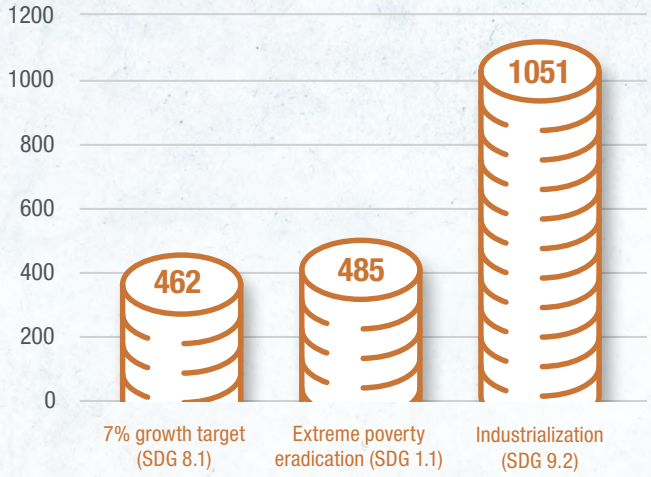
CHAPTER

4

Estimating the cost of achieving Sustainable Development Goals in the LDCs during the post-pandemic decade

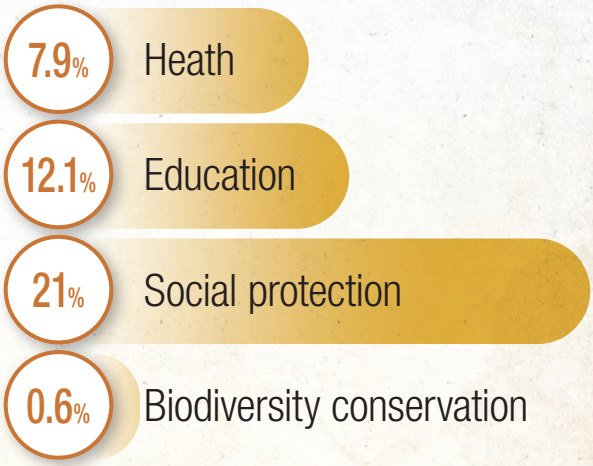
Annual investment requirement for LDCs in billion $



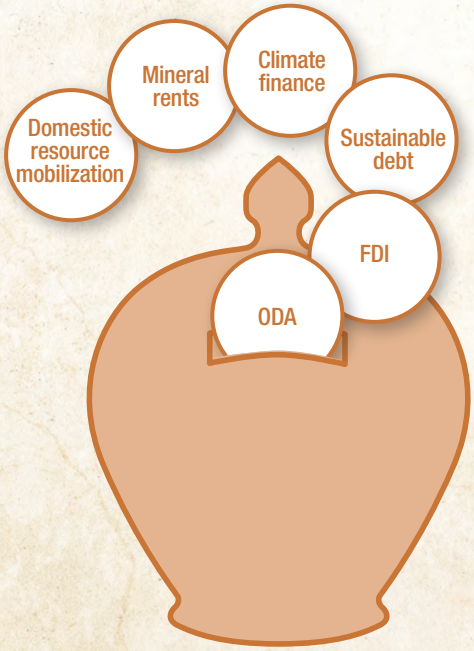
The annual average **investment requirements** for LDCs to reach the SDGs are **daunting, especially for** targets related to **structural transformation**

The goal of **universalizing major social and ecosystem** services in LDCs **entails huge financing gaps**

Average financing gaps in LDCs



% of GDP



Expanding the sources of financing available to LDCs **is** as **critical** as ever in the wake of COVID-19

CHAPTER 4

Estimating the cost of achieving Sustainable Development Goals in the LDCs during the post-pandemic decade

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A. Introduction

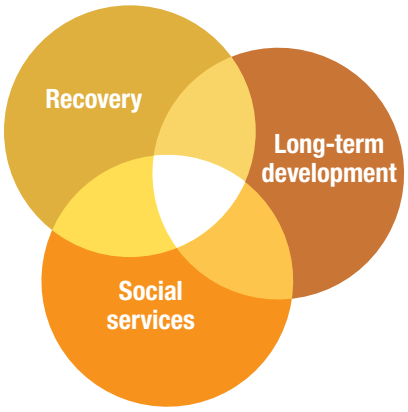
1. Rationale

The least developed countries find themselves at a crossroad. As the category completes its 50 years of existence, these countries – which are inherently characterized by heightened structural vulnerabilities – remain battered by the lingering effects of the COVID-19 crisis. At the same time, they need to project themselves into the future, recover from the current slump, but also trace their future development path in the new decade. The importance of the latter task is two-fold: (i) 2022–2031 will be the period of implementation of the new programme of action (PoA) to be decided by the Fifth United Nations Conference on the Least Developed Countries (LDC5); (ii) the years up to 2030 fall within a Decade of Action to deliver the Sustainable Development Goals (SDGs) called for by world leaders at a summit held in September 2019.[1]

When planning for the future, the 2030 Agenda for Sustainable Development provides the overarching medium- and long-term Goals and targets for both international and domestic policymakers. LDCs need to set their future development trajectory on a more solid and sustainable footing and adopt measures to address the long-standing structural impediments and shortcomings of the development strategies and policies LDCs have followed. To this end, LDCs and the international community need to take into account the lessons learned both over the past half century, and since the outbreak of the COVID-19 pandemic.

Faced by the magnitude of issues to resolve, LDC policymakers and broader stakeholders are increasingly preoccupied by the challenge of financing the effort required to reach the Sustainable Development Goals. At this stage, however, it is crucial to have an estimate of these financing requirements, in order to devise strategies and policies to mobilize the necessary resources, either from domestic or international sources. Costing the key targets of the Sustainable Development Goals is even more urgent in the present context, as multiple policy priorities, be they short, medium- or long-term priorities, imply greater trade-offs in the allocation of scarce resources. On this basis, it is also vital to creatively forge financing options to construct a more promising developmental horizon for the LDCs up to 2030.

The forecast of financial costs for time-bound and target-based development goals is at the core of the methodology underpinning the Sustainable Development Goals. This feature has the advantage of tying policymakers, donors and stakeholders to well-determined objectives, guiding both resource mobilization and operation strategy (Sachs, 2015). One advantage of the goal-based method is "backcasting". As the Goals set are time-bound, one can start from the assigned targets and work out backward an operational plan to achieve them. This planning approach lends itself to being costed, which enable us to assess various modes of financing and related financing gaps.



LDCs face **multiple policy priorities** with attendant **trade-offs** in the allocation of scarce resources

This chapter contributes to the debate by undertaking a novel LDC-specific costing exercise of the most critical Sustainable Development Goals targets, which LDCs need to reach to achieve structural transformation and attain sustainable development. The development of productive capacities is seen as the means to reach those Goals and targets, and should be used as the framework guiding the formulation and execution of the programme of action (PoA) for the LDCs in the decade 2022–2031.

The costing exercise presented in this chapter aims to make a vital contribution to the international community's efforts to construct a more promising developmental horizon for the LDCs during the post-pandemic decade.

Other costing exercises related to the Sustainable Development Goals have already been carried out, and are outlined in the next section. Revisiting them is more urgent in the present context, for two main reasons: First, it is critical to revise the costing in light of the protracted impact of the COVID-19 crisis. Second, and perhaps more importantly, it is

[1] https://www.un.org/development/desa/dspd/2020/09/decade-of-action/ and https://www.un.org/sustainabledevelopment/decade-of-action/

Costing is critical for prioritizing and allocating resources to key Sustainable Development Goal targets

fundamental to revisit the costing from the perspective of the structural transformation and industrialization of LDCs, which has not been the central concern of previous costing estimations.

The present chapter complements and goes beyond previous efforts by:

(i) focusing exclusively on LDCs, while the other estimates have been made for other country groups;

(ii) highlighting the financing needs related to structural transformation, whereas previous exercises have tended to concentrate mainly on social development and infrastructure;

(iii) building alternative scenarios, rather than arriving at a single headline figure. These scenarios are useful for domestic and international policymakers in view of the priorities they decide to focus on, as well to mobilize the resources needed to achieve different scenarios;

(iv) combining a different and innovative methodology with some elements of previous costing work.

For the sake of clarity, the previous exercises are surveyed hereafter, and a comparative table between these efforts and the contribution of this report is presented in the annex (Annex Table 4.1).

Costing the Sustainable Development Goals is, in practice, a challenging endeavour due to: (i) intrinsic methodological limitations; and (ii) sizeable data gaps, which are especially wide in the case of LDCs. Costing exercises can be misleading for a variety of methodological reasons, including the sensitivity of findings to underlying assumptions, and attendant failures to discount costs or consider operational and maintenance costs in a consistent manner. Moreover, the multifaceted, and yet interrelated, nature of the Sustainable Development Goals raises the probability of double counting, and overlooking the dynamic interactions and synergies in the pursuit of different Goals and targets.

Moreover, the complexity of the Sustainable Development Goals is much greater than the Millennium Development Goals. Some goals are complex to measure (e.g. SDG 8.5 – decent work for all, or SDG 10 – reduced inequalities within and among countries). By contrast, other Sustainable Development Goals are more easily targetable and typically require public funds, e.g.: (i) universal health coverage (SDG 3.8); (ii) universal access to pre-primary school and secondary education (SDG 4.1); (iii) universal access to water and sanitation (SDG 6); and (iv) universal access to affordable, reliable, sustainable and modern energy services (SDG 7).

While inevitably imprecise and despite these provisos and shortcomings, costing exercises are useful exercises as they can boost the level of ambition of both national and international policymakers; at the same time, costing exercises help in collaborative effort to mobilize the necessary resources to implement promising strategies and projects to achieve internationally agreed development goals in the LDCs.

2. Previous costing exercises

The development agenda prior to the onset of the COVID-19 crisis inspired earlier costing exercises by various institutions and authors. Since the launch of the Sustainable Development Goals, a few exercises have been published estimating the financial needs to reach some of the Sustainable Development Goals in middle- and low-income countries[2] (Gaspar et al., 2019; J. Sachs et al., 2018) and worldwide (McArthur and Kharas, 2019; UNCTAD, 2014b). Other studies have focused on ending extreme poverty by 2030 (Manuel et al., 2020), or in reaching selected Goals and targets in specific sectors, such as infrastructure (Rozenberg and Fay, 2019); health (Stenberg K, Hanssen O, Edejer TT-T, Bertram M, Brindley C, Meshreky A, Rosen James E, et al., 2017); food security (FAO et al., 2015); or social protection (Elizondo-Barboza, 2020). However, none of these studies has focused exclusively on LDCs.

UNCTAD's *World Investment Report 2014* (UNCTAD, 2014b) carried out the first global costing exercise of the Sustainable Development Goals, prior to their official launch in 2015. It found that total investment needs ranged between $3,340–$4,520 billion, while the investment gap – the difference between the investment needs to reach Goals and targets and the current level of expenditures – reached 55–68 per cent of the total.

An initial estimation based on key economic sectors conducted by Schmidt-Traub (2015) shows that low- and lower-middle-income countries would need to spend $1.4 trillion per year to achieve the Sustainable

[2] Low, lower-middle, upper-middle, and high-income countries are World Bank country classifications based on GNI per capita in current US dollars (using the Atlas method). Unless otherwise specified, the analysis in this chapter follows the UN country classification.

Development Goals, corresponding to 4 per cent of the GDP of these countries. Schmidt-Traub and Sachs (2015) present a more extensive projection of incremental investment needs for the Sustainable Development Goals in developing countries that amounted to $1.6–$2.8 trillion, with public funds accounting for about 47 per cent of the total.

In a more detailed analysis, Sachs et al. (2018) estimate the costs of the 59 low- and lower-middle-income countries to achieve selected Goals and targets relating to, among others, agriculture, biodiversity, education, health, and water and sanitation. The authors take the unit costs from the existing literature and multiply them by the population projections, assuming that the targets are met by 2030. They also add operational expenditures in public administration, courts, policing and defense as essential services to reach the Sustainable Development Goals. According to their estimation, low- and lower-middle-income countries will, on average, need $1,011 billion per year[3] from 2019 to 2030 to achieve the Sustainable Development Goals. The bulk of these investments – 86.4 per cent – are related to public services in health, education, infrastructure, biodiversity, agriculture, social protection, justice, humanitarian and data sectors, and 13.5 per cent to operational public expenditures. Health and education account for 48 per cent of the expenditures, and 21 per cent for infrastructure.

The projected financing gap is about $400 billion from 2019 to 2030. The calculated amount is 0.4 per cent of the annual global GDP, and about 0.7 per cent of the yearly GDP of advanced economies. Breaking down estimated value by country-groups, on average, this represents 24 per cent of the annual GDP of low-income countries, and 12 per cent of that of lower-middle-income countries. However, the authors make it clear that a high priority with respect to the financing of the Sustainable Development Goals is to prepare a more precise, detailed, and country-led[4] costing and evaluate the revenue-raising potential of countries.

