

Public Investment for Closing SDG Financing Gap in Sri Lanka

Lakmini Fernando, Research Economist, Institute of Policy Studies of Sri Lanka

lakmini09@gmail.com

100/20, Independence Avenue, Colombo 07, Sri Lanka

1. Introduction

The United Nations 2030 Agenda for Sustainable Development is a road map to more inclusive growth and development. Realizing the Sustainable Development Goals (SDGs) require increased development financing. There is a sizable gap in financing for low-income and lower-middle income countries which approximates to USD 500 billion per year (Sachs, et al. 2022). Public investment¹ can make a substantial contribution in overcoming this financial gap. Although, public investment is strongest in advanced and many emerging market economies (IMF 2020), its importance and crowding-in effects on private investment in avoiding secular stagnation and the savings glut in all economies should not be overlooked (Rabnawaz and Jafar 2015).

In this context, the purpose of this chapter is twofold. First, it outlines innovative financing modalities which are useful in meeting SDG financing gap. Second, the additional investment required for meaningful progress on the SDGs for Sri Lanka is estimated focusing on investment in human, social and physical capital which share a considerable allocation of national budget – especially, education, health, roads, electricity and water and sanitation. The assessment is carried out relative to a baseline of current spending to GDP in above five key sectors employing a modified version of the innovative costing methodology proposed by Gaspar (2019). It has been found that, to deliver the SDGs by 2030, Sri Lanka needs an additional investment of LKR 4 trillion and this counts to 9.3 percentage points of GDP. The results are consistent with the additional expenditure estimates of the EMEs.

Having a plan to finance the SDGs is the way-out for timely achievement. In addition, a robust mainstreaming strategy that aligns SDGs well into the national development agenda is a prerequisite for SDG achievement (Fernando 2022). The mainstreaming strategy should focus on strengthened macroeconomic management, combating corruption and improving governance, strengthening transparency and accountability and fostering enabling business environment. Raising more domestic revenue is an essential component of the SDG financing plan. It is estimated that the tax-to-GDP ratio to be increased at least by 5% of GDP in the next decade for developing countries (Gaspar, et al. 2019). Addressing spending inefficiencies is also critical – countries need to spend not only more, but better. It is found that countries could save about as much through efficiency efforts as through tax reforms. In addition to domestic resources, the scale of the additional spending needs in developing countries requires support from all stakeholders – including the private sector, donors, philanthropists and international financial institutions. Delivering on official development assistance targets can help in closing development gaps in many LIDCs. A national reform agenda that maps the SDGs to national circumstances should articulate the complementary role of the various development partners.

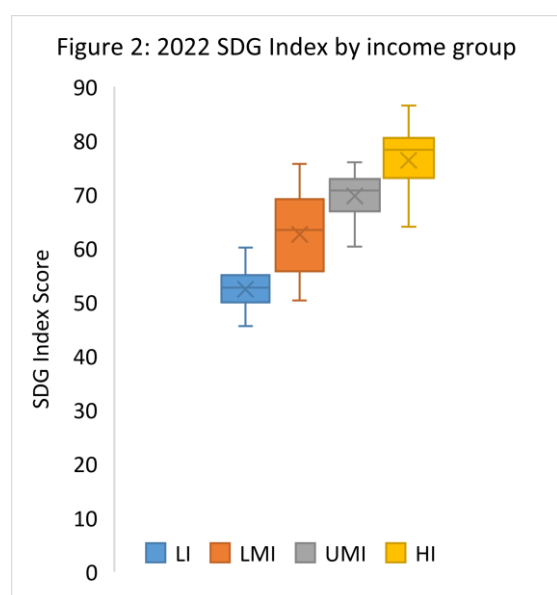
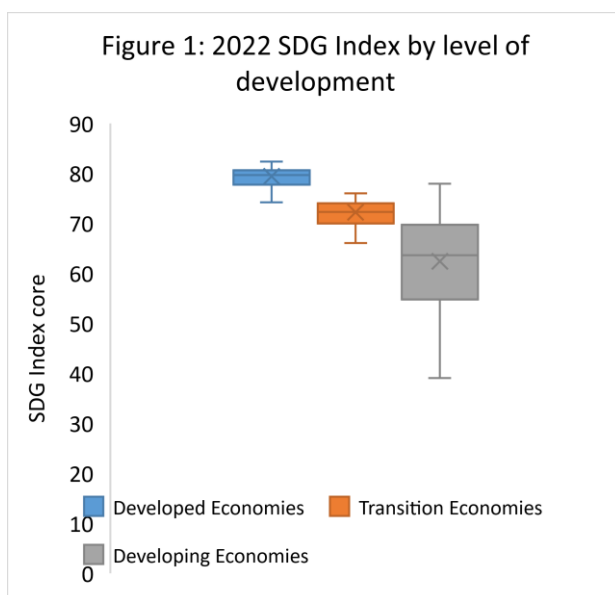
The remainder of the study is organised as follows. Section 2 details the SDG progress and financing modalities important in meeting the SDG financing gap. Section 3 describes the data and the estimation strategy. Section 4 contains the results and discussion. Finally, Section 5 presents the concluding remarks and policy implications.

