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E. MACROECONOMIC INDICATORS DETERIORATED IN ALL LDCs

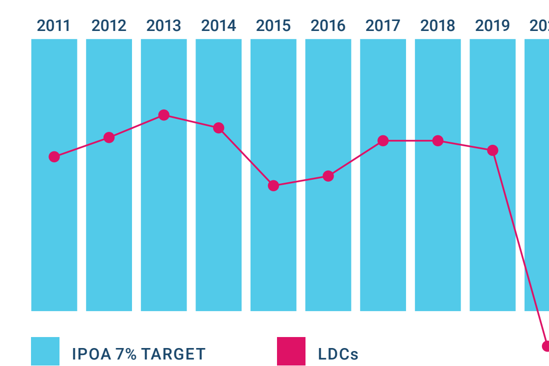
As described in the previous sections, the COVID-19 crisis in LDCs is both a demand shock as well as a disruption of supply caused by a combination of COVID-19 itself, domestic measures to contain the spread of the virus and especially external spillovers. The global recession affects LDCs through a reduction in trade, capital and remittance flows leading to reduced or negative GDP growth. Consequently, government revenue and expenditure as well as price and exchange rate stability are also affected. The uncertainties related to the spread and duration of the pandemic have also increased the vulnerability of LDCs.

E.1 DECLINE IN GDP

Limited growth in LDCs was insufficient to accelerate economic and social progress and significantly reduce poverty even before the pandemic. Average growth in the least developed countries stood at 4.7 percent between 2011 and 2019. Weak growth rates in many advanced and emerging economies and the steep fall in international commodity prices after 2011 ultimately had an impact on growth rates in the least developed countries. In 2019, average growth in the least developed countries was 4.9 percent, a slight improvement from 4.3 percent in 2011. The recovery in economic growth for the least developed countries, which commenced towards the end of 2016, mirrored the cyclical upturn in global activity, driven by factors such as rising investment, increased industrial production and trade, and strengthened consumer confidence. Growth in the least developed countries is influenced in large part by domestic drivers of growth, commodity prices and vulnerability to natural hazards and other exogenous shocks (UN, 2020a).

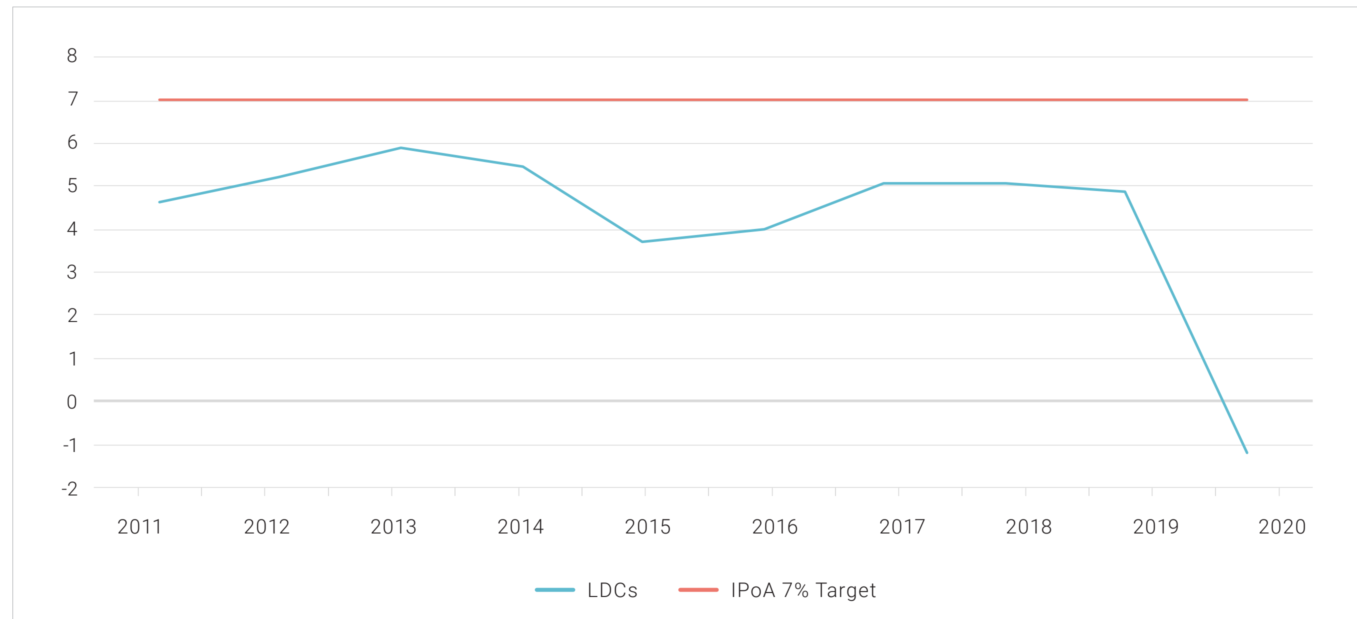
Estimates of GDP growth rates have been revised downwards throughout 2020, both for the world and for groups with large overlaps with LDCs. On average, GDP in LDCs is estimated to have declined by 1.3 percent (while global GDP declined by 4.3 percent) in 2020, according to latest available projections by UN DESA (UN DESA, 2021). This is a quite stark difference to the projected 5.1 percent GDP growth in LDCs at the beginning of 2020 and well below the IPoA target of 7 percent (figure E.1). This sharp decline in the growth rate is mainly driven by reduced external demand, falling commodity prices, decline in tourism, remittances and foreign investment, and higher borrowing costs in addition to the domestic effects of COVID-19 and measures to contain it, which