McArthur and Kharas (2019) developed a more granular analysis of the public financing needs of developing and developed countries with respect to the Sustainable Development Goals. Based on sector expenditures, they proposed a bottom-up estimate of present public spending, and then projected the potential financial gap to reach the Sustainable

The investment gap to reach Sustainable Development Goal targets is widest among LDCs

Development Goals by 2030. The authors find that adding up the spending in each country on the Sustainable Development Goals would amount in 2015 to $21.3 trillion, rising to $32.3 trillion annually in 2030. Thus, the projected annual gap is $12 trillion.

A group of International Monetary Fund (IMF) economists used an input-outcome approach to calculate the additional annual spending required by countries to afford investments to reach Goals and targets in education, health, roads, electricity, and water and sanitation (Gaspar et al., 2019). The authors conclude that delivering on the 2030 Agenda for Sustainable Development will require increasing spending until 2030 by $0.5 trillion for low-income countries, wherein the average additional expenditure represents 15 per cent of GDP.

Tiedemann et al. (2021), also from the IMF, prepared a cost estimate for 25 small developing states[5] with climate vulnerabilities to meet the Sustainable Development Goals. The innovations of this paper were: (i) to bring country-specific unit costs for the climate-resilient investments in physical infrastructures, such as roads, energy, and water and sanitation; and (ii) to construct a multidimensional database through text mining to circumvent the limitation of data availability. The authors found that spending on physical infrastructure needs to increase by 3.7 per cent of 2030 GDP per year to reach the Sustainable Development Goals by 2030. In addition, health and education expenditure must expand from 3 per cent of GDP in 2019 to 8 per cent of GDP in 2030. Lower-middle-income countries, including six LDCs, have the highest cost estimates, amounting to 8.6 per cent of 2030 GDP.

Taking a different but complementary approach, Manuel et al. (2020) estimate the financial needs to end extreme poverty by 2030 by costing education, health, nutrition, and social protection transfers. The total cost for low and middle-income countries

[3] Values in 2019 constant prices.

[4] This can be achieved by conducting SDG Fiscal Needs Assessment, based on the guiding framework of the United Nations Integrated National Financing Framework.

[5] The LDCs covered in the paper are: Bhutan, Comoros, Djibouti, Kiribati, Sao Tome and Principe. Solomon Islands, Timor-Leste and Tuvalu. In addition, non-LDC countries covered are: Antigua and Barbuda, Bahamas, Belize, Cabo Verde, Dominica, Fiji, Grenada, Guyana, Kiribati, Maldives, Mauritius, Micronesia, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and Grenadine, Samoa, Seychelles, and Vanuatu.

Public investment is critical in boosting private investment in the COVID-19 context

is $2.4 trillion, wherein low-income countries represent a total of $137 billion and $188 per person per year.

The *World Investment Report 2021* (UNCTAD, 2021c) also argues in favour of a push for sustainable investments in the post-COVID 19 pandemic recovery period. The report indicates that while developed countries have spent $13.8 trillion on stimulus programmes in the context of the COVID-19 pandemic, developing countries have spent just $1.9 trillion. About 10 per cent of these total amounts consist of new investments – mainly in infrastructure – in which public investment has leveraged private investments through equity participation, expansion of guarantees, financing or tax incentives, and regulatory improvement. Leveraging additional private sector finance is critical to boosting investments. The report estimates that $1 of public investments in infrastructure projects can mobilize $10 of capital investments through public-private financing solutions. However, the report argues that these multipliers are lower in developing countries. Following this logic, a $2–$3.5 trillion investment push from the public sector could result in $10 trillion in investments throughout this decade. The report highlights that LDCs are not well captured in the scenarios above. Concerns about mobilizing sustainable development finance are especially important in the context of reduced levels of investment in productive capacities in LDCs. From 2019 to 2020, for instance, the report shows that greenfield investment announcements fell by 44 per cent, negatively affecting investments that potentially contribute to structural change.

Despite the importance of these projections in guiding policymakers, these studies are not easily comparable because they use different methodologies, target countries, economic sectors, discounting methods and baselines. More fundamentally, Vorisek and Yu (2020) warn that cross-country costing exercises of the Sustainable Development Goals can be misleading, due to: (i) double counting; (ii) sensitivity to underlying assumptions; (iii) downplaying of policy and institutional dimensions; (iv) differences between short and long-term dynamics; and (v) difficulty in discounting costs.

Country-specific estimations, relying on official and detailed sources of information, is the most efficient way to obtain more credible costing. The Inter-agency Task Force on Financing for Development, for instance, encourages countries to develop their own Integrated National Financing Frameworks, with support from the United Nations Joint Sustainable Development Goals Fund. To date, 28 LDCs have engaged in this initiative.[6] One potential outcome of this initiative are country-based estimations of financing gaps. Bangladesh, for instance, published the "*SDGs Needs Assessment and Financing Strategy: Bangladesh Perspective*" (Bangladesh Planning Commission, 2017). Using a variety of methods[7] to estimate the financing gap, the government projected the annual average cost of achieving the Sustainable Development Goals of $66.3 billion at 2015 constant prices.

Acknowledging the potential challenges of cross-country projections, and taking stock of the surveyed literature, the following sections present the methods used to estimate the financing needs of LDCs to achieve the Sustainable Development Goals.

B. Methodology and data

This section presents the first detailed and differentiated Sustainable Development Goals costing exercise conducted exclusively for the LDCs, which focuses on a selection of critical Goals and targets for structural transformation. This is a deliberate choice, as past editions of *The Least Developed Countries Report* have argued that the only sustainable and realistic route through which LDCs can achieve sustainable development is by developing and upgrading their productive capacities, thereby embarking on the process of structurally transforming their economies (Box 4.1).

Structural transformation generates employment opportunities of increasing quality, and is associated with rising labour productivity and income. This is the key to the eradication of extreme poverty (SDG 1.1). While income transfers are an important part of social policies, especially in low-income countries, they are unlikely to be the decisive instrument to redress poverty in a sustainable, long-term manner. Given the incidence and depth of poverty in LDCs, coupled with their modest capacity to mobilize public revenues, financial,

[6] For details, see the Integrated National Financing Framework Knowledge Platform jointly developed by the United Nations and the European Union: https://inff.org/

[7] For instance, multiplicative factor analysis based on unit costs, incremental capital-output ratio to estimate investment needs, analysis of the currently funded budget and discount of overlaps among the different Sustainable Development Goals.

administrative, and logistical challenges would be formidable. In the absence of structural transformation, such transfers would need to be continued indefinitely, and on a very large scale, to prevent a return of extreme poverty (UNCTAD, 2014a). Poverty reduction in a context of low level of development of productive capacities is extremely vulnerable to economic downturns and shocks. This has been dramatically highlighted by the sharp rise in extreme poverty in 2020 brought about by the COVID-19 crisis, which has forced an estimated 35 million additional people to live in extreme poverty in LDCs.

The sustainability of poverty eradication hinges on raising primary incomes (from employment and self-employment) and productivity levels to reduce the need for social transfers to a feasible level. This implies increasing employment, wages and incomes resulting from structural transformation. Moreover, the magnitude of potential transfers is itself contingent, at least partly, on the capacity of each country to mobilize public revenues, which in turn stems from the level of output, as well as institutional characteristics.

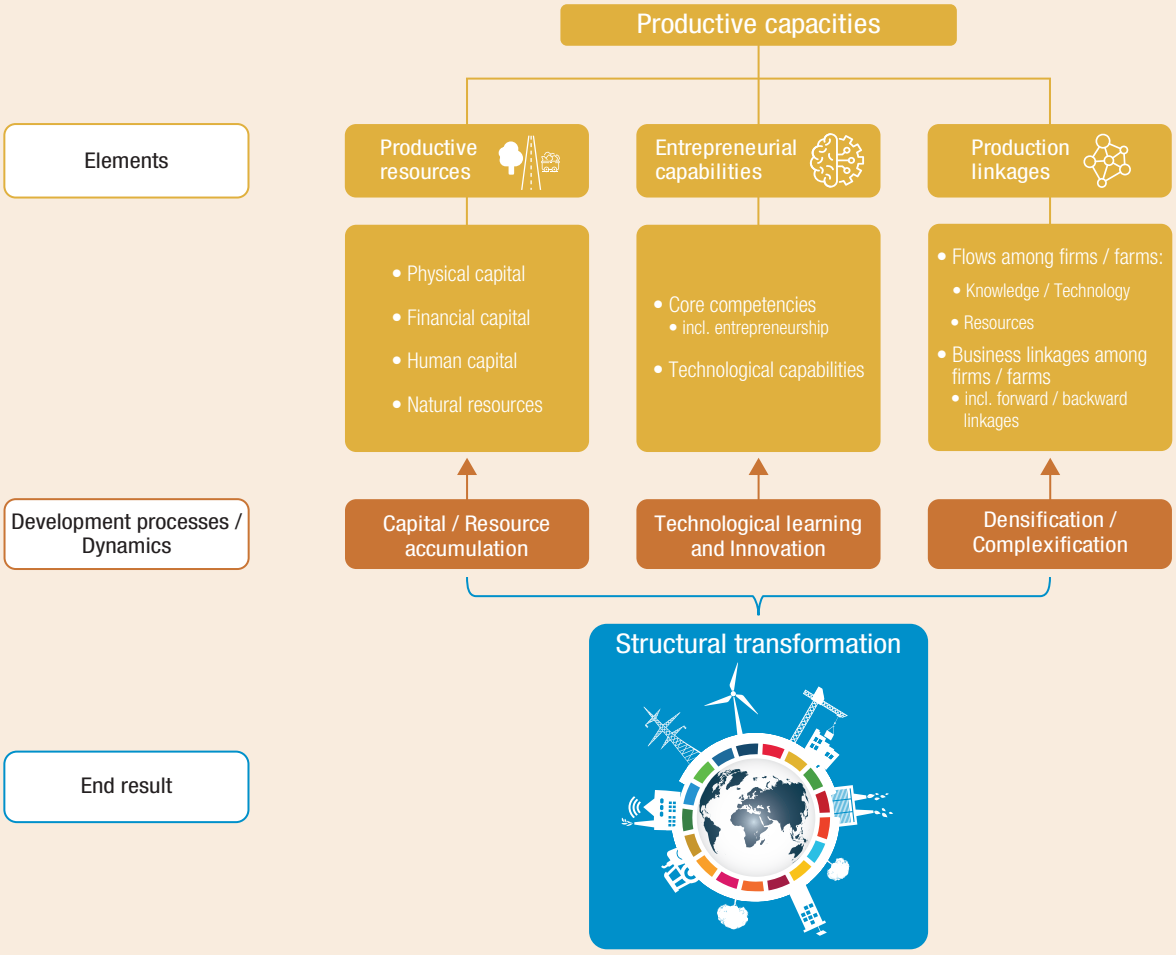
A similar reasoning applies to many other Sustainable Development Goals: it is only by achieving superior

Box 4.1 Structural transformation and the Sustainable Development Goals

Structural transformation results from the development of productive capacities through the different development dynamics/processes indicated in Box Figure 4.1 and discussed in greater detail in other issues of this report (UNCTAD, 2020a). Structural transformation occurs when a country's productive resources (natural resources, land, capital, labour and know-how) are transferred from low-productivity economic activities to high-productivity economic activities – the latter being associated with the economy's capacity to generate new dynamic activities with higher productivity and higher returns to scale (see chapter 2).

Box Figure 4.1

Productive capacities and structural transformation



Source: UNCTAD, 2020a: 28.

Fostering productive capacities is a critical pre-requisite for achieving structural transformation

levels of productivity that economies can generate the resources (fiscal or otherwise) required to invest heavily in social policies (and develop human capital in countries), environmental protection and greening of their economies (UNCTAD, 2014a). Hence, the previously referred to difficulties of costing the Sustainable Development Goals. It is therefore critical for countries to create a virtuous circle among the economic, social and environmental dimensions of sustainable development.

Another important feature of the present costing exercise is that it captures the short-term effect of the COVID-19 pandemic on economic activity. It does so by using growth estimated for 2020 to compute the baseline from which to project the expenditures that LDCs need to carry out to reach selected targets of the Sustainable Development Goals from 2021 to 2030. While many of the effects of the COVID-19 pandemic on LDCs cannot yet be fully comprehended or quantified – partially because of lack of immediate access to vaccines – the short-term outcomes have been economically and socially consequential (UNCTAD, 2020a).

The methodology adopted focuses on selected Sustainable Development Goals closely linked to measurable enablers of structural transformation, whose required progress can therefore be rigorously assessed. To derive from the required trajectory of target indicators and corresponding financing needs, two alternative estimation approaches are used, depending on the intrinsic nature of the target, namely: (i) one that estimates the growth and investment requirements, based on macroeconomic elasticities; and (ii) another that estimates spending requirements (and the financing gap), based on unit costs.