¹ Public investment is the gross fixed capital formation of a country, which includes physical or tangible investments in infrastructure and human or intangible investment in education, skills and knowledge.

2. Marching toward the Agenda 2030 for Sustainable Development

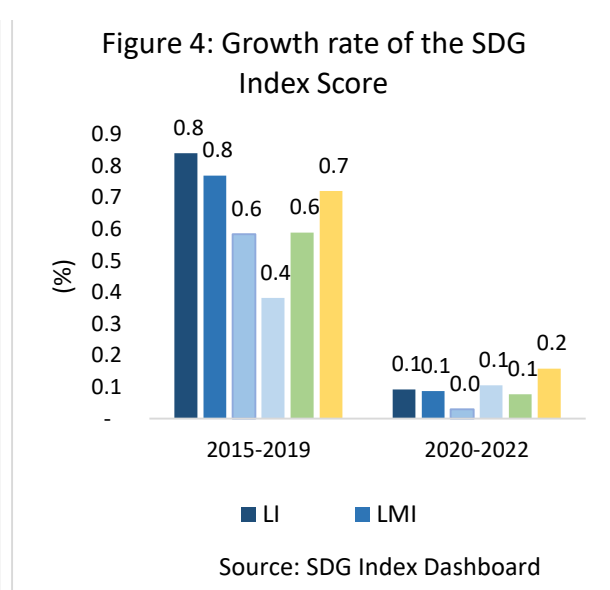
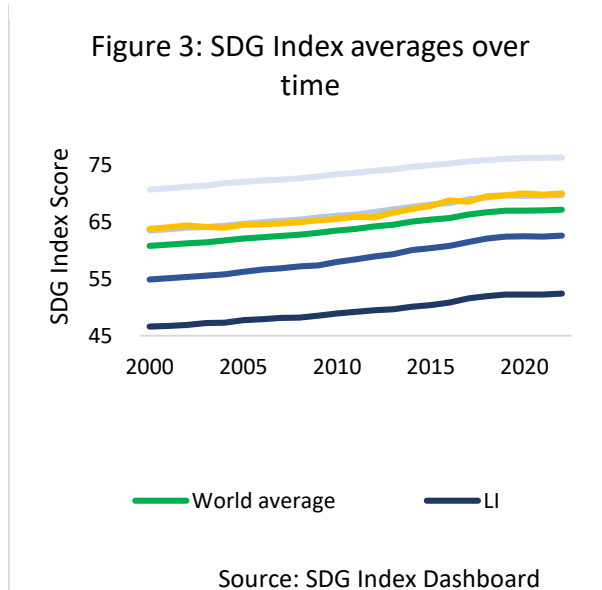
2.1 Sri Lanka's SDG Progress

On average, countries with higher percapita income have better SDG outcomes (Figure 1 & 2), the trend continues (Figure 3). The SDG scores vary the most within developing economies than any other country groups. After the COVID-19 outbreak, no country is making progress on the SDGs. All countries are yet to reach pre-pandemic level progress. Before the pandemic, World has an annual SDG progress rate of 0.6% during 2015-2019, while Sri Lanka has above world average of 0.7%. In the SDG index, Sri Lanka ranks 76 in 2022 and 87 in 2021. Progress rate of Sri Lanka is quite similar to that of Upper-Middle income category (Figure 4). Comparatively, developing countries show higher rate of growth progress than rich countries. Even amidst the worst economic crisis, Sri Lanka shows the highest post-pandemic SDG growth progress during 2020-2022. Considering the multiple and complex post-pandemic instabilities, this achievement however, creates much ambiguity on the sensitivity of SDG monitoring and reporting mechanisms in Sri Lanka on capturing the prevailing socio-economic and political underdevelopments in the country.



