants to positive spillovers and/or the need to align investment priorities across levels of government (this can be done through specific conditionalities)
- ✓ Review the incentive effects of transfer arrangements to ensure adequate incentives for sub-national governments to maximise own-revenues
- ✓ Ensure timely, predictable transfers between levels of government
- ✓ Minimise the variance between estimated and actual transfers

Pitfalls to avoid

- x Create fiscal gaps or unfunded mandates, linked to mismatch between allocated competencies and resources to fulfil the mandates
- x

x Often change the rules in transfers, that prevent subnational governments to have long-term visibility on revenues – a key pre-condition for public investment

Principle 10 – Require sound and transparent financial management at all levels of government

Rationale

- To ensure budgetary and financial accountability at all levels of government
- To enhance transparency with citizens and other stakeholders
- To ensure national fiscal stability

Potential solutions

✓ Ensure that budget transparency occurs at all levels of government

✓ Co-ordinate public investment decisions with medium-term budget forecasts

✓ Accurately assess costs of public investment and select investments based on their value-for-money

✓ Assess operations and maintenance costs of infrastructure investment and plan for future financing

✓ Disclose costs and contingent liabilities for PPPs in budget documents

✓ Make information regarding allocations for and spending on public investment transparent and publicly available

Pitfalls to avoid

x Exclude contingent liabilities from budget documents, notably at the sub-national level

x Disconnect sub-national public investment strategies from the budget procedure

Principle 11 – Promote transparency and strategic use of public procurement

Rationale

- To ensure transparent sub-national procurement systems
- To enhance the use of procurement by sub-national governments as a strategic tool

Potential solutions

✓ Provide guidance for sub-national governments for procurement

✓ Collaborate for procurement (e.g. purchasing alliances, networks, framework agreements, central purchasing bodies)

✓ Use e-government tools to simplify and harmonise procurement practices

✓ Professionalise procurement

- ✓ Use procurement as a strategic tool in sub-national governments to foster green development and support innovation

Pitfalls to avoid

- x To create procurement functions in every jurisdiction without mutualising the operations
- x To frequently change procurement rules, which put sub-national governments in a situation of uncertainty
- x To under-estimate training needs for procurement
- x To under-use the strategic potential of procurement

Principle 12 – Strive for quality and consistency in regulatory systems across levels of government

Rationale

- To promote a regulatory framework conducive to both public and private investment at the sub-national level
- To enhance the regulatory capacity of sub-national governments

Potential solutions

- ✓ Co-ordinate regulatory policy across levels of government, e.g. via inter-governmental platforms, mutual recognition policies, regulatory harmonisation agreements and regulatory uniformity agreements
- ✓ Review the stock of regulation regularly, assessing costs and benefits of new regulations and taking compliance costs for sub-national governments into account
- ✓ Minimise the administrative burden of government formalities for a typical public investment project
- ✓ Foster sub-national capacity for regulatory quality as an integral aspect of effective public investment

Pitfalls to avoid

- x Constantly changing regulations undermining predictability
- x Undermine high quality regulation at one level of government by poor regulatory policies and practices at other levels
- x Use regulation that focuses on that single jurisdiction's welfare to the detriment of other jurisdictions (such as race-to-the-bottom forms of competition)
- x Ignore innovative regulatory practices set-up at the regional or local level that could benefit higher levels of government

Checklist of indicators to measure the implementation of the OECD Recommendation for Effective Public Investment across levels of government *(Green tick - System is in place and works in a satisfactory way; Yellow tick – System is in place but improvements needed; Red tick – System is not in place or not functioning well)*