Before moving to the estimation of financing needs, it is worth discussing selected targets of the Sustainable Development Goals: the first target is the LDC-specific target of achieving an annual rate of economic growth of 7 per cent (SDG 8.1). This choice stems from the fact, documented also in earlier chapters of this report, that economic growth is a key driver for the attainment of other Sustainable Development Goals, and tackling structural impediments to the sustainable development of LDCs.

The second Sustainable Development Goals target considered is eradicating extreme poverty, presently defined as people living on an income below the $1.90 a day (measured in 2011 PPP dollars). As shown in chapter 2, LDCs in recent years have generally reduced extreme poverty incidence, yet the pace of poverty reduction achieved so far is not compatible with the target of eradicating poverty by 2030 (SDG 1.1).

The third Sustainable Development Goals target is more closely related to structural transformation, regarded as the main path towards sustainable development (and hence towards achieving other Goals and targets), as explained in Box 4.1. The complexity of the process of structural transformation renders this component of the exercise even more challenging than other cost estimations. As a proxy for structural transformation, this costing exercise singles out the SDG 9.2 target of doubling the share of industry in GDP in LDCs. However, it has slightly adapted the target, and estimates the costs of doubling the share of manufacturing – rather than industry – in GDP. The rationale for this choice is that industry technically comprises manufacturing, as well as mining, utilities and construction. Of these, only manufacturing, however, displays specific features which makes it: (i) a potent driver of structural transformation; (ii) rapid technological change; (iii) productivity spillover effects on other sectors of economic activity (both upstream and downstream); (iv) increasing returns to scale, (traditionally); and (v) high job-creation potential, etc. (Imbs and Wacziarg, 2003; UNCTAD, 2020a).

Mining (including both fuels and minerals) is technically part of industry. This is an activity in which many LDCs have comparative advantage. However, natural resources can be a curse or a blessing (van der Ploeg, 2011). In the case of LDCs, they have typically failed to work as a driver of broader structural transformation. On the contrary, in the early 2000s this comparative advantage was associated with the re-primarization of the economy of several commodity dependent LDCs (UNCTAD, 2018a).

Finally, structural transformation being a macro and multi-dimensional process is also connected to human capital accumulation and multiple environmental variables (Herrendorf et al., 2014; Herrendorf and Schoellman, 2018; Jänicke et al., 2000). This is why the Sustainable Development Goals were conceived as an integrated set of goals to achieve the economic, social and environmental dimensions of sustainable development. To partly account for these issues, Goals and targets universalizing access to health, education and social protection services (SDGs 3.8 and 4.1), and ensuring the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services

Table 4.1

Summary of the main estimation results for the LDCs

	Total invesment needs (annual average 2021–2030)					Social and environmental SDG targets: total expenditure needs (annual average 2021–2030)								
	7% annual growth (SDG 8.1)	End extreme poverty (SDG 1.1)		Double manufacture (SDG 9.2)		Health (SDG 3.8)		Education (SDG 4.1)		Social Protection (SDG 1.3)		Biodiversity (SDG 15.1)		Total
	Billion dollars	*Billion dollars*	*GDP growth required*	*Billion dollars*	*GDP growth required*	*Billion dolars*	*% GDP*	*Billion dollars*	*% GDP*	*Billion dollars*	*% GDP*	*Billion dollars*	*% GDP*	*Billion dollars*
Mean	10.1	10.6	9%	22.4	20%	1.9	11.8%	2.7	16.9%	4.5	22.3%	0.11	0.7%	
Median	3.5	3.5		5.7		1.1	9.8%	1.6	14.1%	0.2	4.6%	0.06	0.6%	
Minimum	0.02	0.0		0.0		0.0	2.1%	0.0	3.0%	0.0	0.0%	0.00	0.1%	
Maximum	119.9	85.8		240.7		14.0	81.4%	20.0	116.2%	59.7	238.8%	0.80	4.7%	
Total	**462.4**	**485.4**		**1 051.4**		**88.6**		**126.5**		**193.7**		**5.06**		**413.5**
Financing gap						46.4	7.3%	95.0	14.2%	184.2	21.1%	4.50	0.6%	330.1
Financing gap (median)							5.2%		10.2%		3.1%		0.5%	

Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division, Penn World Tables, World Development Indicators (World Bank), Atlas of Social Protection Indicators of Resilience and Equity (World Bank), and United Nations Population Division of the Department of Economic and Social Affairs [accessed June 2021].

(SDG 15.1), are also costed by using the unit cost methodology, contrary to the methodology used for costing the first previously mentioned three targets.

To summarize, different targets of the Sustainable Development Goals were selected for the costing exercise, giving rise to the following corresponding estimates:

(i) Achieving a 7 per cent annual GDP growth for the LDCs (SDG 8.1) – investment requirements;

(ii) Eradicating extreme poverty (SDG 1.1) – growth and investment requirements;

(iii) Promoting inclusive and sustainable industrialization – a major form of structural transformation – translated by the target of doubling the share of industry (manufacturing) in GDP in the LDCs (SDG 9.2) – growth and investment requirements;

(iv) Achieving universal health coverage (SDG 3.8) – spending requirement and financing gap;

(v) Ensuring that all girls and boys complete free, equitable and quality primary and secondary education (SDG 4.1) – spending requirement and financing gap;

(vi) Implementing nationally appropriate social protection systems and measures for all (SDG 1.3) – spending requirement and financing gap;

(vii) Ensuring the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services (SDG 15.1) – spending requirement and financing gap.

Regardless of the costing frameworks, one of the main shortcoming of the present approach of obtaining target-specific investment requirements is that they cannot necessarily be added up due to potential double-counting and the distinct adopted frameworks. However, projected scenarios are relevant references for policymakers and donors to consider in formulating policies aimed at structural transformation and sustainable development in LDCs. Table 4.1 presents a summary of the main estimation results.

The subsections below present the estimation approaches adopted in the projections and costing, and outline the data.

1. Estimation approaches

The following subsections provide additional information on the estimation approaches that have been used.

a. Estimates using elasticities

The Sustainable Development Goals targets considered are typically time-bound and are expected to be met by 2030. In light of this, it is possible to estimate related investment needs through elasticities which capture how sensitive an economic variable is to another. As documented in earlier chapters of the report, LDCs are a heterogeneous group of countries with distinct, and at time divergent, development trajectories. Their highly differentiated state capacities, institutions, economic infrastructure,

LDCs require $462.4 billion annually in additional investment to achieve the 7 per cent GDP growth target

and human capital levels influence how they react to the current crisis, as well as how capable (or not) they are at bringing about a sustainable recovery and build resilience. To capture this, the default approach used in this costing exercise was to calculate relevant elasticities *by country*, using panel data techniques for the period 1970–2020 and forecastingthe relevant series[8] until 2030.

The standard methodology employed to estimate such elasticities is panel time series (Pesaran, 2006).[9] With sufficient and consistent information as in this case, it estimates individual elasticities[10] for each country in a macro panel. Three sets of elasticities are calculated below.

i. Economic growth (SDG 8.1): growth-investment elasticities

SDG 8.1 targets growth at 7 per cent per year for the LDCs. The investment rate (i.e. the fixed capital formation/GDP ratio) is critical to sustain growth over the long term (Bond et al., 2010), as it partly incorporates expenditures necessary to achieve several targets contained in other Goals (e.g. clean water and sanitation (SDG 6); affordable and clean energy (SDG 7); industry, innovation and infrastructure (SDG 9); sustainable cities and communities (SDG 11); and climate action (SDG 13). Naturally, the investment rate is an aggregate measure and, as explained in Chapter 2, the sectoral allocation of investment and the effectiveness of expenditure are also important determinants of development outcomes.

Growth-investment elasticities measuring the impact of a 1-per centage-point increase in the investment rate on overall GDP growth were obtained by regressing investment,[11] structural transformation, human capital, and employment[12] on GDP. Since the 7-per-cent growth rate for the 2021–2030 period is a given parameter, and the investment-growth elasticities were calculated by country, it is possible to gauge the level of investment required in individual LDCs until 2030. Clearly, the growth-investment elasticities are expected to be positive, since higher investment leads to stronger growth.

The exercise then took a step further, by differentiating the investment need by funding sources. To this end the IMF dataset on public, private, and public-private partnership (PPP) investments was used.

ii. Eradicating extreme poverty (SDG 1.1): poverty-growth elasticities

SDG 1 includes the target of eradicating extreme poverty by 2030. In this respect, the poverty-growth elasticity for LDCs is calculated taking into account income distribution within the countries (Ravallion, 2016).

National survey data for poverty and inequality are sparse. The lack of sufficient observations prevents the application of the panel time- series estimations. Therefore, in this case the elasticities were estimated by clustering the LDCs according to the geographic-structural classification long adopted by *The Least Developed Countries Report* series (African LDCs and Haiti, Asian LDCs and Island LDCs) using a fixed-effects methodology.[13] The objective of analyzing the LDCs according to geographic-structural characteristics, rather than having one overall average number, is to capture the underlying differences among those sets of countries. The elasticities are expected to be negative because growth tends to reduce poverty.[14]

Once growth rates are estimated, results can be plugged into the first model using previously computed investment-growth elasticities to project the investment needs of the LDCs to eradicate extreme poverty by 2030.

iii. Structural transformation (SDG 9.2): manufacturing-growth elasticities

For the exercise related to doubling of the manufacturing share of GDP (SDG 9.2), elasticities are obtained by regressing the manufacturing share of economy-wide value added, as well as other covariates, such as population and employment, on log GDP. For the countries with missing or

8 A detailed description of the data is in the Annex.

9 See Annex for more detailed information. Several tests were carried out to select the appropriate model to be used.

10 For a log-log equation, the coefficients calculated are elasticities.

11 The variable used is gross fixed capital formation. The same procedure was conducted using capital stock as the investment variable. However, this stock variable is more complex and more difficult for policymakers to rely on or employ as a target or benchmark. In any case, the estimation results conducted using both variables are coherent with each other.

12 See the description of variables in the Annex.

13 More information on this is available in the Annex.

14 The benefit of fixed-effects estimation is to reduce the omitted variables bias by capturing the country variation within variation over time. This is the key difference between the standard pooled ordinary least squares (OLS) and fixed effects.

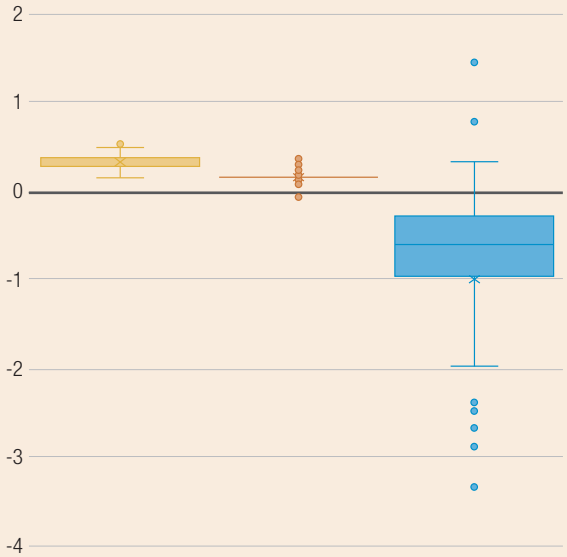
Box 4.2 Elasticities of GDP growth, poverty and structural transformation to fixed investment in LDCs

Elasticities are expected to be positive in growth-investment (SDG 8.1) and manufacturing-growth (SDG 9.2), but expected to be negative for poverty-growth elasticities (SDG 1.1), i.e. stronger economic growth will lead to more rapid poverty reduction. Figure 4.2 shows the estimated elasticities in a boxplot format, providing a visual representation of the distribution of the data among different LDCs.*

Box Figure 4.2 the median results correspond to the expectations, but there are a few outliers, especially in poverty-growth elasticities. The explanation of these unexpected results, and of the few LDCs that exhibit positive elasticities, is that: (i) the poverty-reducing effect of economic growth is not automatic or universal; (ii) the implementation of pro-poor policies has traditionally been difficult, due to lack of finance, weak state capacity and political economy problems; and (iii) in some countries economic growth has been positive but lower than demographic growth, hence with declining income per capita, poverty incidence has also been on the rise. Two sets of countries exhibit positive poverty-growth elasticities, namely: (i) oil-based economies (e.g. Angola); and (ii) economies with a very high percentage of the population, i.e. with more than 50 per cent of its population living in extreme poverty (as is the case of Guinea Bissau, Madagascar and Zambia). In the case of Angola and Madagascar, a fundamental problem of their growth pattern is that their population growth rate exceeded their GDP growth rate, leading to stagnant per capita GDP growth and rising poverty rates, despite the fact that the overall economy recorded a small but positive expansion in GDP.

Box Figure 4.2

Elasticities



Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division, Penn World Tables, and World Development Indicators (World Bank) [accessed June 2021].