Notes: LI: Low-Income, LMI: Lower-Middle Income, UMI: Upper-Middle Income and HI: High Income

Source: Author's calculations using data from the United Nations 2022 SDG Index and Dashboard Reports



2.2 Public Investment in meeting the SDGs

Public investment is critical for development, particularly in sectors where limited private sector participation prevails due to high uncertainty and long-time taken in returns on investment. These sectors could be categorized into 9 SDGs: no poverty (SDG 1), zero hunger (SDG 2), good health and well-being (SDG 3), education (SDG 4), gender equality (SDG 5) and infrastructure development (SDG 6,7,9,11).

According to Wagner's Law, public investment and tax revenue increases with per capita income. Thus, the fiscal policy has a more influential role in advanced economies (IMF 2017). Government expenditure on education, health and infrastructure is highest in advanced economies (AEs) than low-income developing economies (LIDCs) and emerging market economies (EMEs) (Table 1). In Sri Lanka, the highest spending is for infrastructure and the lowest is for education. Sri Lanka's infrastructure spending is double the that amount of AEs and education spending is even less than LIDCs. Thus, the spending pattern and SDG progress of Sri Lanka is inconsistent and needs re-assessment, given the importance of public expenditures for inclusive growth (Haque 2003).

Table 1: Spending by Functional Classification and Income Group (% of GDP)

	2016			2016	2019
	LIDCs ^a (n=29)	EMEs ^a (n=58)	AES ^a (n=34)	Sri Lanka ^b	
Education, Health, Infrastructure	4.9	7.3	15.5	8.5	8.2
Education	2.3	3.2	5.2	2.0	1.9
Health	0.9	2.3	7.8	1.6	1.6
Transport	0.9	1.5	1.9	2.1	1.6
Fuel and Energy	0.4	0.2	0.3	0.4	0.5
Water and other amenities	0.4	0.1	0.3	2.5	2.6
Social Protection	1.6	6.7	13.0	5.1	0.0
Defence, Order and Safety	2.1	2.7	3.9	2.6	2.2
Other	9.3	12.7	8.1	3.4	9.1
Total	17.9	29.4	40.5	19.6	19.5

Notes: LIDCs = low-income developing countries; EMEs = emerging market economies; AEs = advanced economies. Sample size in parentheses. The figures reported correspond to the GDP-weighted average country. (n = number of countries)

Sources: ^a Fiscal Policy and Development: Human, Social and Physical Investment for the SDGs by Gasper (2019); ^b Author's calculation using IMF Government Finance Statistics.

Table 1 shows the government spending based on the functional classification. A similar sectoral analysis of the public investment based on the medium-term Public Investment Programme (PIP) is shown in Table 2. The PIP maps the medium-term economic development strategy within the national development framework to which Sri Lanka is firmly committed. On average public investment is around 5.4% of GDP during the last two decades. Table 1 and 2 suggests possible discrepancies between the development policies, planning and spending pattern. This could be due to two main reasons: 1) The annual budgetary allocations do not closely follow the vision shared in the PIP and 2) PIP contains only the capital expenditures. So that. the changes might be driven owing to the inclusion of current expenditures.

Table 2: Investments as per Public Investment Programme 2017-2020 and 2021-2024 (Average allocation as a % of total public investment)

	PIP 2017-2020	PIP 2021-2024
Education, Health, Infrastructure	58.8	74.6
Education	10.7	6.1
Health	6.2	8.4
Transport	5.1	6.0
Power and Energy	0.2	0.1
Other infrastructure	36.6	54.0
Social Protection	1.2	1.4
Defence, Order and Safety	9.7	7.5
Other	30.4	16.6
Total	100.0	100.0