Principle 1 – Invest using an integrated strategy tailored to different places

	✓	✓	✓
Coherent planning across levels of government Mechanisms exist to ensure that sub-national investment plans reflect national and sub-national development goals			
Tailored, place-based development plan There is correspondence between assessment of territorial needs and strengths and planned projects			
Clear public investment priorities There is a clear and authoritative statement of public investment priorities at national and regional levels			
Complementary of hard and soft investments Consideration is given to complementarities between investments in hard and soft infrastructure			
Complementarities across sectors Attention is given to potential complementarities and conflicts among investments by different ministries/departments			
Cross sectoral coordination Formal or informal mechanisms exist to co-ordinate across sectors (and relevant departments/agencies) at the sub-national level			
Forward-looking investment plans Authorities assess the potential contribution of investments to current competitiveness, sustainable development and regional and national well being			
Data availability & use for investment planning Data are available and used to support the territorial assessment and planning process			

Principle 2 – Adopt effective instruments for co-ordinating across national and sub-national levels of government

	✓	✓	✓
Co-ordination bodies across levels of government There are formal mechanisms/bodies for co-ordination of public investment (formal platforms and *ad hoc* arrangements) across levels of government			
Cross-sectoral approach These co-ordination bodies/mechanisms have a multi-sector approach			
Mobilisation of co-ordination arrangements There co-ordination mechanisms are mobilised regularly and produce clear outputs/outcomes			
Efficacy of co-ordination platforms Stakeholders' perception (or empirical data) regarding the efficacy of these different platforms			
Contractual agreements/partnerships Contractual agreements/partnerships across levels of government have been developed to manage joint responsibilities for sub-national public investment			
Effectiveness of contractual agreements The share of sub-national public investment covered by these agreements is measured			
Co-financing arrangements There are co-financing arrangements for public investment			

Principle 3 – Co-ordinate horizontally among sub-national governments to invest at the relevant scale

	✓	✓	✓
Horizontal co-ordination Cross-jurisdictional partnerships involving investment are possible			
Cross-sectoral approach Cross-jurisdictional partnerships cover more than one sector			

Incentives from higher levels of government Higher levels of government provide incentives for cross-jurisdictional co-ordination			

Effectiveness of horizontal co-ordination The share of investments involving use of cross-jurisdictional co-ordination arrangements at the sub-national level can be measured by mechanism and/or by sector			

Use of functional regions Functional regions are defined, identified, and used in investment policy			

Principle 4 – Assess upfront the long-term impacts and risks of public investment

	✓	✓	✓
***Ex-ante* appraisals** A large share of public investment is subject to ex-ante appraisal			

Results of *ex-ante* appraisals The results of *ex-ante* appraisals are used to prioritise investments			

Quality of appraisal process *Ex-ante* appraisals are conducted by staff with project evaluation skills			

Independent review of ex-ante appraisals Share of *ex-ante* appraisals subject to independent review			

Guidance for ex-ante appraisals Technical guidelines for *ex-ante* appraisal are available and used at all levels of government			

Principle 5 – Engage with stakeholders throughout the investment cycle

	✓	✓	✓
Mechanisms to involve stakeholders Mechanisms exist to identify and involve stakeholders throughout the investment cycle			

Fair representation of stakeholders Fair representation of stakeholders in the investment cycle consultation process is guaranteed (to avoid capture situations)			
Early involvement of stakeholders Stakeholders are involved from the early stages of the investment cycle			
Access to information Stakeholders have easy access to timely and relevant information throughout the investment cycle			
Feedback integrated in decision-making process Stakeholders are involved at different points of the investment cycle and their feedback is integrated into investment decisions and evaluation			

Principle 6 – Mobilise private actors and financing institutions to diversify sources of funding and strengthen capacities

	✓	✓	✓
SNGs have access to technical assistance for PPP Sub-national governments have access to and use technical assistance for public-private partnerships (e.g. via PPP units, formal training, good practice guidance)			
Use of quantifiable indicators The amount of private financing per unit (e.g. Euro, USD) of public investment is known			
Access to information SNGs have access to information concerning (supra) national funds for investment			
Use of innovative financing instruments The use of new, innovative financing instruments at sub-national levels is accompanied by assessment of their benefits, risks, and sub-national capacities to employ them			

Principle 7 – Reinforce the expertise of public officials and institutions involved in public investment, notably at sub-national levels