More broadly, oil-dependent countries typically tend to have a high degree of income concentration, due to the capital intensity of their oil industry, and an ensuing weak employment impact and limited embeddedness in the domestic economy. As for the high-poverty countries, economic growth does not always effectively translate into poverty reduction and, sometimes, even increases poverty – which is the case when captured by positive poverty-growth elasticities. This unexpected result can happen if economic growth is not accompanied by: (i) more effective tax collection; (ii) expenditures that lead to higher levels of human capital; (iii) effective cash transfer programmes; (iv) healthier populations; (v) reduction of corruption; (vi) rising labour productivity; and (vii) sophistication of the economy. In these cases, the engines of growth are only poorly connected to effective distributive policies that seek to reduce poverty and expand opportunities.

* A boxplot is a standardized method to show the distribution of data based on five data points: "the minimum", first quartile (Q1), median, third quartile (Q3), and "the maximum". The dots outside the box are outliers.

non-significant elasticities, the LDC average was applied.[15] In this way, it is possible to: (i) estimate the annual GDP growth required to double the weight of the manufacturing sector by 2030; and (ii) plug GDP growth into the growth-investment model described above, to obtain the necessary rate of investment to reach the target considered.

[15] LDCs estimations tend to reflect the values found in countries reporting results. It possibly adds an upward bias because income might be correlated to level of reporting/ data availability. However, since the main interest is gauging elasticities, the mentioned procedure seems appropriate.

b. Estimates using unit costs

The majority of social and environmental services (targeted by SDGs 1.3, 3.8, 4.1 and 15.1) are not classified as investments but as current spending. While this distinction is a technical detail in public accounting, it matters in this exercise because it suggests that the forecasts using elasticities (subsection 2.2.1.) exclude most of the resources required to reach universal health coverage (UHC), education, social protection services, as well as ensuring the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services.

Ending extreme poverty or doubling the share of manufacturing in GDP will require LDCs to achieve astronomical GDP growth rates

In the case of these social and environmental targets, forecasting with elasticities is not possible due to a general lack of data for LDCs, including more detailed government expenditures or outcomes. Therefore, the estimation technique adopted to gauge pending needs and financing gaps is as follows: first, it calculates the total cost to reach the universality of services by 2030 by multiplying unit costs from the academic literature (McCarthy et al., 2012; Stenberg K, Hanssen O, Edejer TT-T, Bertram M, Brindley C, Meshreky A, Rosen James E, et al., 2017; Waldron et al., 2013). Second, these data are subtracted from current expenditure data, resulting in financing gaps similar to those developed in other costing estimates (McArthur and Kharas, 2019; J. Sachs et al., 2018).[16] Third, the progress of interventions is modelled linearly from 2021 to 2030, and those parameters are used to estimate annual expenditures for the period.

2. Data

The analysis draws on a variety of datasets. Most of them exhibit long series, starting in the 1970s, and contain most of the LDCs, varying from 36 to 46 countries (maximum).

The primary datasets utilized are the United Nations Statistics Division, United Nations Department of Economic and Social Affairs (UN-DESA), the Penn World Tables (PWT), the IMF's Investment and Capital Stock Dataset and *World Economic Outlook 2021*, the World Bank's World Development Indicators, and its Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE). The Annex provides a detailed description of the variables utilized from each dataset.

C. LDCs' financial needs to achieve selected Sustainable Development Goals

The methodologies used in the costing exercise has generated two sets of results. On the one hand, the elasticities produced fixed investment levels and the GDP growth rates required to achieve some of the Sustainable Development Goals. On the other hand, the forecasting based on unit costs has spending requirements as the primary outcomes.

As indicated by the aggregate findings in Table 4.1, average annual growth rates of 7, 9 and 20 per cent, respectively, will be needed until the end of the decade to achieve the minimum economic growth (SDG 8.1) required, ending extreme poverty (SDG 1.1), or doubling the share of manufacturing in GDP (SDG 9.2). Clearly, compared to historical values, these scenarios imply very ambitious growth targets. Even the lowest of these three GDP growth rates – the annual 7 per cent foreseen by SDG 8.1 – is clearly above the highest annual growth rate achieved by the LDCs since the establishment of the category: 5.2 per cent in the 2000s (Figure 4.1).

Table 4.1 highlights that the median annual value to universalize health coverage (SDG 3.8), education (SDG 4.1), social protection (SDG 1.3), and ensuring the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services (SDG 15.1) by 2030 is 29.1 per cent[17] of GDP. This implies more than doubling the current annual expenditure on those areas, which amounts to 13.1 per cent of GDP. In other words, LDCs would need to reach the same level of spending on these areas as the OECD average of 32.4 per cent (OECD, 2021). This confirms again the enormous challenges involved in reaching these selected targets given their limited resources available to LDCs, or for their similarly limited capacity to mobilize resources.

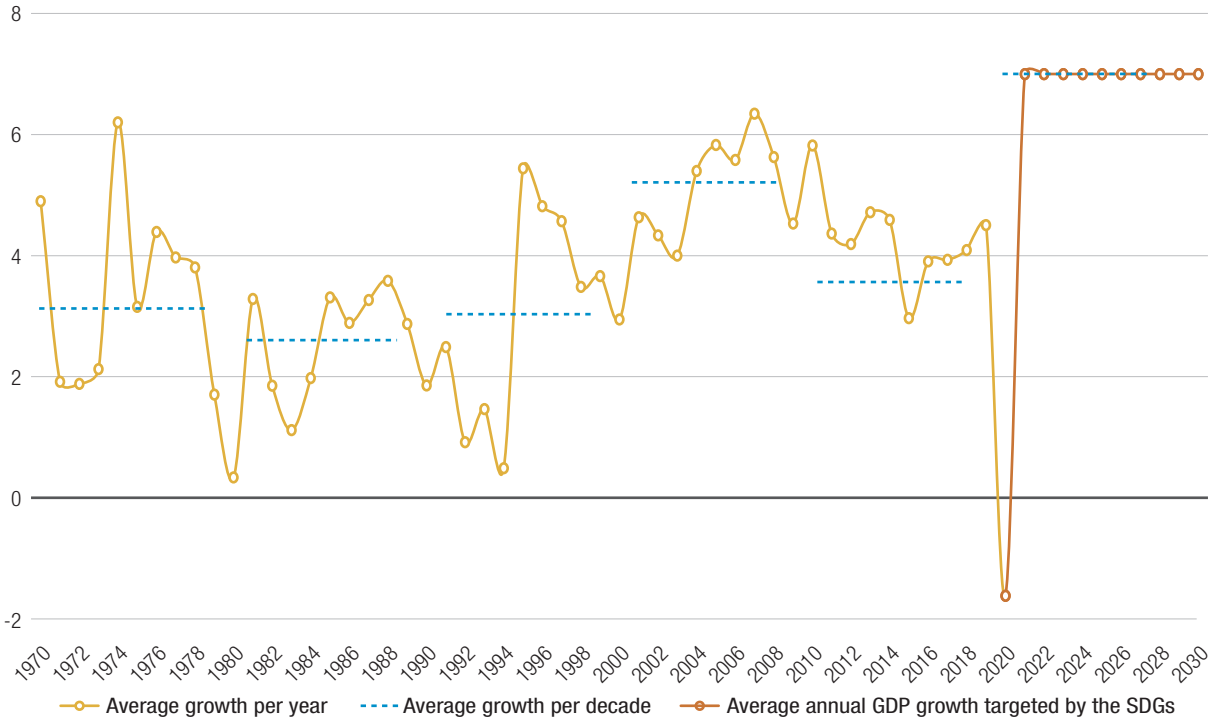
Adding the fixed investment requirements under one of the three scenarios, and the forecast total social and environmental spending needs obtained from estimates, the total average annual spending of LDCs would range from $876 billion to $1,465 billion. To give an idea of the magnitude of this challenge, these values correspond to 80134 per cent of the GDP of LDCs in 2019. i.e., before the COVID-19 crisis hit them. It should be noted that adding up these two sets of data presents the risk of double counting, but less so than the fixed investment estimates, which cannot be added. The major risks of double counting are two-fold. First, fixed investment boosts growth, which is likely to boost public revenue mobilization, and hence the capacity to pay for social protection. Second, the sectors of education and health require both current spending and fixed investment, but the latter expenditures are usually minor in these sectors

[16] Gaspar et al. (2019) offered an alternative solution using an input-outcome approach, where the Sustainable Development Goals index captures the outcome in the respective area.

[17] The median value was used to avoid the outliers that are absorbed in the average values.

Figure 4.1

Average annual GDP growth of the LDCs: 1970 to 2030



Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division [accessed June, 2021].

compared with the previous one. The country-specific results of the estimation exercise are shown in Annex Table 4.5.

Once the aggregated results have been presented, the subsections below present estimated investment and expenditure needs.

1. Investments need to grow at high rates to eradicate extreme poverty and promote structural transformation

a. Estimation results

The main differences in the three initial scenarios are that different GDP growth rate are required to reach targets of the Sustainable Development Goals. For SDG 8.1, the growth rate is part of the target itself, i.e., 7 per cent growth. To end extreme poverty (SDG 1.1), the growth rate needs to be on average 9 per cent throughout the decade. By contrast, the requirements for structural transformation are significantly higher as LDCs would need to achieve a whopping 20 per cent average annual growth rate to reach the target of doubling the manufacturing sector share of GDP (SDG 9.2). This highlights how challenging the task of achieving long-term structural economic transformation, even in comparison with the other two already challenging targets.

The annual average fixed investment requirements from 2021 to 2030 for LDCs to reach the above-mentioned growth rates are as follows: (i) $462 billion for economic growth (SDG 8.1); (ii) $485 billion for poverty eradication (SDG 1.1); and (iii) a much higher sum ($1,051 billion) for structural transformation (SDG 9.2).

These results highlight the fact that the structural transformation target is much more ambitious than the others, i.e., strong economic growth and even poverty eradication – themselves already challenging issues. During the 2010–2019 period, only seven LDCs met or exceeded that growth target, while the vast majority of these countries (39 of them) falling short of it, including countries that displayed prolonged collapses in GDP levels. Moreover, these growth results were achieved prior to the outbreak of the COVID-19 pandemic. The latest crisis not only brought about the worst growth performance of LDCs in 30 years (UNCTAD, 2020a), but also risks introducing hysteresis in the form of sub-par economic and social performance in many LDCs over the medium term.

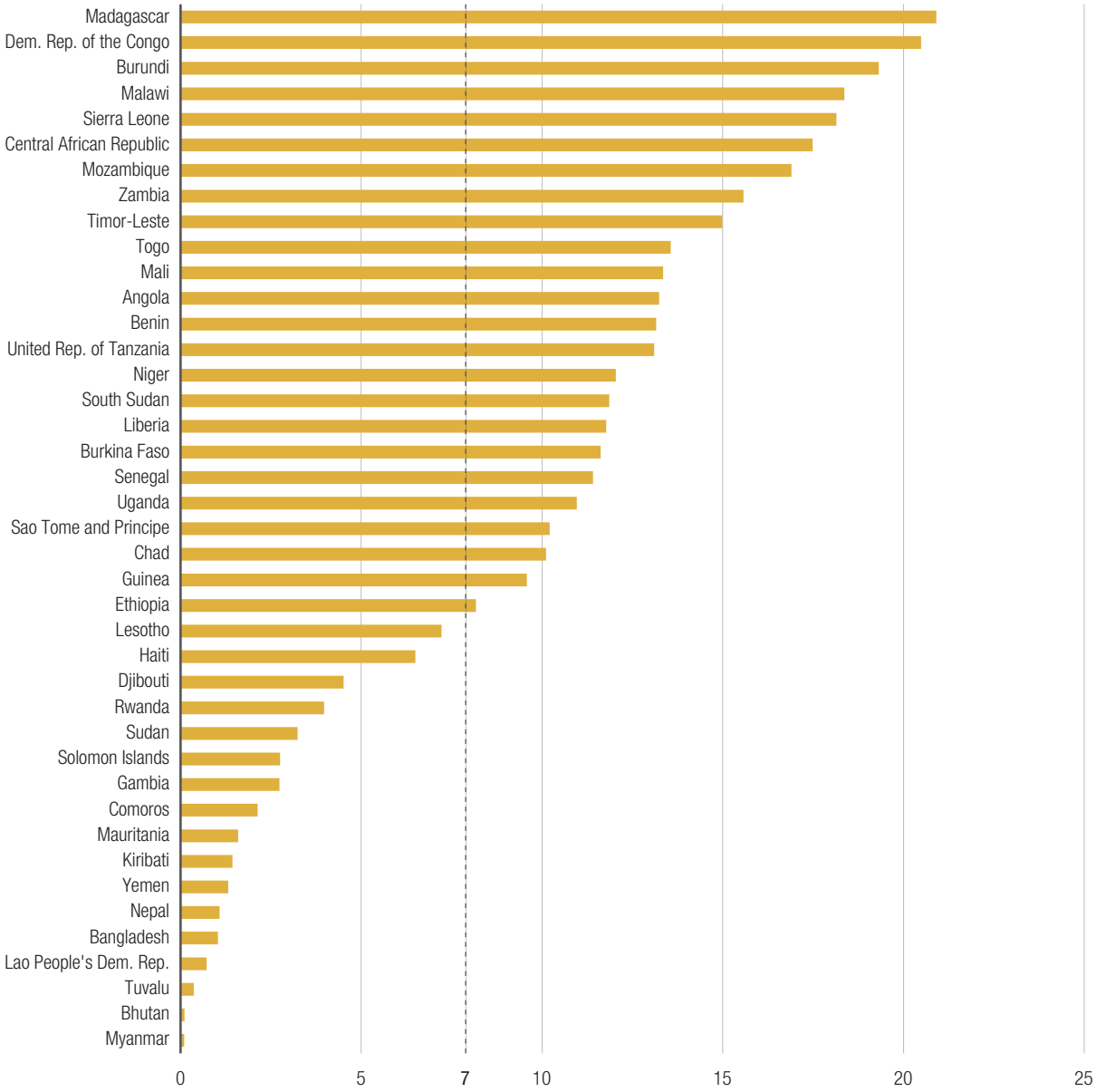
Concerning the poverty target, LDCs achieving the highest economic growth rate and/or that have advanced most towards structural transformation have been the most successful in strongly reducing

poverty (for example, Bangladesh, Cambodia, Ethiopia, Liberia and United Republic of Tanzania). Conversely, LDCs that have the highest rates of extreme poverty are those that need to make the strongest effort to eradicate this scourge. These contrasting performances are reflected in equally contrasting investment needs to eradicate extreme poverty; this, in turn, translates into a very wide range of economic growth rates required to eradicate poverty. Among the most challenging cases are Madagascar and Democratic Republic of the Congo, which have very high poverty rates and would need to grow at more than 20 per cent annually in 2021–2030 to eradicate poverty by 2030. By contrast, the growth needs of several Asian and Islands LDCs are much lower, given their success in reducing extreme poverty since the beginning of the century (Figure 4.2). It is important to recall that these growth rates concern only the poverty eradication rate, and do not take into consideration broader targets, such as structural transformation or environmental goals.