Source: Author's own calculation based on PIP 2017-2020 and 2021-2024

2.3 Financing the SDGs

The agenda 2030 for sustainable development agenda is basically an investment agenda in physical and human capital development. However, the financing constraints have held back the SDG achievement in developing economies. All top 10 countries of the 2022 SDG index² are advanced economies. Yet, these are the countries with highest Spillover index which indicates how the rich countries generate negative socioeconomic and environmental spillovers. Presence of strong and supportive national policy framework and investment plan is vital for SDG achievement. In this context, the Sustainable Development Report 2022 suggests five priorities toward a global plan to finance SDGs: 1) G20 to channel larger financing flows to developing economies; 2) G20 to increase lending capacity and annual flows of the multilateral development banks; 3) G20 to support the other measures such as increased ODA, large-scale philanthropy and refinancing of debt falling; 4) IMF and credit rating agencies to redesign the assessments of debt sustainability and 5) developing countries to strengthen their debt management and creditworthiness by integrating borrowing policies with tax policies, export policies and liquidity management. The main motive for investment planning is to significantly increase fiscal space in developing countries (Sachs, et al. 2022). While, the global financing plan is in place, Sri Lanka should consider revamping its investment planning to match with it. Hence, formulating SDG-based public investment strategies and means of financing is the call for Sri Lanka, and the main focus in this study.

The Sustainable Development Solutions Network (SDSN) identified six investment priorities: 1. Education (SDG 4) and social protection (SDG 1); 2. Health systems (SDG 3); 3. Zero-carbon energy and circular economy to decarbonize and slash pollution (SDG 7, SDG 12 and SDG 13); 4. Sustainable food (SDG 2, SDG 13, SDG 15); 5. Sustainable urban infrastructure (SDG 11) and 6. Universal digital services (SDG 9). These ‘transformations’ require long-term public investment programme and the challenge for developing countries is to mobilizing sufficient finance for these priorities. The financing gap of developing economies has been widely studied (Benedek 2021). Low-income countries (LICs) and lower-middle income countries (LMICs) with an annual gap of US\$ 500 billion and upper-middle income countries (UMICs) with US\$ 1 trillion gap. The financing gap for LICs and LMICs is larger and accounts for 10-20% of gross domestic product (GDP), however, relative to gross world product (GWP) of US\$ 100 trillion, the financing gap is modest and around 1-2% of GWP. It is suggested the developing countries to enter into “SDG Investment Compact” with the Bretton Woods Institutions for increased SDG financing in line with long-term debt sustainability. Further, there are new practical pathways suggested for increased financing for SDGs which Sri Lanka could successfully adopt. This includes Increased domestic tax revenues; Increased borrowing from multilateral development banks; Sovereign borrowing on capital markets; Increased Official Development Assistance; Increased philanthropic giving; and Debt restructuring for heavily indebted countries.

3. Assessment of Investment for SDGs: An Analytical Approach

The assessment of SDG spending requirement considers the importance of public investment in recovery strategy (IMF 2020). The fiscal responses are country-specific and depends on the fiscal space. In this context, public investment encourages private investment that might otherwise postpone their investment plans during a crisis. The deteriorating debt dynamics of Sri Lanka likely to constrain the investments. Substantial market borrowing increases risk premium for both private and public sectors undermining the short-term growth prospects derived from public investment (Huidrom, et al. 2019). Financing constraints and competing spending priorities have put on hold most of the domestically-financed projects in developing economies. A gradual increase in public investment financed by borrowing could create

² The SDG Index is an assessment of each country’s overall performance on the 17 SDGs, giving equal weight to each Goal. The score signifies a country’s position between the worst possible outcome (score of 0) and the target (score of 100).

positive short- and long-term multipliers, if there is no fluctuations in the interest rates (Buffie 2012).

3.1 Methodology

The study estimates the annual cost of achieving high performance across five SDG areas (education, health, roads, electricity, water and sanitation), by using a modified version of the input-outcome approach proposed by Gaspar (2019). In this assessment, development outcomes are assumed to be a function of mix of inputs (Table 2). Then, by using a set of key input variables as the reference, the unit cost to reach high development outcomes is estimated. The high performing countries are selected considering the SDG Index scores in the Asian region. The government expenditure requirement in 2030 is therefore calculated based on these reference input levels and controlling for factors such as demographics and the level of GDP per capita projected in 2030. Table A in the Appendix summarizes the main data sources. The expenditure in one SDG sector in 2021 is $s(b, x^{2021})$. This is a function of input cost drivers, b , (such as teacher-student ratio, teacher salaries) and other factors x (such as school age population, GDP percapita). Cost drivers for 2021 are derived by averaging over the period 2012-2021. Expenditure requirement for 2030 is estimated for given b^* considering the mean value of selected high performing six Asian economies (Japan, Republic of Korea, Singapore, China, Malaysia and Thailand) and country-specific projections for 2030 for Sri Lanka. Accordingly, 2030 government expenditure assessments are derived as follows:

$$\text{Additional government expenditure requirement as a \% of GDP} = \frac{s(b, x^{2030})}{GDP^{2030}} - \frac{s(b, x^{2021})}{GDP^{2021}}$$

