

The Role of Infrastructure in Securing Economic Growth and Transition to Middle Income Country in Sri Lanka: A Synthesis Paper

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Abstract

Sri Lanka has attached high priority to achieving a higher growth trajectory now that the conflict has ended. Export expansion will have to be integral for attaining the Government's 8 percent medium-term growth target. Export growth depends on efficient infrastructure that shortens the supply chain and creates agglomeration economies. Sri Lanka has a relatively low urbanization rate (15%). This is significantly below that of its lower-middle-income peers. However, the rural-urban dichotomy does not seem to apply in the conventional sense in the country as it has been successful in providing urban level services in rural areas. Despite this, well-managed urbanization has the potential to strengthen the growth framework in the economy. It can result in agglomeration dividends that generate higher returns to investment in manufacturing and modern services.

Modernizing infrastructure will be fundamental to realizing the growth potential associated with urbanization through improved connectivity and inclusivity. The infrastructure investment, necessary to increase international competitiveness for export-driven growth and promote well-managed urbanization that facilitates productive activity, should not be addressed in a piecemeal fashion. A sector-wide approach encompassing transport, the energy sector, water and sanitation, solid waste management and telecommunications is required. The financing of an infrastructure development program that supports the Government's growth target would need to take into account the high level of public debt and low revenue generation. Though the funding involved would be substantial, it can be accommodated through a combination of reduced SOE losses; PPPs; increasing coordination across tiers of government; and taking advantage of synergies across sectors. Attracting private investment into infrastructure projects with long pay-back periods would require a reduction in regulatory risk among other actions.

¹The World Bank, Washington DC, USA. The paper / presentation carries the name of the author and should be cited accordingly. It is based on an extensive work undertaken by a multidisciplinary team of local and international experts from 2009 to 2012. Financial support for this work was provided by the World Bank, AUSAID Infrastructure for Growth Initiative and the SAR Trade Window for the Multi-donor Trust Fund on Trade and Development. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Introduction

Sri Lanka achieved Middle Income Country (MIC) status in January 2010 through steady long-term GDP growth of about 5 percent per annum. The growth was fuelled by the adoption of a liberalization policy which took place in the late 1970's, and has continued, albeit, sporadically. One consequence of the reform was the change in the role the government had played from being a major contributor to the production of goods and services to that of a regulator, creating space for the private sector and monitoring the outcomes for further reform.

The government also began to pay attention to the much neglected infrastructure. An ambitious public investment program was launched to overcome the infrastructural backlog focusing on the Mahaweli power and irrigation program, urban development and investment in Katunayaka Free Trade Zone. The Public Utilities Commission of Sri Lanka (PUCL) was set up as a multi-sector regulatory authority to expedite privatization of public utilities. This helped "crowd in" private investment in productive sectors of the economy. Returns to these investments in terms of GDP growth and employment generation would have increased in the absence of the draining conflict. This paper argues that a continued push for regulatory fine-tuning to enhance the efficiency of infrastructure investments would increase returns to investment. The higher returns could have mitigated the need for large public investment in infrastructure and thus help avert the adverse fiscal consequences (including high indebtedness) at a time of competing expenditure demands and low revenue generation.

As a consequence of three decades of civil conflict, infrastructure reconstruction in the Northern and Eastern regions is likely to take center stage. The conflict spanning over three decades has come to an end. The infrastructure needs in the Northern and Eastern regions are higher than in the rest of the country, as a consequence of the conflict itself and the diminished access to the region. A "principle of inclusion" could be applied to bring those regions to the level of infrastructure services available in most of Sri Lanka.

Sri Lanka has been steadily improving its service provision over the course of many years regardless of which political party is in power. This shows continuity in its development path. It is difficult to find a parallel in other nations. Even more remarkable it is the fact that this has been achieved during frequent severe internal strife. Yet, the country is changing. The 30 year civil war is over, and most of Sri Lanka's neighbors have been enjoying rapid economic growth for many years. Import trade partners may soon become export trade partners as the country has the potential to diversify from exporting mainly to developed countries. The need to increase economic growth is taking center stage in the country.

Table 1: Sri Lanka Compared to Other MIC Island Nations

Country	Avg. GDP Growth (2004-09), [GNI per capita], (2009 PPP)	Urbanization (2009)	Forecasted Urbanization (2030) ¹	Telecom Access (per 100 people) ^{2,3}	Electricity Access (% of pop.) (2009)	% Access to Improved Sanitation (2010) ⁴	% Access to Improved Water (2010) ⁵	Total Road Network (km) ⁶	Vehicles per Km of Road ⁷	% Paved Roads (2008) ⁸
Dominican Republic	6.4 [8,110]	69.5	80	97	95.9	83	86	12,600	NA	49.4
Indonesia	5.5 [3,720]	52.6	68.9	114	64.5	54	82	476,337	38	56.9
Philippines	4.8 [4,060]	65.7	76.7	99	89.7	74	92	200,037	14	9.9
Sri Lanka	5.9 [4,720]	15.1 (*)	21.4	104	76.6	92	91	97,286	41	81

Source: WDI database 2012 unless otherwise noted.