Figure 4.2

Average annual GDP growth rates required to end extreme poverty by 2030

(Per cent)

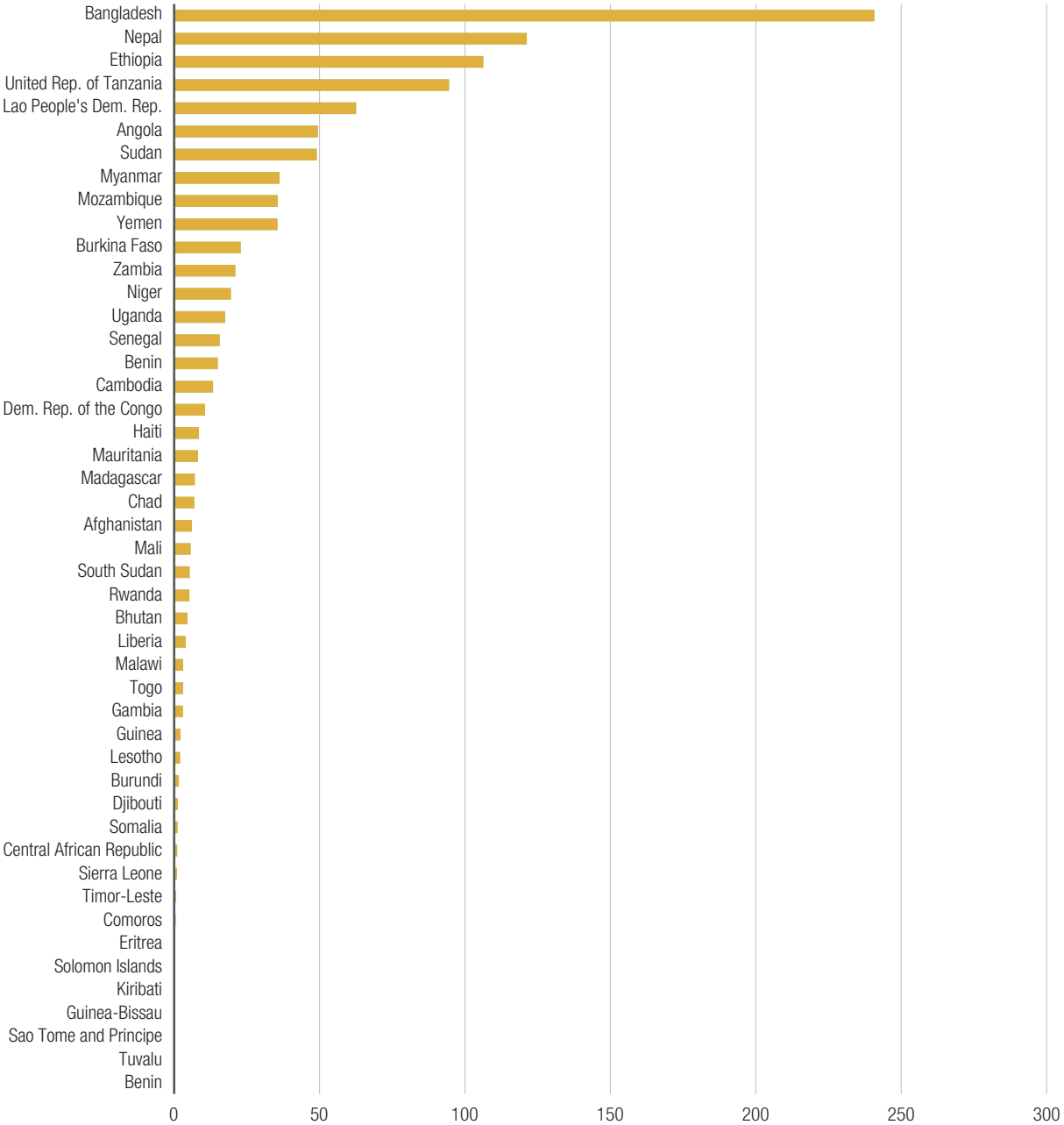


Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division, World Development Indicators (World Bank), Atlas of Social Protection Indicators of Resilience and Equity (World Bank), and United Nations Population Division of the Department of Economic and Social Affairs [accessed June, 2021].

Figure 4.3

Average investment required to double manufacturing share of GDP by 2030

(Per cent of GDP)



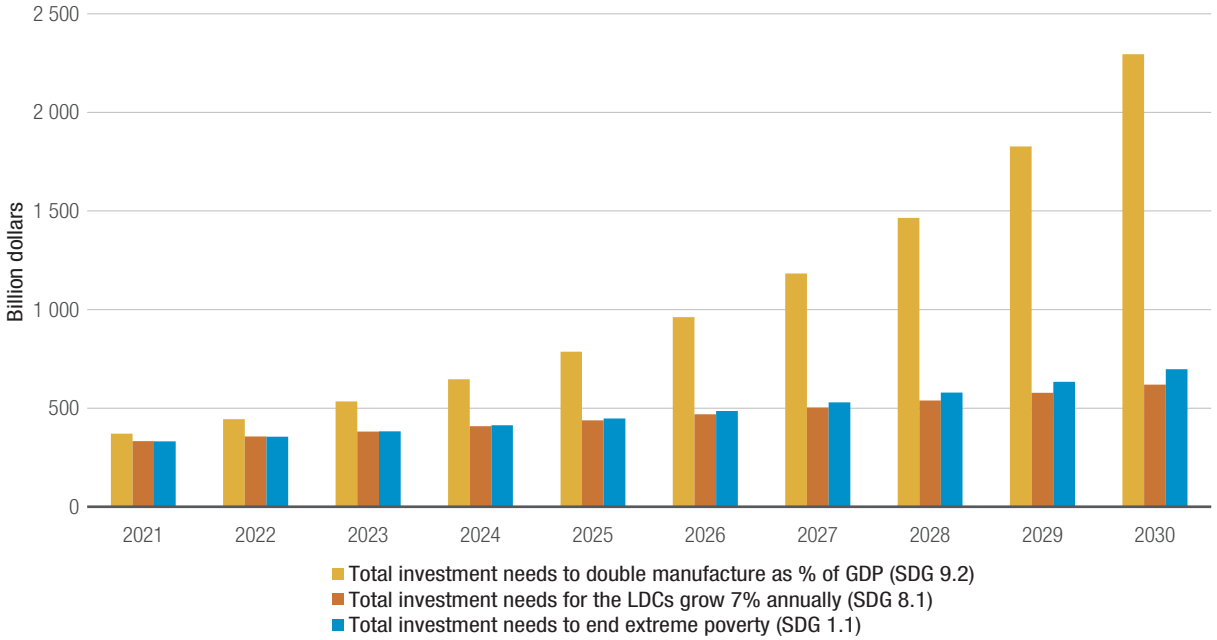
Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division, World Development Indicators (World Bank), Atlas of Social Protection Indicators of Resilience and Equity (World Bank), and United Nations Population Division of the Department of Economic and Social Affairs [accessed June, 2021].

The most ambitious of the selected targets, i.e., the one related to structural transformation (SDG 9.2), has an average fixed investment requirement over the new decade that amounts to more the three times the total fixed investment of these countries in 2019, which amounted to $313 billion. This once again highlights the magnitude of the challenge of mobilizing resources to achieve structural transformation.

Achieving structural transformation would simultaneously enable LDCs to address most other of the other Goals: not only would the growth target be exceeded by a wide margin, but it would also bring a lasting and sustainable solution for poverty. This confirms the argument put forward by *The Least Developed Countries Report* series that achieving structural transformation is one of the preconditions

Figure 4.4

Total investment needs for the three scenarios



Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division, Penn World Tables, and World Development Indicators (World Bank) [accessed June, 2021].

for reaching the Sustainable Development Goals. However, the difficulty in attaining these targets in a relatively short time is highlighted by the fact that the associated average rate of economic growth – a 20 per cent annual growth rate spanning over a decade – has not been achieved over the medium term even by the fastest growth experiences of developing countries in recent years.

Cross-country analysis suggests that those countries in which manufacturing provides a strong contribution to GDP are those for which the target of doubling the manufacturing share of value added by 2030 would entail the greatest challenges. By contrast, countries where the manufacturing share is lowest would require less of an investment effort to double this proportion (Figure 4.3). These results may seem paradoxical but are not. They simply indicate that – in general terms, initial conditions matter as the target is defined as a doubling of the existing share. It should be noted, however, that in countries where the contribution of manufacturing to GDP is very low, even reaching the relevant target of the Sustainable Development Goal would still leave them at relatively low levels of industrialization.

The results of the estimations show that, under the three scenarios, fixed investment should grow by 78–305 per cent, as compared to the previous decade (2011–2020). Figure 4.4 highlights these findings.

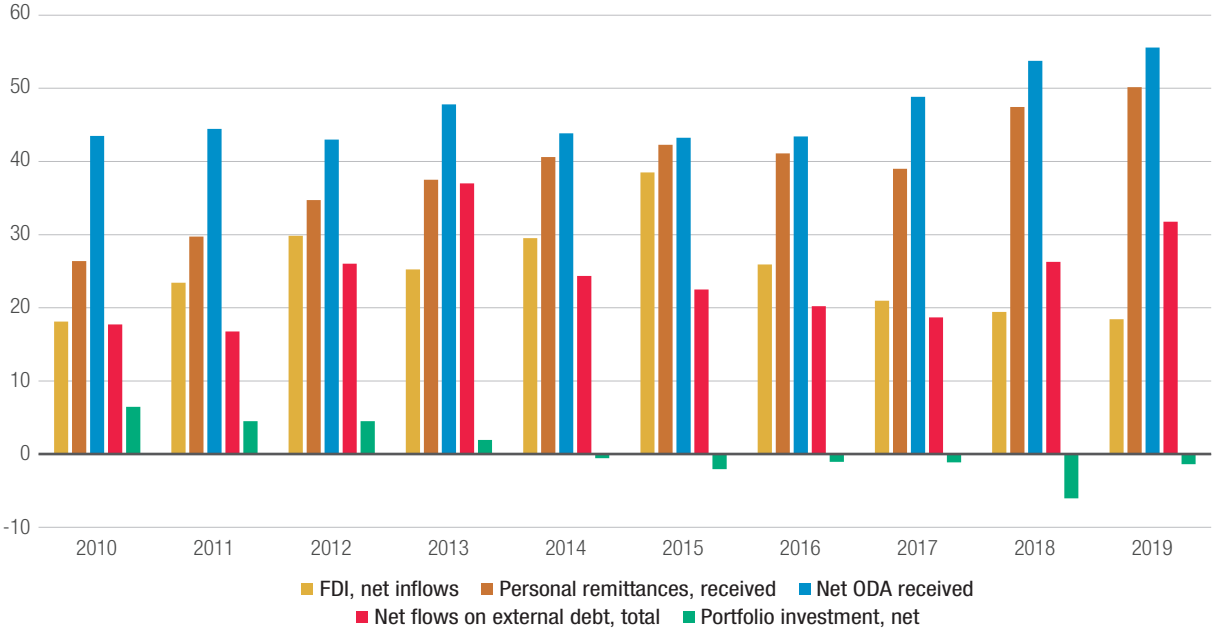
b. Sources of financing

Past patterns of financing of gross fixed capital formation provide an indication of where the funds should be mobilized to finance the realization of the Sustainable Development Goals by 2030. The bulk of the funding is expected to come from private sources (78 per cent), according to the projections based on the latest IMF's Investment and Capital Stock dataset. As a reference, during the period 2017–2020, the average weight of private investment was 75 per cent. In other words, the average private investment for the 38 LDCs for which data are available, would need to more than double (in real terms), and jump from $457 billion in 2017 to $1,050 billion in 2030. About one-fourth of total investments should be financed by the public sector (26 per cent). The average value for public investment starts at $152 billion dollars in 2017, and would need to reach $357 billion in 2030. Finally, public-private partnerships (PPPs) would represent just 1 per cent of total investment requirements, – the value of their investment would start at $5.2 billion in 2017 and need to rise to $12.4 billion by 2030.