Macroeconomic indicators deteriorated in all LDCs GDP growth fell drastically



This sharp decline in the growth rate is mainly driven by reduced external demand, falling commodity prices, decline in tourism, remittances and foreign investment, and higher borrowing costs in addition to the domestic effects of COVID-19 and measures to contain it, which also suppress domestic demand.

Figure E.1: Annual GDP growth in LDCs (percent)



Source: UN DESA (2021).

also suppress domestic demand. Thus, commodity exporters and countries with large tourism sectors or strong trade links with China, the Euro Area and the US are severely affected (UN DESA, 2021 and World Bank, 2020a).

In many LDCs the effects of the pandemic are compounded by other disasters. Several LDCs in East Africa are also affected by a locust infestation, which has damaged agricultural crops and thus increased food prices. At the same time cyclone Harold had a devastating impact on Solomon Islands and Vanuatu in April 2020 as cyclone Amphan had in Bangladesh. In other countries like Afghanistan and Yemen GDP growth is also hampered by conflict (World Bank, 2020a; ADB, 2020b).

Tourism dependent LDCs, which include Cambodia, Comoros, The Gambia, Sao Tome and Principe, Vanuatu are also affected severely, as tourism presents a significant share of GDP, employment, fiscal revenue and foreign exchange. Globally tourist inflows are only expected to return to 2019 levels by around 2023 (IMF, 2020a and 2020c).

The most severe decline in GDP in 2020 of more than 6 percent is projected for Afghanistan, Kiribati, Nepal, Sao Tome and Principe, South Sudan, Timor-Leste, and Vanuatu (UN DESA, 2021). In Angola, real GDP is expected to decline for the fifth year in a row as the pandemic has worsened existing vulnerabilities, including high export concentration and declining access to capital (IMF, 2020a).

In some non-resource intensive countries, including Bangladesh, Benin, Lao People's Democratic Republic, Malawi, Myanmar, Rwanda and United Republic of Tanzania GDP growth is expected to be more resilient and stay in positive territory in 2020. Except for Lao People's Democratic Republic and Malawi, all of these countries had high growth rates of more than 6 percent in 2019 (UN DESA, 2021).

For Malawi, a small but positive growth rate of 0.2 percent is estimated for 2020. With no major exports of oil and minerals and a relatively small international tourism sector, Malawi was not fully exposed to the worst shocks in the global economy. GDP growth was driven by a higher than average maize harvest and the implementation of domestically financed development projects. However, disruptions of supply chains, political uncertainties and electricity outages had a negative effect. Also, remittances declined by around 13 percent (IMF, 2020e).