Additional government expenditure requirement in Rs. million

$$= GDP^{2030} * \frac{s(b, x^{2030})}{GDP^{2030}} - \frac{s(b, x^{2021})}{GDP^{2021}} - \frac{GDP \text{ deflator}^{2021}}{GDP \text{ deflator}^{2030}}$$

Table 2: Input-Outcome Approach in Five Sectors

	Education	Health	Roads	Electricity	Water and Sanitation
Outcome indicator	SDG 4	SDG3	SDG 9.1.1	SDG 7.1.1	SDG 6.1 and 6.2
Inputs	Number of teachers Other current and capital spending Public investment	Number of health care workers (doctors/others)	Kilometre of all-weather road	On/off grid mix 2	Households with safely managed water and sanitation
Unit cost	Teacher wage	Health care workers wage	Unit costs of all-weather road kilometre	Unit cost of access to a certain consumption level	Unit cost of access
Other factors	Demographics Enrolment rates GDP percapita	Demographics GDP percapita	Topography GDP percapita Population density	Demographics GDP percapita	Demographics GDP percapita

Source: Adopted from the Gaspar, 2019.

Education sector total government expenditure requirement expressed as follows:

$$\text{Education sector expenditure} = (WAGE \times TSR \times ER \times SAP)/(1 - y - z)$$

The costing parameters are number of teachers, which is the product of the teacher-to-student ratio (TSR), enrolment rates (ER) and school-age population (SAP); teacher salaries ($WAGE$); share of non-wage and salaries in education current expenditure to GDP (y) and share of education capital expenditure to GDP (z). The mean values of $WAGE$, TSR , y and z of high performing six countries is used as the reference for estimations in 2030. The GDP and demographic projections are author's own calculations considering the growth projections of World Bank, Asian Development Bank and International Monetary Fund.

Health sector total government expenditure requirement expressed as follows:

$$\text{Health sector expenditure} = (DPR \times POP \times (1 + \alpha/\rho) \times DWAGE)/(1 - x - h)$$

The costing parameters are doctor salaries (*DWAGE*); number of doctors and other medical personnel (derived using doctor density (*DPR*), total population (*POP*) and ratio of doctors to all other health staff (ρ); the ratio of all non-doctor wages to doctor wages (α) and share of non-wage and salaries in health current expenditure to GDP (x) and share of health capital expenditure to GDP (h). A similar approach of education sector is followed in setting the reference values.

Road sector additional government expenditure requirement is estimated using the following model:

$$\begin{aligned} \text{Road sector expenditure} \\ = \alpha + \beta_1 \text{GDPPC} + \beta_2 \text{POPD} + \beta_3 \text{AGS} + \beta_4 \text{MANU} + \beta_5 \text{URB} + \beta_6 \text{RAI} + \varepsilon \end{aligned}$$

The outcome variable is the road density and the explanatory variables are GDP per capita (*GDPPC*), population density (*POPD*), agriculture (*AGS*) and manufacturing sector (*MANU*) shares in the economy, urbanization rate (*URB*) and Rural Access Index (*RAI*). Using the results, the additional kilometres of roads required to ensure road access for all (assuming raise in RAI to at least 75%) is estimated. The requirement for 2030 is estimated considering the demographic and GDP projections.

Electricity: The additional electricity network needed to provide electricity access to 100 percent of the projected population by 2030, while considering an increase in per capita consumption in line with real GDP per capita. Then, the total cost of the additional electricity network is estimated by multiplying it by the unit cost per kilowatt, which is set at US\$ 2,250, following World Bank (2013).

Water and Sanitation: The estimates of the cost to provide basic and improved access to water and sanitation are derived using the WASH Bank methodology (Hutton 2016). The model has unit costs calibrated at the country level.