1. UN World Urbanization Prospects: The 2007 Revision Population Database.

2. International Telecommunication Union (ITU) World Telecommunications ICT Indicators 2012 Database.

Notes:

3. Telecom Access is defined as the number of fixed and mobile lines.

4. "Improved Sanitation": connection to a public sewer, a septic system, pour-flush latrine, simple pit latrine, and ventilated improved pit latrine.

5. "Improved Water": household connection, public standpipe, borehole, protected dug well, protected spring, rainwater collection.

6. Data from varying years: Dominican Republic -2001, Indonesia-2009, Philippines- 2003, Sri Lanka-2003.

7. Data from varying years: Indonesia -2009, Philippines -2005, Sri Lanka- 2007.

8. Data from varying years: Dominican Republic -2001, Indonesia-2009, Philippines- 2003, Sri Lanka-2003.

* Recalculated at 40% [according to Lall and Astrup (2009)].

Sri Lanka's social achievements (high literacy and good health indicators) are on par with or even better than its middle income peers such as Indonesia, the Philippines and the Dominican Republic. The Sri Lankan labor force is thus ready to work with investments which generate high productivity employment. Sri Lanka could aim at becoming a high Middle Income Country (MIC) in the next 15 years as indicated in its vision document - the Mahinda Chintana (MC). It could become a new Malaysia. However, unlike its peers and Malaysia, Sri Lanka has not succeeded in attracting investment to create the demand for its labor force with high productivity potential. The central theme of this paper, in concert with the Mahinda Chintana, is that with the conflict out of the way, infrastructure will be critical in attracting investment for sustained high growth in future. This is much in line with MC's Hub concept, since agglomeration dividends become part of the "economics energy" that fuels the dynamism of infrastructure, commercial and knowledge hubs. A "principle of

connectivity” would thus enable the country to take advantage of agglomeration dividends, steering the economy toward sustained high economic growth. Table 1 (above) compares Sri Lanka with the aforementioned countries on selected infrastructure services. It is interesting to note that the number particularly striking refers to urbanization.

Cross-Sectoral Issues

The two principal drivers of investment for sustained high economic growth and productive employment are: i) international competitiveness for export-led growth and ii) urbanization which facilitates productive economic activity. These two drivers of investment and economic growth, in turn, depend crucially on efficient infrastructure that shortens the international supply chain on the one hand and brings about agglomeration dividends on the other.

International competitiveness for export-led growth

Four rankings were combined to get an overall ranking of export priorities. The index for the overall ranking simply adds up to the highest ranking of each approach. The priority export activities are deemed to be those that have an aggregate score of 4 or 3.

Table 2 summarizes the results. Apparel (mainly underwear, knitted goods and swimwear), coconut oil, fish, Information Technology (IT) and Information Technology Enabled Services (ITES), precious and semi-precious stones, natural rubber and rubber-based goods (surgical gloves and tires), port and port-related services, and tea reveal themselves to be the priority export activities.

Sri Lanka’s exports (identified in revealed comparative advantage, government’s own priorities, etc) are apparel (mainly underwear, knitted goods and swimwear), coconut oil, fish, IT services, precious and semi-precious stones, natural rubber and rubber based goods (surgical gloves and tires), port and port related services and tea.

The supply chain analysis of priority exports pinpoints the importance of modernizing infrastructure (air cargo, Colombo port, rail and road connectivity to the ports, telecommunications) to shorten the chain, lower the costs and increase international competitiveness. If tourism is also to play a major role, the importance of connective infrastructure cannot be underestimated.