One major concern is the continued high uncertainty of the effects of COVID-19 on both the global and domestic economy, which makes the design of adequate measures even more difficult in already vulnerable countries. In many LDCs this uncertainty is compounded by scarce availability of data, which makes planning challenging. The social and economic effects will not only depend on the spread of the virus, which increased towards the end of 2020, but also on the impact on domestic and international demand and supply as well as the effectiveness of public policy responses like shutdowns and the behavioral changes related to the pandemic. There is empirical evidence that in countries that started reopening of the economy when the number of new COVID-10 cases

was still high and rising, mobility and economic activity did not increase significantly. Some LDCs introduced or reintroduced lockdown measures in the second half of 2020 leading to a downward revision in growth projections, while in others a second wave of COVID-19 infections had the same effect (AfDB, 2020 and IMF, 2020c).

Several forecasts expect that recovery in many LDCs will be slower than in many other countries (IMF 2020a). In addition, the prospects for 2021 are highly uncertain and come with major downside risks. Important sectors like tourism and transport may take longer to recover as demand might only rebound once the pandemic is fully contained, meaning it might take several years before output reaches 2019 levels again (see also section D.). The downside risks are interconnected and mutually reinforcing, resulting in high uncertainty. These include the possibility of subdued commodity prices for a longer time, which would affect public finances of commodity exporters. The tightening of financial markets combined with high debt burdens and capital outflows have made it more difficult and expensive to finance necessary measures to contain the effects of COVID-19 and to refinance maturing debt. In addition, climate change related shocks will continue to affect LDCs and in some of them the security situation has been deteriorating and there is the risk of social unrest (AfDB, 2020).

However, there are also factors that contribute to the resilience of LDCs, which could enhance the growth recovery, including the lower share of deaths from COVID-19 (see also section A.), and relatively strong domestic consumption as well as external buffers (AfDB, 2020).

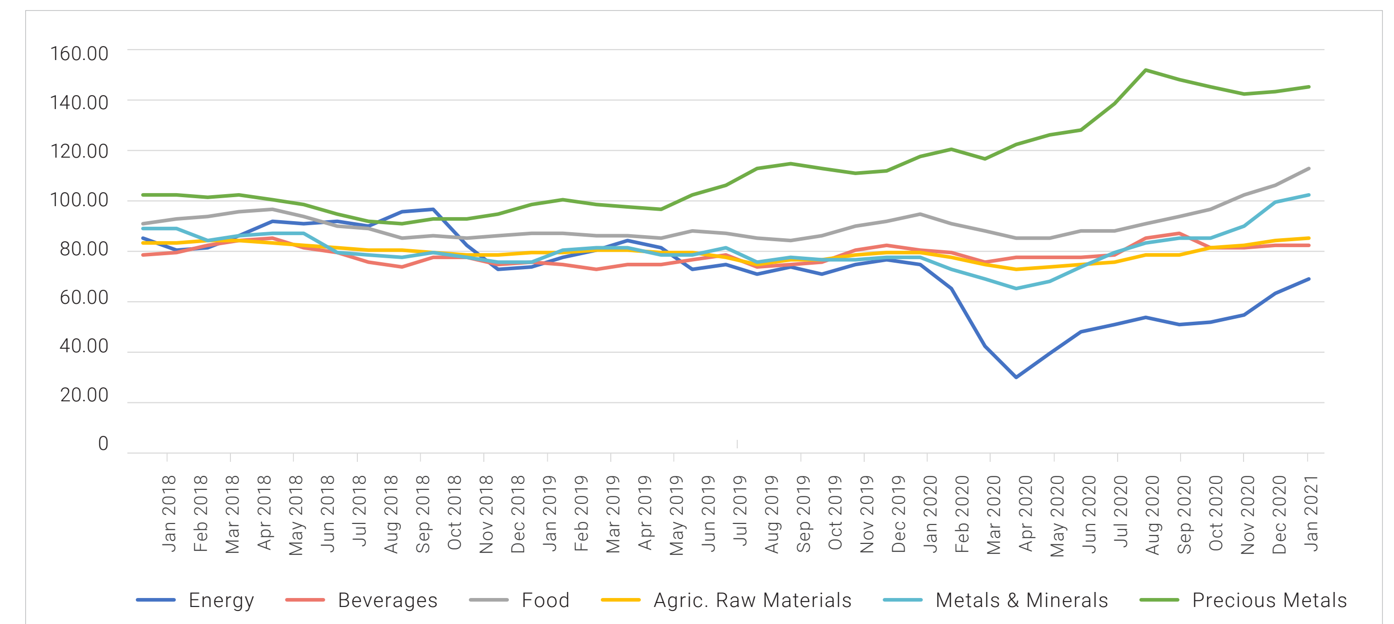
E.2 PRICE VOLATILITY, EXCHANGE RATES, MONETARY POLICIES

Drivers of inflation have been pointing in different directions and overall inflation has been relatively stable in LDCs, especially core inflation, which does not include food and basic energy (AfDB, 2020).