4. Results and Discussion

Table 3 shows the estimations of additional government expenditure requirement in 2030 for Sri Lanka. All the estimates for additional expenditure needs are reported as of 2030, in both percentage points of GDP and in LKR (Billion). Our estimates are similar to that of the EMEs. The cross-country estimation by Gasper (2019) indicates that Asia and Pacific region has the largest additional financing requirement (1.5% of world GDP) followed by Sub-Saharan Africa (0.4% of world GDP). For improvements in education sector needs the highest additional investment. For improvements in the physical infrastructure the highest requirement is seen in power and energy sector and the least in water and sanitation sector.

Table 3: Additional government expenditure requirement in 2030

Sector	Additional government expenditure requirement		
	EMEs (Percentage points of GDP)	Sri Lanka	
		Percentage points of GDP	LKR (Billion)
Education	2.0	2.4	1,016
Health	2.0	2.1	900
Roads	2.1	1.5	643
Power and Energy	2.1	2.1	900
Water and Sanitation	2.1	1.2	514
Total	2.1	9.3	3,973

For Sri Lanka, education has the largest additional financing requirement of 2.4% of GDP followed by health and power and energy, each with 2.1% of GDP. Furthermore, Sri Lanka's high human development index which resembles that of advanced economies, suggests that future education investments to consider more on qualitative improvements rather than the quantitative. For instance, Table 4 suggests that unlike the three other advanced economies in the Asian region, Sri Lanka's high number of years of schooling has not been clearly translated into economic gains. Further, Republic of Korea shows a remarkable development

progress today, which shares similar schooling years and GDP percapita during the period 1961-1970.

Table 4: Schooling and Economic Development

Period	Japan		Republic of Korea		Singapore		Sri Lanka	
	Schooling (Mean years)	GDP percapita (USD)	Schooling (Mean years)	GDP percapita (USD)	Schooling (Mean years)	GDP percapita (USD)	Schooling (Mean years)	GDP percapita (USD)
1961-1970	7	1,153	4	182	3	503	4	160
1971-1980	8	5,398	6	871	4	2,648	6	242
1981-1990	9	15,471	8	3,603	5	7,805	7	367
1991-2000	10	36,313	10	10,461	7	21,548	9	713
2001-2010	11	37,665	11	18,471	10	32,453	11	1,499
2011-2017	12	41,505	12	28,090	11	56,805	11	3,684

Source: World Development Indicators, World Bank

Public investment is essential to raise long-term economic growth, to progress toward SDGs (IMF 2020). Public investment in infrastructure development reduces inequality by fostering structural transformation eventually converging rural and urban areas in low income economies (Fabrizio, et al. 2017). Further, public investment helps to preserve fiscal space yet, toward this end it is important that the policy makers to implement investments with highest social pay-offs. Investment needs are continuously growing, but public investment is declining since 2010, reducing the capital-stock-to-GDP and public-to-private-capital ratios. Public investment is falling in education, agriculture, technology & ICT, industry, and environment weakening society's qualitative improvements, while only physical capital investment show a remarkable increase. Unlike many other emerging economies, Sri Lanka allocates considerably high (more than two thirds of total investment) into physical capital improvement. Yet, its efficient conversion into output is worth studying considering the global benchmarks/standards for input/output conversions. The total number of miles of roads increased by a cumulative of 56% in low-income countries and 33% in emerging market economies. Digital infrastructure shows a considerable decline over the reference period. The sector needs to attract investments more from private sector. Sri Lanka's population with internet access has increased significantly from 10% in 2004 to 34% in 2020. However, the improvement is comparable to low-income countries with 32% internet access while emerging market economies and advanced economies show 72% and 86% access in 2018, respectively. Sri Lanka, regional differences in computer literacy and internet access is a concern which needs to be addressed with high priority as this has a direct impact on online learning and business activities. Economic convergence across countries and inclusive growth within countries can adversely affect due to the digital gap. For the effective implementation of the social-distancing rules, it is necessary the countries are supported with digital financing gap (Chiou and Tucker 2020).