Table 2: Sector Prioritization Screening

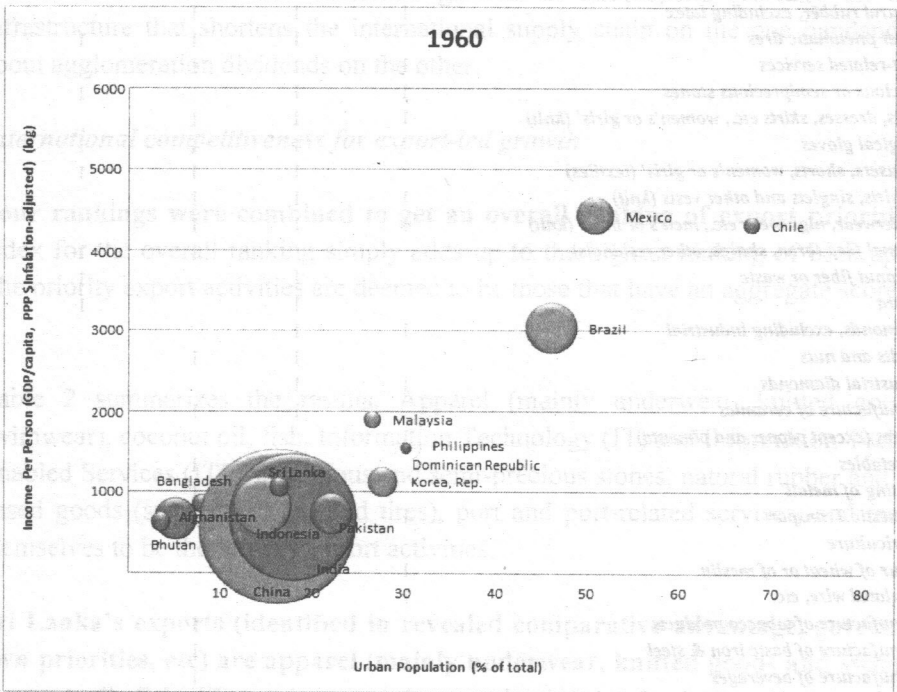
	Export Dynamics	Govt. priorities	Industr y Review	Revealed Comparativ e Advantage	Count
<i>Brassieres, corsets, etc.</i>	1	1	1	1	4
<i>Gloves, mittens and mitts (knitted or crocheted)</i>	1	1	1	1	4
<i>Swimwear</i>	1	1	1	1	4
<i>Tea</i>	1	1	1	1	4
<i>Tires and inner tubes</i>	1	1	1	1	4
<i>Underwear and nightwear, women's or girls'</i>	1	1	1	1	4
<i>Animal fat, vegetable oils, partly processed, including Coconut oil</i>	1	1	1	1	3
<i>Fish (frozen, excluding fillets)</i>	1	1	1		3
<i>Hard rubber etc.</i>	1	1	1		3
<i>IT and ITES</i>	1	1	1		3
<i>Natural rubber, excluding latex</i>	1	1	1		3
<i>Other pneumatic tires</i>		1	1	1	3
<i>Port-related services</i>	1	1	1		3
<i>Precious or semiprecious stones</i>	1	1		1	3
<i>Suits, dresses, skirts etc., women's or girls' (knit)</i>	1	1	1		3
<i>Surgical gloves</i>		1	1	1	3
<i>Trousers, shorts, women's or girls' (textiles)</i>		1	1	1	3
<i>T-shirts, singlets and other vests (knit)</i>	1	1	1		3
<i>Underwear, nightwear etc., men's or boys' (knit)</i>	1	1	1		3
<i>Animal feed (bran, sharps, other residuals)</i>			1	1	2
<i>Coconut fiber or waste</i>		1		1	2
<i>Copra</i>		1		1	2
<i>Diamonds, excluding industrial</i>	1	1			2
<i>Fruits and nuts</i>		1	1		2
<i>Industrial diamonds</i>	1	1			2
<i>Manufacture of ceramics</i>		1	1		2
<i>Spices (except pepper and pimento)</i>	1			1	2
<i>Vegetables</i>		1	1		2
<i>Casting of metals</i>			1		1
<i>Domestic Transport</i>	1				1
<i>Floriculture</i>		1			1
<i>Flour of wheat or of meslin</i>	1				1
<i>Insulated wire, etc.</i>	1				1
<i>Manufacture of tobacco products</i>			1		1
<i>Manufacture of basic iron & steel</i>			1		1
<i>Manufacture of beverages</i>			1		1
<i>Manufacture of dairy products</i>			1		1
<i>Manufacture of electronic motors, generators etc.</i>			1		1
<i>Manufacture of other chemical products, mainly fertilizer</i>			1		1
<i>Manufacture of plastic products</i>			1		1
<i>Manufacture of structural metal products, tanks, etc.</i>			1		1
<i>Parts, electric panels etc.</i>	1				1
<i>Printed matter</i>			1		1
<i>Saw-milling and planning of wood</i>			1		1
<i>Tourism</i>			1		1
<i>Wholesale and retail</i>			1		1

Source: Author's calculations

Urbanization

Different than most economies, Sri Lanka has witnessed a five time increase income per capita without a relative expansion of its urban population². Figure 1 and 2 provide snapshots of the relationship between urbanization and economic progress in selected developing countries.