While commodity prices for key exports of LDCs remained relatively stable in 2018 and 2019, they changed drastically in 2020 (see figure E.2). Energy prices dropped sharply in the Spring but mostly recovered to the levels a year earlier by January 2021. Prices of agriculture commodities, including food as well as metals and minerals only dropped slightly and have reached levels well above the previous 3 years, especially for food and metals and minerals. By contrast, prices of precious metals which had started to raise in 2019, continued their increase throughout most of 2020 and leveled off towards the end. For 2021 modest increases of most commodity prices are expected but forecasts are subject to heightened uncertainties as they depend on the overall recovery of the world economy (World Bank, 2020b).

In selected goods price volatility increased due to disruptions of supply chains, export bans and an increase in air freight rates. This applies for example to medical supplies and equipment (like PPE and ventilators), for which most LDCs have no capacity to manufacture. Likewise, food shortages have led to increasing local food prices (see also section C.). As food has a high share in overall consumption in LDCs this could drive up inflation. However, monetary tightening might not get inflation rates down as the price hikes are caused by supply shortages both domestic and through imports (Addison et al., 2020).

Figure E.2: Commodity price indices for key LDC exports (2010=100)



Source: World Bank (2021).

On average, consumer price inflation in LDCs is estimated to have increased from 11.7 percent in 2019 to 21.4 percent in 2020, however with very wide variations. In many LDCs inflation has been modest or even negative as increasing food prices were balanced by the decline in demand as well as falling oil and commodity prices (ADB, 2020a and AfDB, 2020). However, the consumer price index in some LDCs has increased by more than 20 percent in 2020, driven by currency depreciations and disruptions to supply chains, especially for food and energy. These include Angola, Democratic Republic of the Congo, Ethiopia, Haiti, South Sudan and Sudan (UN DESA, 2021).

During the first months of 2020 the changes in exchange rates in LDCs have varied, depending on the structure of the economies, and the exchange rate regimes in place. For most LDCs no large-scale depreciation of exchange rates has occurred in 2020. However, the loss of export earnings, tourism and remittances contributed to significant currency depreciations in some LDCs, including Angola, Ethiopia, Mozambique and Zambia, where they were not only temporary but lasted until the end of 2020, making imports, including of food and agricultural inputs more expensive, which could further increase food insecurity (AfDB, 2020; Addison et al., 2020 and UN DESA, 2021).

In the current situation, currency depreciation cannot be expected to spur demand for their exports or attract tourism since this shock is systemic. Currency weakness will likely worsen the economic situation for many of low-income and fragile states whose debt is in foreign currency, further depressing local demand and resulting in declining GDP (Sayeh, and Chami, 2020).

Monetary policy

Many LDCs have used monetary policy to ease liquidity constraints during 2020. Despite occasional price increases some central banks have eased their monetary stances (e.g. Democratic Republic of the Congo) while others have lowered reserve requirements to free up liquidity (Mozambique), or implemented asset purchase programmes (Rwanda) (World Bank, 2020a). Many LDCs have cut policy rates significantly according to the IMF tracker of COVID-19 policies (IMF, 2020b).

Other LDCs introduced facilities to inject liquidity into the banking system ranging from 0.5 percent of GDP in Angola to 3 percent of GDP in Zambia. Banking authorities also used flexibility provided in regulatory frameworks, including for loan restructuring operations (IMF, 2020a).

The regional central bank (BCEAO) for the West-African Economic and Monetary Union (WAEMU), which covers Benin, Burkina Faso, Guinea-Bissau, Mali, Niger and Togo (in addition to Cote d'Ivoire, which is not an LDC), has taken steps to better satisfy banks' demand for liquidity and mitigate the negative impact of the pandemic on economic activity. This included reduction of interest rates, relaxation of collateral requirements, and encouraging commercial banks to extend debt service periods. In addition, the BCEAO launched in April 2020 a special 3-month refinancing window at a fixed rate of 2.5 percent for limited amounts of 3-month "Covid-19 T-Bills" to be issued by each WAEMU sovereign to help meet immediate funding needs related to the current pandemic (IMF, 2020b).