Another important dimension of the sources of financing which policymakers need to consider is the geographical origin of the funds to finance investments. In 2019 the total fixed investment of all LDCs amounted to $313 billion and financed from both domestic sources and external financing. Total external financing of LDCs amounted to $155 billion,

Figure 4.5

External finance to the least developed countries, 2010–2019



Source: UNCTAD Secretariat calculation based on data from World Development Indicators database [accessed July 2021].

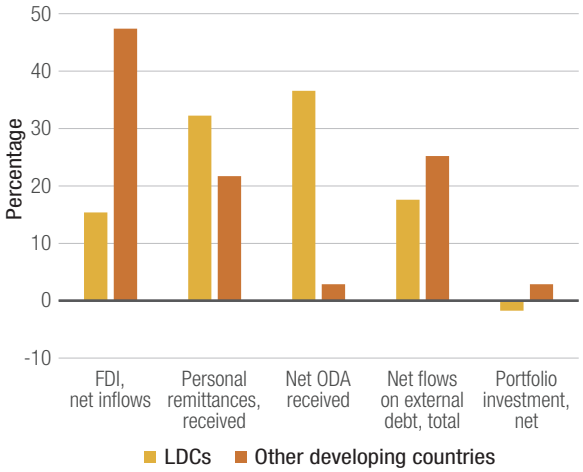
including about $50 billion of ODA and personal remittances each, $32 billion of net flows of external debt and $18 billion of foreign direct investment (FDI) (Figure 4.5).[18]

The composition of external financing of LDCs is in sharp contrast with that of other developing countries (ODCs). For the latter, private commercial flows (FDI, external debt and portfolio investment) accounted for three-fourths of external development financing in the period immediately preceding the COVID-19 pandemic (2016–2019). The LDCs, by contrast, rely much more on official flows (ODA and other official flows whose concessionality does not meet aid definition), and to a lesser extent, personal remittances, which jointly account for 69 per cent of their external development financing (Figure 4.6). An additional challenge faced by LDCs in financing the investment to reach their development targets is that personal remittances are more likely to be channeled towards current household consumption instead of investment (UNCTAD, 2012c).

[18] Total external financing mobilized by a country does not automatically translate into fixed investment. Moreover, these two sets of figures come from different sources: external financing is part of balance of payment statistics, while gross fixed capital formation is part of national accounts. Part of the net foreign resources mobilized by a country does serve to finance fixed investment. However, available statistics do not enable a precise determination of the share of gross fixed capital formation that is financed from domestic or external sources.

Figure 4.6

Share of external development financing, 2016–2019



Source: UNCTAD Secretariat calculation based on data from World Development Indicators database [accessed July 2021].

2. Expenditure needs to universalize major social and ecosystem services by 2030

LDCs currently spend 2.9 per cent of GDP, on average, on social and ecosystem services, as measured by the four targets of the Sustainable Development Goals (SDGs 1.3, 3.8, 4.1 and 15.1) by 2030, LDCs would need to mobilize additional resources, amounting to 10.4 per cent of the GDP per year, on average, until end of the decade.

Table 4.2

Main parameters used to calculate the financing gaps

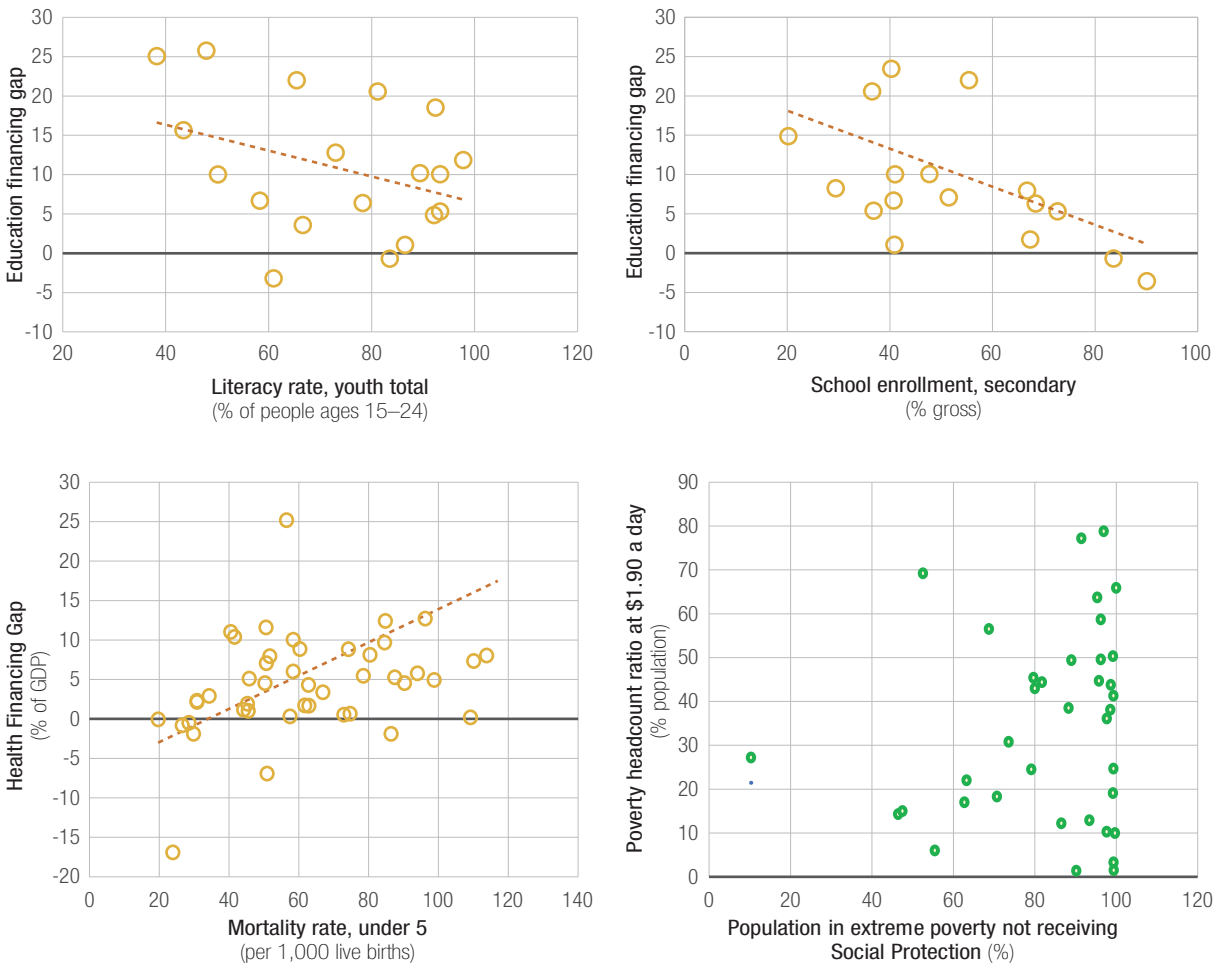
SDGs	Unit cost	Average expenditure to universalize the service by 2030	Current expenditure	Average financing gap*	Annual rate of grow to universalize services by 2030
	$ per capita	% GDP	% GDP	% GDP	%
Health (3)	85.7	12	6.1	7.9	6.2
Education (4)	122.4	16.9	3.9	12.1	5.7
Biodiversity conservation (15)	4.9	0.7	0.1	0.6	20.2

SDGs	Population living in extreme poverty receive social protection	population live with less than $1.9 per day is not covered by social programs	Expenditure in social protection	Average financing gap	Annual rate of grow to universalize services by 2030
	%	%	% GDP	% GDP	%
Social Protection (1)	10.3	29.2	1.6	21	17
Global average	**55.8**	**14.7**	**2.9**	**10.4**	**12.3**

Source: Stenberg et al., 2017; McCarthy et al., 2012; Waldron et al., 2013; McArthur and Kharas, 2019; J. Sachs et al., 2018; World Bank, 2021.
* Only countries with a financing gap compared to the benchmark were considered.

Figure 4.7

Financing gaps and outcomes



Source: UNCTAD Secretariat calculations based on data from World Bank (2021a).
Notes: The data relating to education financing and health financing gaps are based on our own calculation (year 2019); all the other variables are taken from the World Bank's WDI and refer to 2019.

Reaching these four targets at issue requires tripling social and ecosystem spending as a share of GDP. In other words, the level of expenditures would need to increase by 12.3 per cent per year relative to the level observed in 2019.

It is important to highlight that the estimates for ensuring the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their respective services are a lower bound, and probably underestimate the financial needs to reach the target contained in SDG 15.1. The costing of financial needs relating to environmental conservation and climate change is very challenging,[19] which has led to the use of the Sachs et al. (2018) methodology for LDCs, based on the unit costs of environmental protection (McCarthy et al., 2012).[20]

For the selected social and ecosystem targets, both total expenditure and financing gap are estimated. The methodology for calculating the financing gap is straightforward, and requires the prior projection of the average expenditure needs (Table 4.2, column three), corresponding to the unit costs in column two. Subtracting from the total expenditure needed to universalize a given service, the corresponding level of current expenditure obtains the average financing gap (column five). Finally, the last column is the linear growth rate of expenditure that countries need to follow to universalize the selected services by 2030.

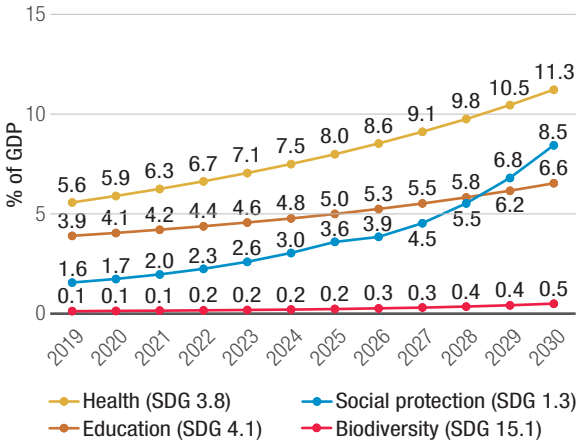
The estimated financing gaps plotted against variables, such as the under-five mortality rate, literacy rate, school enrolment or social protection coverage, show that more actual spending is associated with better outcomes (Figure 4.7).

Countries can also track progress in decreasing the financing gap over time. Figure 4.8 shows the average annual incremental financial targets that LDCs need to attain from 2021 to 2030 to universalize services and achieve selected Sustainable Development Goals. This is a tool to guide countries' resource mobilization, both domestically and internationally.

The total average expenditure per year would need to rise by about 55 per cent of GDP, once combining the current and the forecasted social and environmental expenditures (current spending and financing gap) with one of the three scenarios based on investment data.

Figure 4.8

Average yearly incremental spending targets for the LDCs to universalize health, education, social protection and provide ecosystem conservation services: 2019-2030



Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division, World Development Indicators (World Bank), Atlas of Social Protection Indicators of Resilience and Equity (World Bank), and United Nations Population Division of the Department of Economic and Social Affairs.

D. Expanding sources of financing to reach the targets

The main priority of countries worldwide in the context of a global pandemic is to focus attention and resources on the health sector. This implies that other areas might have been neglected, including in terms of budgetary allocation. Therefore, the economic recovery of countries that will be possible once vaccinations are rolled out needs to be anchored in Sustainable Development Goals' priorities, and with the mid- to long-term horizon in mind.

A clear message emerges from the estimates shown and analyzed in the present chapter. The message is that, in spite of the uncertainties necessarily surrounding them, substantially higher amounts are needed for the LDCs to reach the Sustainable Development Goals than what is available to them at present. This points to the acute need for the international community to earnestly mobilize itself to assist these countries to achieve the necessary sharp scaling up of sustainable development finance. The mobilization of additional funding sources for the Sustainable Development Goals is essential (De Neve and Sachs, 2020).

Substantial **transfers of resources to LDCs** capable of kickstarting the productive capacity development process constitute the critical mainstay of the PoAs for the LDCs. They are a major component of the

[19] Sachs et al. (2018) explain in detail the main shortcomings of the data and the difficulties in costing environmental-related SDG targets.