	✓	✓	✓
Specific focus on investment required skills Human resource management policies demonstrate attention to the professional skills of staff involved in public investment (e.g. hiring is targeted, needs assessments are made, appropriate training is available and used)			
Dedicated financial assistance Dedicating financial assistance is made available for technical training of civil servants involved with public investment; training utilisation rates			
Technical guidance Technical guidance documents are available for actors at all levels of government to clarify approaches to planning, implementation, and evaluation of public investment			
Assessment of binding capacity constraints Specific assessments are conducted to assess binding constraints for effective public investment and identify the needs and the proper sequence of reforms			

Principle 8 – Focus on results and promote learning from experience across levels of government

	✓	✓	✓
Performance monitoring in place A performance monitoring system is used to monitor public investment implementation			
Timely reporting The monitoring systems facilitate credible and timely reporting of expenditure and performance			
Output and outcomes The indicator system incorporate output and outcome (results) indicators			
Targets Part of the indicators are associated with measurable targets			

Performance monitoring information is used in decision-making Performance information contributes to inform decision-making at different stages of the investment cycle			

Ex-post evaluations *Ex-post* evaluations are regularly conducted. Some *ex-post* evaluations are conducted by independent bodies (e.g. research organisations, universities, consultancies)			
Clear guidance documents exist that detail *ex-post* evaluation standards			

Principle 9 – Develop a fiscal framework adapted to the objectives pursued

	✓	✓	✓
The intergovernmental fiscal framework is clear, with timely indications of transfers between levels of government			
There is minimal variance between estimated and actual transfers.			
Information is made publicly available on the fiscal situation of sub-national governments and their comparison			

Principle 10 – Require sound and transparent financial management at all levels of government

	✓	✓	✓
Budget transparency Budget transparency principles apply at all levels of government			

Timely information Budgetary information regarding public investment is publicly available to stakeholders at all levels of government in a timely and user friendly format			

Maintenence costs integrated into budgeting Operations and maintenance costs of infrastructure investment are assessed and integrated into budgeting and planning decisions			

Budget co-ordination across levels of government Budgetary co-ordination across levels of government in terms of contributions to national fiscal targets			

Multi-year forecasts Public investment is linked to multi-year budget forecasts, which are reviewed regularly			

Medium term budgeting framework The medium-term planning and budgeting framework is integrated with the annual budget			

Multi year forecasts Multi-year forecasts for public investment reviewed and updated regularly			

Principle 11 – Promote transparency and strategic use of public procurement at all levels of government

	✓	✓	✓
Competitive procurement			
The share of public tenders for public investment that are competitively awarded is known and publicly available			
The participation rates for tenders is known			
Procurement information from the full procurement cycle is publicly available at the national and sub-national levels of government			
Procurement review and remedy mechanisms are in place at the national and sub-national levels			

Strategic procurement			
The share of procurement which involves more than one sub-national government is known			
Procurement is used strategically by SNGs to achieve green objectives			
Procurement is used strategically by SNGs to achieve innovation objectives			

Sub-national capacities for procurement			
There is recognition of procurement officials as a specific profession			
Formal guidance regarding procurement procedures is provided to sub-national governments			
There is a procurement unit that can assist SNGs			
The percentage of total annual contracts awarded go to SMEs in sub-national procurement is known			

The percentage of national/sub-national procurement conducted on-line is known			

Principle 12 – Strive for quality and consistency in regulatory systems across levels of government

	✓	✓	✓
Regulatory co-ordination across levels of government Formal co-ordination mechanisms between levels of government that impose specific obligations in relation to regulatory practice			
Regulatory impact assessment Regulatory Impact Analysis (RIA) are used			
Reduction of stock of regulation Efforts to reduce the stock of regulation or simplify administrative procedures in relation to public investment are made			
Public consultations Public consultations are conducted in connection with the preparation of new regulations of sufficient duration, accessible, and appropriately targeted			
Use of e-government tools Use of e-government tools used to simplify administrative procedures for public investment projects			

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