A number of LDCs implemented measures to stimulate the use of e-money and reduce the use of cash, mainly using reduced transaction fees and increased balance and transaction limits (IMF, 2020b).

External balances

The median current account deficit of LDCs had been declining since 2012 from 7.6 percent to 4.9 percent of GDP in 2018.[37] The pandemic has shown declining remittances and other inflows, and because of that current account deficits are expected to worsen again (AfDB, 2020). The effects on the trade balance are unclear as the decline in exports might be offset by reduced imports due to the disruption of supply chains. While trade declined sharply from March to May 2020, it started to recover in the second half of 2020. Also a few export items faced increased demand, for example bicycles from Cambodia (see section D.). Imports of capital goods and inputs like fertilizers also declined significantly in many LDCs. One notable exception is Myanmar, where imports increased significantly, largely of capital and investment goods for government infrastructure projects. Net oil importers benefit from the drop in oil prices (ADB, 2020a).

On average, it is expected that COVID-19 will have a negative terms of trade shock for most LDCs at least in the short run (Addison et al., 2020). This comes on top of their already large exposure to risks related to price volatility of their main exports and a decrease of terms of trade over the past decade (UN-OHRLLS, 2018).

External reserves in LDCs had been low and stagnant before the pandemic with a median reserve cover of around 4 months of imports in 2018. They were at very low rates in several LDCs with less than 1 months of imports covered in Burundi, the Democratic Republic of the Congo and Sudan and less than 2 months in Djibouti, Lao People's Democratic Republic, and Zambia. This leaves very limited space for the import of essential goods as well as payment of external debt obligations (AfDB, 2020).

Reduced investment

Investment, both domestic and foreign is expected to decline further due to the pandemic, from already low levels. Many companies need existing access to capital (both savings and access to lending) to survive during the pandemic, so less financing is available for investment. At the same time, in several sectors longer-term earning expectations have been revised downwards, especially in extractives (mining and oil and gas), also reducing investment (Addison et al., 2020).

Many LDCs have experienced delayed or reduced FDI, driven by the COVID-19 shock (see section G.). Portfolio flows to Africa are also expected to decline by more than 50 percent, due to the global recession and more risk aversion by investors (AfDB, 2020).

While resources of firms have been depleted and access to capital reduced through the recession caused by the pandemic, increased investment that is aligned with the SDGs is crucial for building back better. Thus, measures that have been proposed to support the LDCs before the crisis, especially the dedicated investment promotion regime need to be urgently implemented, as discussed in section G.

E.3 FISCAL DEFICITS INCREASING

Decline in revenue from different sources

Before the pandemic the median tax-to-GDP ratio in LDCs increased very slowly, from 13.3 in 2011 to 16.2 in 2018, well below the level of higher income countries, and insufficient to meet the SDGs. These low ratios are due to their economic structures, high poverty rates, weak tax administration and the nature of their tax systems. In several LDCs the rate was lower than 10 percent. LDCs rely predominantly on taxes on goods and services followed by income taxes, with low (and often falling) shares of corporate taxation and very limited property taxes. Most of the increase in taxes came from taxes on goods and services, including the introduction of value added tax (VAT) in several LDCs, which generally has a regressive effect as the poor spend a larger share of their income on consumption. However, challenges, such as the handling of VAT credits and the management of VAT registrations, as well as possible regressive effects, remained. In addition, tax administration capacity in LDCs is relatively low, with a much lower proportion of staffing compared to high-income countries and the collection of tax revenue is challenging due to a large informal economy (UN-OHRLLS, 2017; UN, 2020a and 2020b).

Another challenge for LDCs is the role of international tax agreements, financial secrecy jurisdictions and tax havens in facilitating tax evasion and illicit tax avoidance that involves wealth transfers across borders. Resource extraction is often under-taxed and multilaterals investing in LDCs use tax avoidance strategies that exploit gaps and mismatches in tax rules to artificially shift profits to low- or no-tax locations (UN-OHRLLS, 2017).