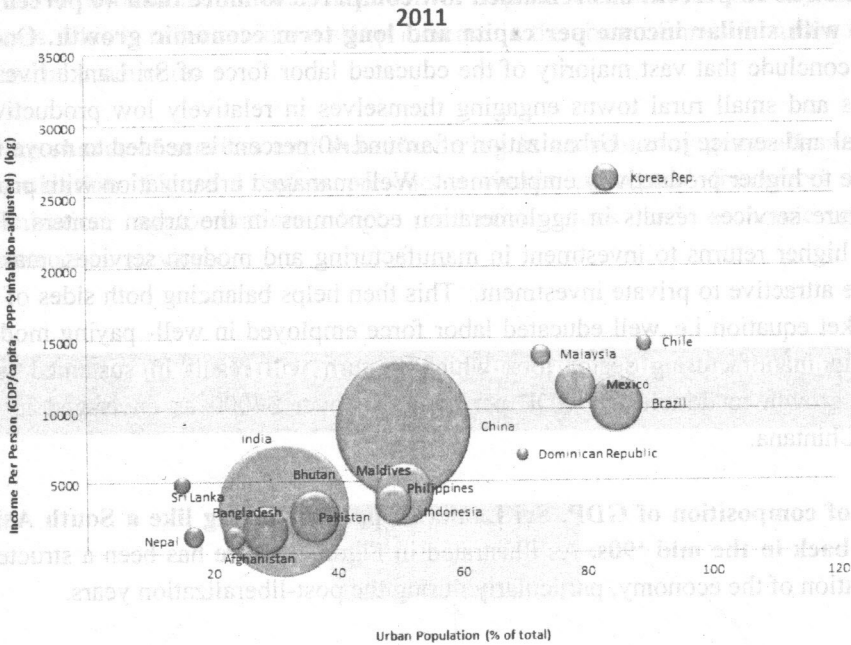
Figure 1: 1960 Snapshot of the State of Urbanization



Source: 1. WDI (2012).
2. gapminder.org

²Sri Lanka has several characteristics such as education levels which indicate that it is more urbanized. In effect the official definition of urban population changed prior to the 2001 census. If the official 2001 definition is expanded to include growing urban areas and emerging urban centers then the urban population would account for 40 percent of total population (Lall and Astrup, 2009).

Figure 2: 2011 Snapshot of the State of Urbanization



Source: 1. WDI (2012).
2. gapminder.org

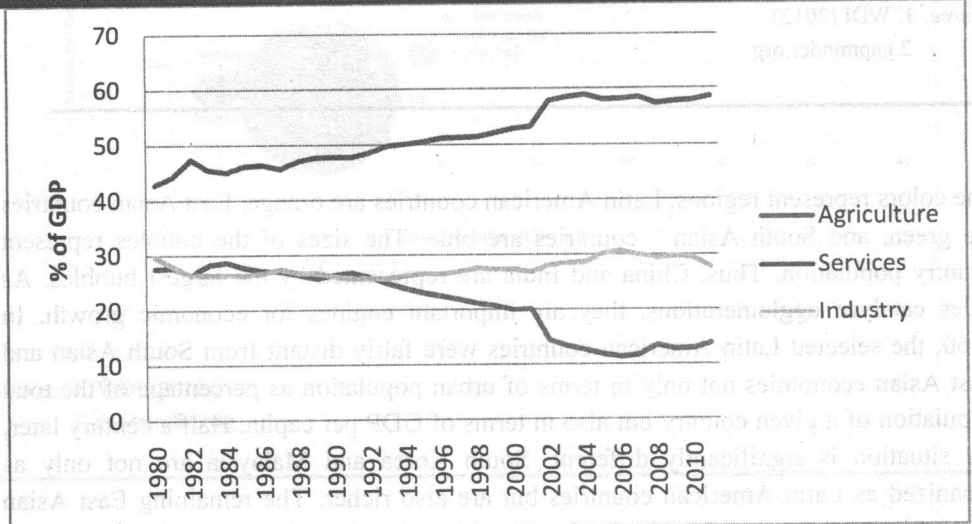
The colors represent regions. Latin American countries are orange, East Asian countries are green, and South Asian countries are blue. The sizes of the bubbles represent country population. Thus, China and India are represented by the largest bubbles. As cities catalyze agglomerations, they are important engines for economic growth. In 1960, the selected Latin American countries were fairly distant from South Asian and East Asian economies not only in terms of urban population as percentage of the total population of a given country but also in terms of GDP per capita. Half a century later, the situation is significantly different. South Korea and Malaysia are not only as urbanized as Latin American countries but are also richer. The remaining East Asian economies are not significantly far from Latin American countries. Yet, South Asian countries lag behind on both variables. In the case of Sri Lanka this may have been exacerbated by a definitional change in the early '90s.² Even if we recalculate the 2011

urban population to be 40 percent of the total,³ Sri Lanka would still remain clustered with other South Asian countries instead of closely following its MIC competitors.

Even though Sri Lanka has recently experienced reasonable economic growth, urbanization at 15 percent has remained low compared to more than 40 percent in countries with similar income per capita and long term economic growth. One is forced to conclude that vast majority of the educated labor force of Sri Lanka lives in rural areas and small rural towns engaging themselves in relatively low productivity agricultural and service jobs. Urbanization of around 40 percent is needed to move this work force to higher productivity employment. Well-managed urbanization with proper infrastructure services results in agglomeration economies in the urban centers. This results in higher returns to investment in manufacturing and modern services, making them more attractive to private investment. This then helps balancing both sides of the labor market equation i.e., well educated labor force employed in well-paying modern service and manufacturing sector jobs which in turn will result in sustained high economic growth to double the GDP per capita to over \$4000 as envisaged in the Mahinda Chintana.