[20] McCarthy et al. (2012) estimate the financial costs for the two targets of protected areas and prevention of extinctions. The authors use data from birds to develop models that can extrapolate to the costs for biodiversity.

To **mobilize** sufficient **development finance** LDCs need to:

strengthen their fiscal capacities

increase domestic resource mobilization

improve the effectiveness of public expenditures

partnership between the international community and the LDCs, and underpin the international support measures that are integral to the design of the PoAs for the LDCs. Such a transfer of resources is similarly recognized by the 2030 Agenda for Sustainable Development in the "means of implementation": an interdependent mix of financial resources, technology development and transfer, capacity-building, inclusive and equitable globalization and trade, regional integration, buttressed by the creation of an enabling national environment for the successful implementation and realization of the Sustainable Development Goals.

LDCs will need to continue to strengthen their fiscal capacity, and improve the effectiveness of public expenditure to manage the increasing expenditure demands being made on them (Gaspar et al., 2019). The quoted study assumes that a 5-per-cent annual growth in domestic fiscal revenues is a realistic rate to consider. Even in such an event, domestic tax revenues would not be sufficient to cover all the estimated costs. Official development assistance (ODA), for instance, funds 25 per cent of the health spending in LDCs, and the demand for related services cannot but increase in the current context. Outlays will also be needed with respect to other key basic services, such as education or conservation, as well as investments in productive infrastructure. Against this background, reaching the Sustainable Development Goals will inevitably require a massive scaling up of sustainable development finance in the LDCs.

An important motivation for this costing exercise is to underline the continued and increased relevance of **grant-based ODA** as a major source of external development finance in the face of stronger risk aversion among international sponsors in the context of the COVID-19 crisis.

FDI trends in the LDCs suggest that the COVID-19 pandemic is impeding progress towards achieving the Sustainable Development Goals and widening productive capacities investment gap in structurally weak LDC economies. These developments pose a risk to LDCs' attainment of the Sustainable Development Goals and worsen LDCs' structural weaknesses (UNCTAD, 2021). The number and value of greenfield project announcements in LDCs dropped sharply (-51 per cent compared with 2019, representing a 13-year low) in 2020. The number of LDC host economies that did not attract any project increased from 13 to 17. FDI tends to trail other macroeconomic indicators after a shock, resulting in the prospect of FDI in LDCs remaining subdued in the immediate future. Inflows are expected to remain sluggish over the next few years, and there is a heightened need for ODA to be stepped up to minimize the number of "lost" years in terms of progress toward the Sustainable Development Goals.

The future of FDI in LDCs will depend on how attractive these economies are in the wake of the ongoing reconfiguration of international production through reshoring and regionalization. It is increasingly clear that without prior and continuing public sector investments guided by strategic industrial policy in productive capacities in LDCs, the attractiveness of LDCs to private investment will continue to be low, and FDI flows will likewise be erratic. LDCs need access to adequate and stable flows of financing to achieve sustainable development.

Blended financing is frequently presented as the major response to the financing for development needs of developing countries. This topic is subject to major caveats, especially in the case of LDCs (UNCTAD, 2019a). This modality of financing for development is further discussed in chapter 5.

Additional financial instruments that have been discussed as potential revenue sources to fund the Sustainable Development Goals are:

(i) taxes, contributions, and other obligatory charges, such as the "Big Techs" taxes;

(ii) debt-based borrowing mechanisms, such as social impact bonds; and

(iii) voluntary and solidarity contributions, such as the national lotteries.

Beyond public revenue sources, and if appropriately harnessed and geared towards an authentic partnership for LDC sustainable development, private philanthropy and other private investments, especially those concerned with environmental, social and

governance (ESG) issues could also play an important role in achieving the Sustainable Development Goals.

The analysis in this chapter also shows that LDCs will need to substantially and consistently accelerate their economic growth until 2030. This is especially true of the financing requirements to achieve structural economic transformation. The fact that the requirements here are much higher than those (already high) of reaching other Sustainable Development Goals highlights once again the challenges of achieving structural transformation. Moreover, a truly sustainable structural transformation requires that parallel processes take place in tandem (e.g. human capital building, strengthening domestic entrepreneurial sector, strengthening state capacity), as argued in Chapter 5 of this report.

ANNEX

1. Literature on costing Sustainable Development goals

Annex Table 4.1

Comparison of the existing literature on the costing of the Sustainable Development Goals

	Unctad LDR 2021	SDSN Sachs et al. (2018)	Brookings McArthur and Kharas (2019)	ODI Manuel et al. (2020)	IMF Gaspar et al., 2019
Methodology	• Own methodology of forecasting based on elasticities • Backcasting for social and environmental areas	• Backcasting	• Backcasting	• Backcasting • Focus on ending extreme poverty	• Input-Outcome Approach
Sectors	• Manufacture • Poverty • health • Education • Social protection • Biodiversity	• Health • Education • Infrastructure • Biodiversity • Agriculture • Social protection • Justice • Humanitarian • Data	• Conservation • Agriculture • Justice • Education • Infrastructure • Health • Social Spending	• Education • Health • Nutrition • Social protection transfers • Water, sanitation and hygiene	• Health • Education • Power • Roads • Water and sanitation
Coverage	46 Least Developed Countries	• 59 low- and lower-middle-income countries	• estimate public spending for 190 countries, and minimum SDG public spending needs for 134 developing countries	• 135 low-income countries (LICs) and middle-income countries (MICs)	155 countries. Focus on low-income developing countries (49 countries) and emerging market economies (72 countries)
Data	• Elasticities estimated • Unit costs from the literature	• Unit costs from the literature	• Unit costs from the literature, and sector-specific public expendifures data	• Unit costs calculted by ODI • Renenue capacity	• SDG index • Inputs (e.g., number of health care workers) • Unit cost (e.g., health care workers wage) • Other factors (e.g., demographics, GDP)
Main results	The total average expenditure varies from $875.9 – 1,464.9 billion per year for the LDCs, once combining the forecasted total social and environmental spending with estimated investments.	• Total financial need of $1,011 billion per year on average from 2019 to 2030 to achieve the SDGs. • The projected financing gap is of the order of $400 billion from 2019 to 2030, or $230 per capita, on average.	• Total spending in 2015 would be $21.3 trillion, rising to $32.3 trillion annually in 2030. • The projected annual gap is $12 trillion.	The total cost for Low and Middle-Income countries is $2.4 trillion, while exclusively for Low-Income Countries represents $137 billion and $188 per person per year.	Additional spending of $528 billion for low-income developing countries and $2.1 trillion for emerging market economies in 2030

2. Data

To calculate the investments needs to grow 7 per cent per year from 2021 to 2030, the primary dataset utilized are:

- UN statistics, prepared by the National Accounts Section of the United Nations Statistics Division.
  - > **Variables:** investments (gross fixed capital formation), GDP at 2015 constant dollar values and structural transformation (as proxied by the Manufacturing share of GDP). The variables are used in natural log format.
  - > **Observations:** 46 LDCs.
  - > **Period:** 1970–2019
- Penn World Table 10.0 (PWT), compiled by the University of Groningen
  - > **Variables:** capital stock at constant prices 2017, GDP (output-side real GDP at chained purchasing power parities – 2017), employment (number of persons engaged), human capital (index), depreciation (average depreciation rate of capital stock). The variables are used in natural log format.
  - > **Observations:** 38 LDCs.
  - > **Period:** 1970–2019
- Investment and Capital Stock Dataset, consolidated by the International Monetary Fund (IMF)[21]
  - > **Variables:** public, private, and public-private partnerships (PPPs) investments (gross fixed capital formation). The variables are used in natural log format.
  - > **Observations:** 38 LDCs.
  - > **Period:** 1970–2017
- *World Economic Outlook* of the IMF, and projections from the Asian Development Bank and African Development Bank. To capture the effects of the COVID-19 pandemic in 2020, IMF projections (IMF, 2021b) are considered as the actual 2020 growth.[22]
  - > **Variables:** GDP growth
  - > **Observations:** 46 LDCs.
  - > **Period:** 2020

Second, the growth estimation to end extreme poverty by 2030 utilized as data source the World Bank's World Development Indicators (World Bank, 2021a), mainly because of the poverty headcount and inequality data, including the GDP calculated in purchasing power parity (PPP) terms.

- > **Variables:** Poverty headcount ratio at $1.90 a day is the percentage of the population living on less than $1.90 a day at 2011 international prices, Gini coefficient, and GDP calculated in purchasing power parity (PPP)4 terms at constant 2017 prices. The variables are used in natural log format.
- > **Observations:** 44 LDCs.
- > **Period:** 1980–2018

Third, the forecast of growth and investments needed to double the manufacturing share of the GDP by 2030 relied on two different datasets.

- UN statistics, prepared by the National Accounts Section of the United Nations Statistics Division.
  - > **Variables:** GDP and Manufacture Value Added. The variables are used in natural log format.
  - > **Observations:** 46 LDCs.
  - > **Period:** 1970–2019

[21] www.data.imf.org, accessed in May 2021.

[22] When the IMF does not provide estimation for a given country, we used the estimation from regional development banks, such as the Asian Development Bank (www.adb.org), and the African Development Bank (www.afdb.org).

- Penn World Table 10.0 (PWT), compiled by the University of Groningen
  - > **Variables:** employment (number of persons engaged) and population were used as covariates. The human capital index was not included because it would reduce observations to 30 LDCs. The variables are used in natural log format.
  - > **Observations:** 37 LDCs.
  - > **Period:** 1970–2019

Finally, the costing projections of universal social and environmental services until 2030 include different sources.

- UN statistics, prepared by the National Accounts Section of the United Nations Statistics Division.
  - > **Variables:** GDP, and population
  - > **Observations:** 46 LDCs.
  - > **Period:** 2015–2019
- UN Population Division of the Department of Economic and Social Affairs
  - > **Variables:** Total population, medium
  - > **Observations:** 46 LDCs.
  - > **Period:** 2019–2030
- Expenditure data and unit costs[23]:
  - > Health
    - † Variables: Domestic general government health expenditure as % of GDP (World Bank, 2021a), and unit costs (Stenberg et al., 2017b)
  - > Education:
    - † Variable: Government expenditure on education as % of GDP (World Bank, 2021a), and unit costs (The International Commission on Financing Global Education Opportunity, 2016)
  - > Conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services
    - † Variable: Biodiversity conservation spending (Waldron et al., 2013) updated following McArthur and Kharas (2019) suggested procedure, and unit costs (McCarthy et al., 2012)
- World Bank's Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) prepared by the World Bank
  - > **Variables:** Coverage of all social protection and labor (per cent), coverage of all social assistance (per cent), and population in extreme poverty not receiving social protection (per cent)
  - > **Observations:** 39 LDCs.
  - > **Period:** 2001–2018

[23] McArthur and Kharas (2019) and Sachs et al. (2018) are the main references that use the data desbrided in this section.

3. Selecting the estimation methodology

Several of the empirical tests performed included ordinary least squares (OLS), fixed effects and panel time series methods, such as mean group, cross-sectionally demeaned mean group, and common correlated effects mean group estimators (see Annex B). In all those estimations, logged GDP was regressed with logged investment (gross fixed capital formation),[24] structural transformation, human capital, and employment.[25] As known, the log-log equations result in coefficients that can be interpreted as elasticities. This is an additional reason to adopt this methodology as a default option.

The panel time series models are reported with and without controls (reference). It is critical to choose one estimation to adopt as elasticity. Given the unit root, cointegration, cross-sectional dependence tests, the preferred model is the common correlated effects mean group with country trends (Pesaran, 2006).

More practically, the estimations rely on data extracted from the United Nations Statistics Division dataset and PWT (see more details in the following subsection). The growth-investment elasticities were calculated by country, and they are expected to be positive. Based on those elasticities and the GDP growth target of 7 per cent a year agreed on the Sustainable Development Goals, the level of investments required in the LDCs until 2030 were calculated. In addition, by analyzing the IMF dataset on public, private and PPP investments, it was possible to disaggregate the projections by funding sources.

Unfortunately, it is not technically viable to reproduce the same breakdown by the origin of funding, i.e. domestic or foreign. FDI and remittances, for instance, are financing mechanisms that can add fixed assets to the economy's gross capital formation. In this case, the investment rate necessarily incorporates them into it (Bjuggren et al., 2010; Nawaz, 2020). However, both types of financing can also be used for consumption or pay for current expenditures. In this case, they will not be reported as gross fixed capital formation. The difficulty in developing such estimation is the inexistence of more detailed panel data detailing all the outlays of investment and covering LDCs.