The effects of COVID-19 are expected to lead to a significant decline in government revenue in most LDCs. Government revenues in Sub-Saharan Africa are projected to be on average 2.3 percentage points of GDP below pre-COVID-19 projections, with oil exporters and tourism dependent countries hit particularly hard, for example Mozambique with a decline of 5.27 percentage points. Also, for Asian LDCs government revenue is expected to decline from Myanmar (1.34 points) and Bangladesh (1.57 points) to Yemen (2.79 points), Lao People's Democratic Republic (3.53 points), Cambodia (4.62 points) and Nepal (5.60 points). As customs duties are a major component of tax revenue in many LDCs, with a median share of 14 percent in 2018[38], the decline in exports is affecting them disproportionally. However, there are also a few LDCs (Burkina Faso, Chad, Haiti, Niger, and Senegal where real revenues are projected to increase, mainly because of grants (IMF, 2020a and 2020d).

It is expected that tax revenue will not only decline in absolute numbers but that the tax to GDP ratio will further decline in LDCs as the reduction in domestic tax and non-tax revenues will be larger than the decline in GDP, which is a general pattern during recessions in low-income countries. In addition, public revenues will decline as governments reduce taxes in order to stimulate the economy and as physical tax collection becomes more difficult during the pandemic (OECD, 2020a).

Increase in expenditure

In many LDCs the initial response to the health effects of COVID-19 included increased spending for health care, improving testing infrastructure and enforcing containment measures. In order to support both the population and businesses affected by the pandemic governments need to

[37] OHRLLS calculation based on WDI data.

[38] According to OHRLLS calculations based on WDI data.

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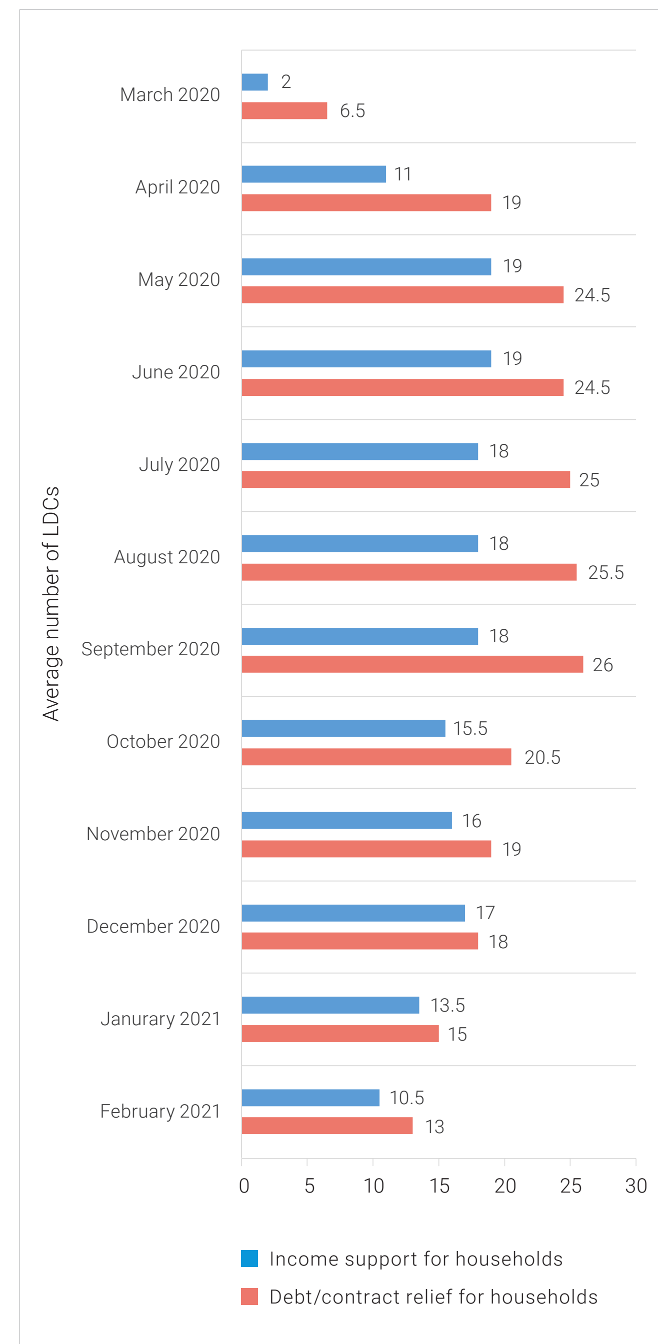
increase spending for social protection and business support but this is putting additional fiscal pressure on LDC governments (World Bank, 2020a). Only a few LDCs still have considerable fiscal space. For example, Timor-Leste used its Petroleum Fund to approve a health response and economic stimulus package equal to 9 percent of GDP (ADB, 2020a).