In terms of composition of GDP, Sri Lanka stopped behaving like a South Asian economy back in the mid '90s. As illustrated in Figure 3, there has been a structural transformation of the economy, particularly during the post-liberalization years.

Figure 3: Sectoral Shares in GDP 1980-2011



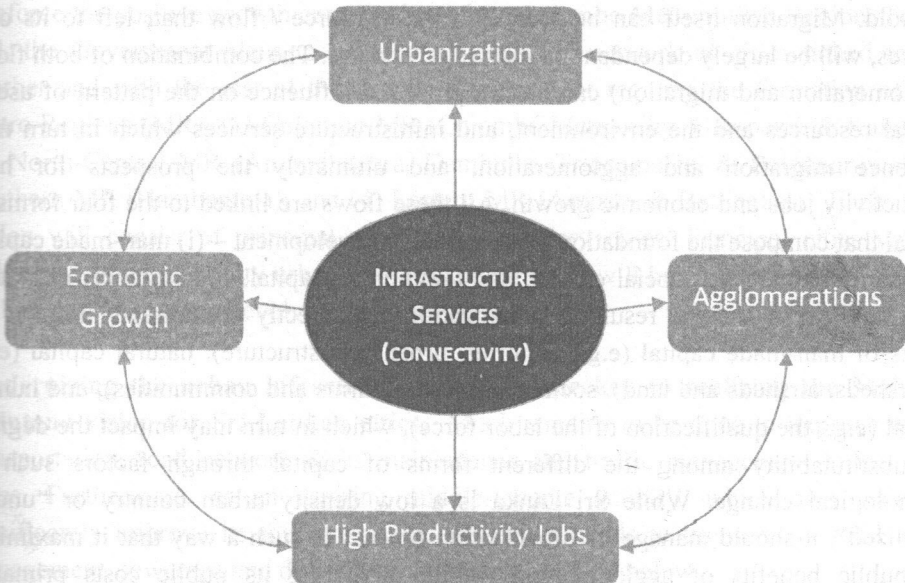
Source: WDI (2012)

³Lall and Astrup (2009).

The share of the agricultural sector declined from 30.7 percent of GDP in 1977 to 12.1 percent in 2011.⁴ The services sector increased from 40.6 to 58.5 percent during the same period. While the share of the industrial sector remained broadly similar, there has been a shift from inefficient production of import substitutes to globally competitive exports. This is reflected in the sharp increase in the share of manufacturing exports in industrial production.

Rising shares of services and manufacturing in an economy generally accompany urbanization. Figure 4 below presents a simple conceptual framework that links urbanization, agglomerations, high productivity jobs and economic growth to infrastructure services.

Figure 4: Infrastructure, Agglomerations, and Urbanization



All factors influence one another in a virtuous cycle and infrastructure services are inputs to the different quadrants and the virtuous cycle as a whole. A few things should be noted. Urbanization and agglomerations are not the same. In effect, urbanization is a physical concept while agglomeration is an economics one. People may take advantage of agglomerations without being urban dwellers when different ways to connect and exchange information are available (e.g. telecoms, IT, etc.). This is already seen in the country side of Sri Lanka given its highly educated population and connectivity via mobile phones and internet. Nonetheless, face-to-face exchange of information is also important allowing labor and production to learn from each other and apply technological advances. In this sense, urbanization facilitates agglomerations which enable highly productive jobs and economic growth. Agglomeration economies also help create internationally connected cities, concentrating production and facilitating economic growth. Like elsewhere in the world, agglomeration economies are present in Sri Lanka, even if the country is under-urbanized⁵. Yet, if MC's hub concept is to reach its full potential, agglomeration economies need to be further stimulated.

Agglomeration economies attract migrants to urban areas. Yet, it cannot be oversold. Migration itself can be seen as a market force / flow that, left to its own devices, will be largely dependent on individual choices. The combination of both flows (agglomeration and migration) can have a profound influence on the pattern of use of natural resources and the environment, and infrastructure services which in turn may influence migration and agglomeration, and ultimately the prospects for high productivity jobs and economic growth. All these flows are linked to the four forms of capital that compose the foundation for sustainable development – (i) man-made capital, (ii) natural capital, (iii) social capital, and (iv) human capital. For instance, migration from rural areas and the resulting urbanization can directly or indirectly impact the stocks of man-made capital (e.g., factories, urban infrastructure), natural capital (e.g., watersheds, airsheds and land), social capital (e.g., firms and communities), and human capital (e.g., the qualification of the labor force), which in turn may impact the degrees of substitutability among the different forms of capital through factors such as technological change. While Sri Lanka is a low density urban country or “under-urbanized”, it should manage its urbanization process in such a way that it maximizes the public benefits of agglomerations while mitigating its public costs primarily congestion, pollution and crime. Taking advantage of the under-urbanization and of its well prepared labor force would allow the country to sustain high rates of economic growth in the long term.

⁵ The literature on economic geography is vast and novel. Fujita, Masahisa and Thisse, Jacques-François. 2002. *Economics of Agglomeration: Cities, Industrial Location, and Regional Growth*. Cambridge University Press and the World Development Report 2009 – World Bank (2009) *Reshaping Economic Geography* are a few examples.