Annex Table 4.2

GDP growth and investment: Ordinary Least Squares and Fixed-Effects estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	FE	FE	FE
			Dependent variable: GDP			
Investment	0.798***	0.543***	0.541***	0.574***	0.382***	0.340***
	-0.00922	-0.0123	-0.0124	-0.00694	-0.0106	-0.00997
Structural Transformation			0.361***			1.914***
			-0.0876			-0.116
Human Capital		-0.0137	-0.0199		-0.027	-0.0342
		-0.036	-0.0358		-0.0645	-0.0588
Population		0.671***	0.665***		0.0897	0.487***
		-0.0756	-0.0771		-0.0989	-0.0933
Employment		-0.180***	-0.176***		0.0501	-0.117
		-0.066	-0.0672		-0.0891	-0.0819
Constant	5.893***	10.19***	10.22***	10.46***	14.15***	14.20***
	-0.193	-0.225	-0.224	-0.141	-0.279	-0.255
Observations	*1 900*	*1 424*	*1 424*	*1 900*	*1 424*	*1 424*
Year dummy	*No*	*Yes*	*Yes*	*No*	*Yes*	*Yes*
R-squared	*0.802*	*0.908*	*0.909*	*0.786*	*0.875*	*0.896*
Number of LDCs	*38*	*31*	*31*	*38*	*31*	*31*

Notes: Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1.
Columns (1) to (3) exhibit the pooled OLS results, while (4) to (6) show fixed effects results.

[24] The same procedure was conducted using capital stock as investment, however this stock-variable is much more complex and more difficult for policymakers to use as a benchmark or target. Nevertheless, both estimations are consistent with each other.

[25] See variables' description in the Annex.

Annex Table 4.3

GDP growth and investment: Panel Time-Series estimates

	(1)	(2)	(3)	(4)	(5)	(6)	-7	-8
	MG	MG	CDMG	CDMG	CMG	CMG	CMG	CMG
	Dependent variable: GDP							
IGFKF	0.259***	0.138***	0.524***	0.146***	0.231***	0.146***	0.189***	0.109***
	-0.0359	-0.0247	-0.0424	-0.0298	-0.0307	-0.0298	-0.0287	-0.0177
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Country trends	Yes	Yes	No	No	No	No	Yes	Yes
CD-test	0	0.017	0	0.039	0.092	0.039	0.923	0.102
Cointegration								
Observations	*1 900*	*1 424*	*1 900*	*1 424*	*1 900*	*1 424*	*1 900*	*1 424*
Number of LDCs	*38*	*31*	*38*	*31*	*38*	*31*	*38*	*31*

Notes: Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
MG: mean group, CDMG: cross-sectionally demeaned MG; CMG: Pesaran (2006) common correlated effects MG.
Controls included are structural transformation, human capital, population and employment.
CD-test calculates the cross-sectional dependence for a panel. The test captures the mean correlation between panel units. The null hypothesis is cross-sectional independence.
Cointegration tests (Augmented Dickey-Fuller, Modified Phillips-Perron, and Westerlund) suggest that GDP and investment are cointegrated. For the equations including all the covariates, the tests also indicate they are cointegrated.

Annex Table 4.4

GDP growth, Public and Private Investment: Ordinary Least Squares and Fixed-Effects estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	FE	FE	FE
	Dependent variable: GDP					
Public Investment	0.274***	0.207***	0.231***	0.356***	0.265***	0.259***
	-0.0179	-0.0142	-0.0148	-0.0161	-0.0185	-0.017
Private Investment	0.544***	0.358***	0.362***	0.332***	0.361***	0.301***
	-0.0179	-0.0122	-0.0121	-0.0152	-0.0186	-0.0171
Structural Transformation			0.265**			2.021***
			-0.125			-0.12
Human Capital		0.168***	0.180***		-0.587***	-0.455***
		-0.0455	-0.0458		-0.0727	-0.0661
Population		0.912***	0.873***		-0.0655	0.305***
		-0.0553	-0.0545		-0.107	-0.0999
Employment		-0.406***	-0.373***		0.786***	0.559***
		-0.053	-0.0526		-0.0951	-0.0869
Constant	0.671***	-0.207*	-0.202*	0.965***	1.440***	0.718***
	-0.0294	-0.124	-0.118	-0.0176	-0.173	-0.161
Observations	*1 853*	*1 410*	*1 362*	*1 853*	*1 410*	*1 362*
Year dummy	*No*	*Yes*	*Yes*	*No*	*Yes*	*Yes*
R-squared	*0.804*	*0.887*	*0.89*	*0.781*	*0.857*	*0.884*
Number of LDCs	*39*	*32*	*31*	*39*	*32*	*31*

Notes: Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Columns (1) to (3) exhibit the pooled OLS results, while (4) to (6) show fixed effects results.

4. Econometric models

The literature suggests that macro panels, such as those used here, need different estimations than micro panels (Baltagi, 2008; Burdisso and Sangiácomo, 2016; Eberhardt, 2012). The main reason is that macro panels need to account for non-stationary issues commonly observed in time-series analysis. Besides, the presence of unit roots in time-series models should be a concern to avoid spurious correlation.

The methodology has additional advantages. It provides efficient estimation even in the occurrence of local spillovers, global or local business cycles, and structural breaks. Those features are very convenient for this type of estimation because it reduces potential risks of utilizing long time series to gauge elasticities. Second, it allows for heterogeneity across countries in all regression coefficients (Lee et al., 1998), which does not occur for pooled OLS or fixed-effects estimations. Moreover, the panel times series method allows for the influence of historical, geographical, and institutional influences on growth rates without requiring direct measurement of these factors. It happens because the fixed-effects model keeps the unobservable variables constant over time, suppressing omitted variables' bias.

a. *Panel time series: common factor model*

For $i = 1, \ldots, N$, $t = 1, \ldots, T$, let

$$y_{it} = \beta_i' x_{it} + u_{it} u_{it} = \alpha_i + \Upsilon_i' f_t + \varepsilon_{it}$$

$$x_{mit} = \pi_{mi} + \delta_{mi}' g_{mt} + \rho_{1mi} f_{1mt} + \ldots + \rho_{nmi} f_{nmt} + v_{mit}$$

where,

y_{it} is the observed output (GDP) in natural log

x_{it} is observed factor inputs (investment or capital stock) in the natural log. This is the coefficient that captures the elasticity we are looking for.

f_t and g_t are unobserved common factors

β_i captures country-specific factor parameters

y_i, δ_i and ρ_i capture country-specific factor loadings

α_i and π_{mi} is the country-specific fixed effects

ε_{it} and v_{it} are i.i.d. erros

b. *Fixed-effects model*

$$\text{Poverty}_{it} = \alpha + \beta \text{GDP}_{it} + \delta_t + \lambda_i + \mu_{it}$$

where,

Poverty_{it} is the dependent variable that captures extreme poverty (percentage of the population living on with less than $1.90 a day in natural log) in a country i in year t

GDP_{it} is the explanatory variable (GDP in natural log) and β is the poverty-growth elasticity we are looking for

δ_t captures time effects related to common trends in GDP, λ_i is the set of country dummies and μ_{it} is the error term

Annex Table 4.5

Average LDCs' investment needs in billion of dollars and as per cent of GDP: 2021–2020

	Average investment values 2021–2030													
	7% annual growth (SDG 8.1)		End extreme poverty (SDG 1.1)		Double manufacture (SDG 9.2)		Health (SDG 3.8)		Education (SDG 4.1)		Social protection (SDG 1.3)		Biodiversity (SDG 15.1)	
	Billion dollars	*Investment as % of GDP*	*Billion dollars*	*Average GDP growth expected*	*Billion dollars*	*Average GDP growth expected*	*Billion dollars*	*% GDP*	*Billion dollars*	*% GDP*	*Billion dollars*	*% GDP*	*Billion dollars*	*% GDP*
Afghanistan	3.7	13	4.1	13	6.2	16	3.3	18	4.7	26			0.2	1
Angola	31.4	20	44.8	1	49.5	15	2.7	3	3.9	5			0.2	0
Bangladesh	119.9	31	85.8	13	240.7	19	14.0	5	20.0	7	4.8	2	0.8	0
Benin	5.7	27	8.2	0	15.0	24	0.1	7	1.4	10	8.0	57	0.1	0
Bhutan	1.8	47	1.2	12	4.6	24	0.1	3	0.1	4	0.0	0	0.0	0
Burkina Faso	5.9	27	7.7	19	22.9	31	4.6	11	2.5	16	21.1	140	0.1	1
Burundi	0.7	16	1.5		1.6	20	1.0	33	1.4	47	0.1	2	0.1	2
Cambodia	7.4	22	8.3	17	13.4	17	1.4	5	2.0	7	0.2	1	0.1	0
Central African Republic	0.6	22	1.1	10	1.1	16	0.4	18	0.6	26	0.1	3	0.0	1
Chad	2.8	16	3.3	2	7.0	23	1.4	12	2.0	17	0.0	0	0.1	1
Comoros	0.2	14	0.2	20	0.5	21	0.1	6	0.1	9	4.7	50	0.0	0
Dem. Rep. of the Congo	4.7	34	10.1	5	10.7	21	7.4	16	10.6	22	0.0	0	0.4	1
Djibouti	1.2	25	1.0		1.4	10	1.0	3	0.1	4	0.0	0	0.0	0
Eritrea	0.1	4	0.2	8	0.3	23	9.6	15	0.4	22			0.0	1
Ethiopia	62.7	48	67.0	3	106.3	16	0.3	10	13.7	15	0.1	4	0.5	1
Gambia	0.7	27	0.5	10	3.0	33	0.1	11	0.3	16	0.0	0	0.0	1
Guinea	3.0	16	3.4		2.2	2	0.2	9	1.6	13	43.4	50	0.1	1
Guinea-Bissau	0.1	5	0.1	7	0.2	23	0.0	12	0.2	18	0.0	0	0.0	1
Haiti	4.1	34	4.0	1	8.6	20	1.1	12	1.4	17	0.0	0	0.1	1
Kiribati	0.1	42	0.1	1	0.3	23	1.0	5	0.0	7	1.7	20	0.0	0
Lao People's Dem. Rep.	8.4	31	5.9	7	62.6	42	0.6	3	0.9	5	0.0	12	0.0	0
Lesotho	1.1	31	1.1	12	2.1	18	0.2	7	0.3	11	0.2	6	0.0	0
Liberia	1.1	29	1.5	21	4.0	29	0.4	16	0.6	23	1.7	9	0.0	1
Madagascar	4.2	22	9.4	18	7.2	16	2.3	16	3.3	23	0.2	9	0.1	1
Malawi	1.4	13	2.8	13	3.1	20	1.6	20	2.3	28	0.2	3	0.1	1
Mali	4.3	17	6.3	2	5.7	11	1.7	10	2.4	14	9.7	73	0.1	1
Mauritania	3.3	33	2.4	17	8.3	23	0.4	5	0.6	7	1.4	8	0.0	0
Mozambique	12.1	45	21.3	0	35.6	26	2.6	17	3.7	24	19.8	25	0.1	1
Myanmar	32.7	29	22.3	1	36.3	9	2.5	6	6.6	9	0.0	0	0.3	0
Nepal	13.7	36	9.8	12	121.2	46	2.0	8	3.5	11	0.5	4	0.1	0
Niger	5.5	30	7.3	4	19.5	29	0.2	15	2.9	22	0.2	2	0.1	1
Rwanda	4.3	25	3.6	10	5.3	10	0.1	10	1.6	15	1.2	5	0.1	1
Sao Tome and Principe	0.1	20	0.1	11	0.1	13	1.1	4	0.0	6	0.0	0	0.0	0
Senegal	9.4	28	12.1	18	15.7	16	0.0	6	2.0	8	7.2	8	0.1	0
Sierra Leone	0.7	10	1.4	3	1.0	12	1.4	16	1.0	23	0.1	4	0.0	1
Solomon Islands	0.2	10	0.2		0.3	13	0.7	4	0.1	6	0.0	0	0.0	0
Somalia	0.5	20	0.5	12	1.2	22	1.3	81	1.9	116	0.0	0	0.1	5
South Sudan	1.9	20	2.6	3	5.4	25	0.9	19	1.4	27	3.8	239	0.1	1
Sudan	11.0	9	8.9	13	49.0	33	3.7	11	5.2	15	1.0	9	0.2	1
United Rep. of Tanzania	41.9	45	59.5	15	94.5	21	0.7	8	7.1	12	0.0	3	0.3	0
Timor-Leste	0.7	26	1.1	14	0.7	8	0.0	5	0.2	8	1.0	14	0.0	0
Togo	1.8	18	2.7	0	3.1	16	3.8	10	1.0	14	0.6	31	0.0	1
Tuvalu	0.0	29	0.0	11	0.1	33	5.0	2	0.0	3	0.0	0	0.0	0
Uganda	11.4	25	14.5	1	17.6	14	1.7	12	5.4	17	59.7	97	0.2	1
Yemen	22.0	76	16.0	16	35.6	15	2.5	10	3.6	14	0.0	0	0.1	1
Zambia	11.9	36	19.7		21.1	17	1.5	7	2.2	9	1.3	6	0.1	0

Source: UNCTAD Secretariat calculations based on data from United Nations Statistics Division, Penn World Tables, World Development Indicators (World Bank), Atlas of Social Protection Indicators of Resilience and Equity (World Bank), and United Nations Population Division of the Department of Economic and Social Affairs [accessed June, 2021].