The investment for climate change mitigation and adaptation is a concern. Globally, the emission reduction to a level consistent with a target of a 2°C. Though, Sri Lanka does not have a binding commitment, renewable energy investments, long-term disaster management protocols need to be strengthened through public and private investments. According to IMF, the required level of increase in investment is 2 to 2.3% (Huidrom, et al. 2019). However, the shift to low-carbon technologies is indeed a challenge for low-income economies compared to emerging market and advanced economies. Public investment can boost growth and employment generation. Literature suggests public investment has larger short-term fiscal multipliers than public consumption (Geichert and Rannenber 2018). Macroeconomic conditions and investment quality affects the size of the multiplier. Multipliers are larger when countries are less open to trade as less imports reduces leakages of benefits to other countries. Larger multipliers are observed during recessions and in countries with fixed exchange regimes (Chodorow-Reich 2019).

5. Conclusions and Policy Implications

The additional government expenditure requirement to ensure the achievement of 9 SDGs in five key sectors— education, health, roads, power and energy and water and sanitation – by 2030 for Sri Lanka is estimated as LKR 4 Trillion and this counts to 9.3 percentage points of GDP. The results are consistent with the additional expenditure needs of the EMEs. However, the results should be viewed with caution as additional costs that might occur due to interlinkages between SDGs has not considered during the estimations. Further, as the estimations cover only 9 SDGs it is suggested to extend the estimations to cover all the SDGs and their interactions in future research. Increasing public investment is challenging, however benefits significantly during recovery. Timely and effective push to investment, continue maintenance investment, review and prioritize active projects, establishment of pipeline of projects, planning for new development priorities and maintain quality when scaling up investment are the best practices to resurge quickly from crisis and march toward Agenda 2030 for sustainable development (Gaspar, et al. 2019). Countries need to invest on development projects considering their readiness and quality. Developing countries mostly have a few number of projects of this nature (Jones and Rothschild 2011). Four steps to follow are, consider maintenance of existing infrastructure, review and reprioritize existing projects, create and maintain a pipeline of projects to deliver within few years and start planning for new development priorities stemming from the crisis. This facilitates identification of quality investments that can be started immediately and prepare economies for the future. Continuing maintenance investment during a crisis is vital. Maintenance projects are small, short duration and less complex. Maintenance of existing projects is advisable than implementing new physical infrastructure development projects. Smaller, short-duration and quality products are the need for quick recovery, not only in health sector but for any other sector that delivers quick and productive outputs. This includes education, transportation, and digital technologies. Maintenance contributes to preserving investments through alleviating the wear of assets, sustains service delivery quality, prevent hazards and limit waste (Wang, et al. 2020). Poor maintenance increases rehabilitation and replacement costs by 50 to 60% in transportation and water and sanitation sectors (Rozenberg and Fay 2020). However, the maintenance budgets are always under-funded. To attract more investments. In low-capacity settings like Sri Lanka should consider on building sectoral expertise in line ministries and local governments. Further, employing an integrated approach in preparing capital and recurrent expenditures in a medium-term perspective avoids mismatches infrastructure assets development and maintenance.

Crisis is good to introduce development transformations. Review of existing portfolios and re-prioritization of projects form implementation is advisable to ensure quick recovery and to ensure uninterrupted investment inflows. Well-coordinated system of planning, budgeting and monitoring are the key for making investments more productive. Preparation of project pipeline should consider project readiness as a key. Otherwise, the administrative red tapes could unnecessarily delay the projects incurring huge escalations in project costs and duration. Hence, the significance of having a project pipeline should not be underestimated. For better results, the project appraisal and selection (priority) processes should be supported (Chaponda, Matsumoto and Murara 2020). Sri Lanka does not effectively maintain a project pipeline. An independent review of projects, communicated transparently reduces the likelihood of investing in unsustainable projects (Gaspar, et al. 2019). There should be a transparent mechanism in place and the selection criteria of any project for investment should be disclosed to the general public (in spite of size of the project). For smaller projects where systematic appraisal cannot be followed, it advisable the investment decisions to be obtained via an independent Task Force consists with experts can be established to review the process. However, this Task Force should be given the due recognition as most of the time, the corrupt bureaucracies hardly support any changes that threat their existence. Amidst all these, it is of utmost important for the country to plan on new development priorities. The post-pandemic era is different the world that we lived. In the new-normal situation the environment has changed a lot toward different social norms, work culture, food habits, education and

healthcare service deliveries. Hence, it is vital for the country to have a gasp ion these new developments to better prepare the nation for future challenges.

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