Fine tuning economic management and public investment to create high productivity jobs in the modern manufacturing and services sectors would allow the country to take full advantage of its existing endowments. It is easy to conclude that the vast majority of the educated labor force of Sri Lanka has either left the country or lives in rural areas and small rural towns engaging in relatively low productivity agriculture and service jobs. Manufacturing's share in GDP has been constant for the past three decades and while the sector has high potential for generating plentiful high productivity jobs, it has yet to deliver up to its potential. Well managed urbanization with proper infrastructure services will result in agglomeration economies in the urban centers leading to higher returns of investment in manufacturing and modern services. This would also mean moving up in the value chain. As far as services are concerned, its share in GDP continues to rise as the sector begins to splinter into modern high productivity services. This will require infrastructure investment to enable this sustained growth and the creation of additional high productivity jobs.

The Mahinda Chintana's vision for Sri Lanka's "Cities of the Future" is to create a system of inter-connected regional growth poles. With the ending of civil unrest there is a strong potential for developing regional growth centers to complement and reinforce the positive growth contribution of the Colombo Metropolitan Region. To this end, the Government plans to develop a systematic network of cities linked to one another and with the rest of the world – a vision that requires the formation of four Metro Regions (MR): (1) Colombo MR (Colombo Metro City, Gampaha, & Kalutara); (2) North-Central MR (Anuradhapura, Dambulla, Trincomalee, & Polonnaruwa); (3) Southern MR (Hambantota); and (4) Eastern MR (Ampara & Batticaloa). Each metro region will consist of principal cities and secondary cities. Principal cities will be endowed with high quality urban services and all cities will be interconnected, enabling each region to grow and evolve as an integrated system.

Modernizing the urban infrastructure will be the key to realizing the Mahinda Chintana vision for Sri Lankan cities. Much remains to be done to improve public transportation, road network & its maintenance and traffic management in the main cities. Furthermore, as an aspiring middle-income country, which also wants to significantly improve its tourism sector, Sri Lanka needs to improve its solid waste management, sewerage and drainage systems as discussed below.

Sectoral Issues

Transport

The redress of infrastructure constraints cannot be piecemeal and product specific. Instead, a sector-wide approach is needed. The Mahinda Chintana provides clear policy

guidelines for the entire transport sector to shorten the supply chain thus making Sri Lankan exports more competitive, improving urban quality of life, and enjoying agglomeration benefits. For instance, to develop Sri Lanka into a dynamic maritime and aviation hub, it recommends expansion of the port of Colombo, development of the port of Hambantota, modernization of Bandaranaike International Airport (BIA), construction of a second international airport at Mattala, and modernization of 14 domestic airports. It reaffirms the importance of public transport and also formulates an ambitious road rehabilitation and development program. Based on assessments utilizing the best available analytical tools and policy objectives of the government (the primary one being 8 percent GDP growth), the work undertaken estimates that the annual investment needs for the transport sector (roads, railways, sea ports, airports, public transport) range from 2.49 percent (lower bound) to 4.16 percent (upper bound) of GDP.

The efficiency of transport sector investments will be enhanced further by addressing priorities at the provincial level. In the Western Province, the priorities are electrification of railways in the Colombo Metropolitan Region (CMR), a Rapid Transit System in CMR and Multimodal transport access to BIA. The priority in the Southern and the Northern Provinces is to carry out Multimodal Transport and Logistics Operations Studies to identify the required infrastructure services. For the Eastern Province, the development of aviation for tourism would be the immediate priority and for the UVA province the focus would be the development of an appropriate road network to promote tourism.

Energy

Affordable and clean energy is essential for ensuring the competitiveness of Sri Lanka's economy. However, the energy sector in Sri Lanka is increasingly dependent on expensive and volatile petroleum imports. Thus, Sri Lanka needs to diversify the generation mix for more coal-fired power plants and renewable energy sources. With realistic targets, the energy sector will require annual investment of 1.18 to 2.17 percent of GDP. Efficiency improvements via cost effective mix of power generation (avoiding the temptation of investing in a new refinery), passing the Petroleum Industry Act and making PUCSL fully operational to monitor and regulate pricing in the partially privatized distribution of petrol, will help lower the total volume of investment in the sector.

Water & Sanitation

Improved access to water and sanitation is essential to enhance the living conditions in Sri Lankan cities. Although well ranked when compared to other South Asian cities, Colombo was recently ranked among the ten least livable cities in the world

by the Economist Intelligence Unit in 2011. One reason for this is its 90-year old sewage system, which could collapse anytime. Annualized rehabilitation and replacement costs and greenfield investments are estimated between 0.13 percent and 0.26 percent of GDP for Sri Lanka as a whole. The cost could be lower with greater efficiency in delivery of services in rural areas and enhancing capacity of local authorities, improvement in collections and better targeted subsidies.

Solid Waste Management

Urbanization and income growth significantly increase solid waste generation. On average, only 31 percent of the solid waste generated in Sri Lanka is collected by the local authorities, the rest being dumped haphazardly along streets and on vacant land affecting local drainage systems and the environment. This statistic masks considerable variation as collection efficiency is typically much higher in urban centers and rich provinces. Annual investment needed to improve solid waste management ranges from 0.04 percent (lower bound) to 0.31 percent (upper bound) of GDP.

Telecommunications

The telecommunications sector is one of the pillars of the Sri Lankan economy and a key partner in a knowledge hub. It has the potential to benefit from the growth of the services sector and the untapped global ICT market. Deregulation and private investment have improved affordability and increased coverage⁶. However, tariff wars and increased cost pressures have eroded profits; hence the inability to reinvest in new technology and expand the network. By March 2012, close to ninety percent of the population had mobile phones but large differences remained between rural and urban areas and across provinces. Roughly 18 percent of Sri Lanka's territory is uncovered. Going forward, addressing telecommunication gaps requires reforms rather than public investment. It is also critical to identify and address gaps in the policy and regulatory framework that might constrain private investment, by focusing on (i) clarifying the telecommunications policy, (ii) completing the liberalization process, (iii) simplifying the tax and licensing regimes, (iv) strengthening the regulatory framework, and (v) rethinking the approach to universal service.

Financing Infrastructure Investment

This work estimates that annual investments of 3.84 to 6.9 percent of GDP would be required to modernize infrastructure to sustain high GDP growth in this decade. Investing 6.9 percent of GDP annually on infrastructure will allow Sri Lanka to

⁶World Bank (2010).

have, for example, a high level of connectivity comparable to that of develop countries and access to water and sanitation comparable to those on upper middle-income countries. The alternative of investing only 3.84 percent of GDP annually will yield more modest standards in terms of access and quality of service. The level of investment requirements will pose a fiscal sustainability challenge, given high level of public debt and low revenue generation. The regulatory and institutional reform for specific infrastructure sectors discussed in this report will help to increase returns to investment in terms of the quantum and the quality of services and will lower the need for total investment. This needs to be complemented by efforts to (i) reduce the losses of state owned enterprises delivering infrastructure services to release resources for investment, (ii) promote public-private partnerships, (iii) improve coordination between different tiers of government and (iv) take advantage of sectoral synergies to increase returns to investment. Table 3 below summarizes the findings.

Table 3: Investment Needs Including O&M costs per Year by Sector, 2010-2020

Annual Investment Needs	In US\$ million	As an average share of GDP, in percent
<i>Transport</i>	1,471 - 2,463	2.49- 4.16
<i>Energy</i>	698-1285	1.18-2.17
<i>Water & sanitation</i>	75.5-154	0.13-0.26
<i>Solid Waste</i>	25 - 182	0.04-0.31
<i>Telecommunications</i>	Not Applicable	Not Applicable
Total	2269.5-4084	3.84-6.9

Source: Authors' calculations

Notes: 2011 GDP was used to calculate average share of GDP.

The elimination of losses of major infrastructure state-owned enterprises (Sri Lanka Transport Board, Sri Lanka Railways, Ceylon Petroleum Corporation, Ceylon Electricity Board and National Supply and Drainage Board) is critical. This was estimated at 1.83 percent of 2011 GDP, and could release as much as 23 percent of the resources which could be used to financing needed infrastructure investments. Cost reflective pricing and efficiency measures such as improved targeting of subsidies, appropriate fuel mix and human resource policies are needed to stem the SOE losses. In addition, fine-tuning in some sectors would bring much needed increase in efficiency via newer technologies, better pricing mechanisms, and incentive signals to promote innovation.

Sri Lanka is accumulating valuable experience in executing PPP's in telecommunications, power generation, sea port terminals, housing and real estate development. There have been difficulties, of course, but none that were insurmountable. By the standards of middle income countries such as, Malaysia, the Philippines and Indonesia, however, Sri Lanka is underserved (each country has about three times as many PPP projects as Sri Lanka) by this important source of infrastructure financing. Apart from political and macro-economic stability, what matters the most for attracting PPPs is a strong framework that lays out clearly the policy, legal and institutional aspects of contracting PPPs. The main elements of the framework that need to be addressed include PPP institutional anchor and jurisdiction, needs and typologies of government support, eligibility criteria and awarding and accounting for guarantees.

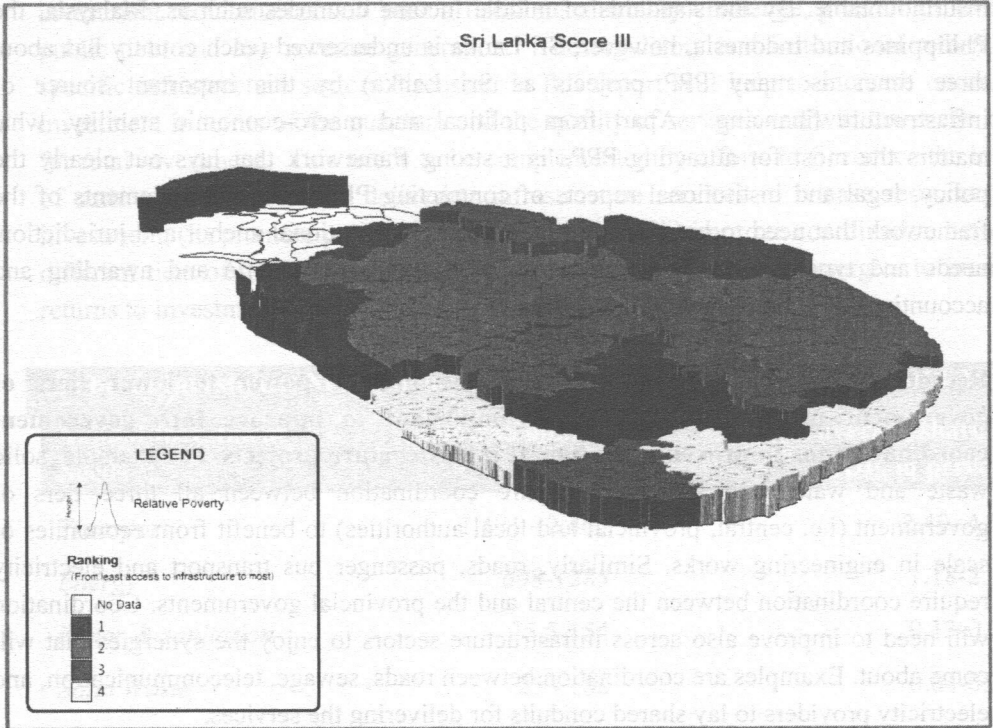
Recent constitutional amendment granting greater power to lower tiers of government makes it all the more important to improve intra-government coordination for improved execution of infrastructure projects. For example, solid waste and water and sanitation require coordination between all three tiers of government (i.e. central, provincial and local authorities) to benefit from economies of scale in engineering works. Similarly, roads, passenger bus transport and electricity require coordination between the central and the provincial governments. Coordination will need to improve also across infrastructure sectors to enjoy the synergies that will come about. Examples are coordination between roads, sewage, telecommunication, and electricity providers to lay shared conduits for delivering the services.

There is remarkable evidence that infrastructure service access in Sri Lanka for key infrastructures like power, and water and sanitation (W&S) is quite inclusive. District analysis (where data is available) indicates very low Gini coefficients for Power, and W&S services (0.059, 0.063, and 0.032 respectively).⁷ Access is widely spread, and quality of these services in the country is generally good. Moreover, if one discounts infrastructure services such as cooking gas and telephone landlines, the picture that emerges is a country where infrastructure services are generally not regressive in income.⁸ Map 1 effectively illustrates this phenomenon below. This "principle of inclusion" existing in the country's infrastructure services planning could guide the rehabilitation and possible expansion of infrastructure services provision in the post conflict areas. A "principle of connectivity" could be used to assist in fostering economic growth in the country.

⁷Authors' calculations.

⁸Gini coefficient for gas is 0.44 and for landlines is 0.13. The former reflects the wide use of firewood for cooking in the country, which may have severe health consequences in terms of indoor air pollution (not analyzed in this study but a possible topic for future work). The latter is less troublesome given the wide use of mobile phones as in other developing countries.

Map 1: Relative Poverty and Access to Selected Infrastructure Services in Sri Lanka



Source: Authors' calculations

Conclusion

In conclusion, this work argues that better infrastructure is essential for more competitive exports and more livable cities that together will help achieve Mahinda Chintana objective of sustained high economic growth. The required infrastructure investment will be substantial but can be contained to minimize the fiscal burden by reducing losses of state owned enterprises, increasing public private partnerships, improving coordination across tiers of government and taking advantage of potential synergies.

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- Another aspect common to "infrastructure" services is reform to state-owned units around the 1990s, most of these services (around the world) being provided mainly or exclusively by the public sector. This high level of public sector involvement has been linked variously to factors ranging from the monopoly nature of the service and the need to ensure equity in access and standards of quality, to more vague articulations of "national" or "public" interest. However, the performance of public sector infrastructure provision has by and large been somewhat below expectations. The lack of competition has marked a lack of innovation, efficiency and effectiveness in service delivery. Political interference has also hampered efficiency and effectiveness, being manifested in overstaffing, poor management and weak financial control.
- Meanwhile, public sector infrastructure providers have been facing increasing financial stringency, flowing from weak government finances, while at the same time the achievement of economic growth has been depending more and more increasingly on infrastructure. As a result, service provision has been unable to keep pace with demand. At the same time, large numbers of the poor, especially the rural poor, continue to be without basic infrastructure services. These several factors brought to the fore the imperative of rethinking the approaches taken to the financing, provision and management of the delivery of infrastructure services.