According to the Oxford Covid-19 Government Response Tracker (OxCGRT) the Central African Republic was the first LDC to implement income support measures of limited coverage as of 14 March 2020.[39] This was followed by Mauritania (25 March), Solomon Islands (27 March) and Nepal (30 March). In May and June, the number of LDCs providing income support had risen to 19 (out of 43 LDCs for which information was collected). However, from July several LDCs started phasing out support measures. A few LDCs started new payments in the Fall, but others continued to phase out measures. By February 2021 around 11 LDCs on average provided some income support measures to households (Figure E.3).

Contract relief for households started even earlier with the Democratic Republic of the Congo providing relief as of 1 March followed by Rwanda and Sierra Leone (both 18 March), Bangladesh (19 March), Haiti and Uganda (22 March). By May an average of 25 LDCs provided contract relief (out of the 43 LDCs with available information) and by September the average number had reached its peak at 26 LDCs according to the OxCGRT.[40] By February 2021 only 13 LDCs on average provided contract relief to households (Figure E.3).

The size of announced fiscal packages in most LDCs is much lower than in other developing countries as many governments face fiscal constraints in their ability to mitigate the impact of the crisis through greater spending, due to deteriorating financial conditions and vanishing fiscal space. LDCs collectively only managed to increase direct and indirect fiscal support by 2.6 percent of their GDP (which amounted to only US$17 per capita), while the size of the stimulus for the developed countries averaged 15.8 percent of their GDP (almost US$10,000 per capita). This challenge of LDCs to respond to COVID-19 with large fiscal responses will likely see their long-term growth and development path adjust downwards relative to the pre-crisis trends and will derail further the objective of reducing inequality between countries (UN DESA, 2021).

Figure E.3: Average number of LDCs providing support to households



Source: Hale et al. (2021).

In many LDCs the increased spending is coming in part at the cost of current and capital spending in other areas. The West African Economic and Monetary Union, which includes Benin, Burkina Faso, Guinea-Bissau, Mali, Niger and Togo, has provided additional space by temporarily suspending convergence criteria to allow greater flexibility of policy responses for member countries (AfDB, 2020; IMF, 2020a and 2020b).

According to the IMF Database of Country Fiscal Measures in Response to the COVID-19 Pandemic (with information as of end 2020) additional spending or foregone revenues due to COVID-19 in the areas of health care as well as social and economic measures varies widely among LDCs, with a few reporting more than 5 percent of GDP (Guinea-Bissau, Chad, Rwanda, Kiribati, Tuvalu, Lesotho, and Timor Leste), while 11 LDCs reported less than 1 percent of GDP (Table E.1). In addition to increased health expenditure, measures include expansion of social assistance programmes, including food distribution, support for private sector entities (wage support, interest subsidies), subsidies to the agricultural sector, tax rebates and exemptions.

Some LDCs also provided liquidity support, with Cambodia providing 2.3 percent of GDP, while Chad Guinea Bissau, Benin, Nepal, Lesotho, Niger, and South Sudan provided between 1 and 2 percent of GDP (Table E.1). Tax administrations have adjusted or simplified procedures for companies, including extended payment deadlines and temporary reductions in penalties or interest for outstanding arrears. In a few countries outstanding debts have been waived. For example, in Ethiopia debts from before 2015 have been written off and penalties and interest on outstanding taxes between 2015 and 2018 have been waived. Such waivers provide an incentive to self-disclose and thus could enhance tax compliance and revenue in the future (Granger et al., 2020).

Some LDCs are using measures that are supposed to address immediate financing needs of firms but would be revenue neutral in the longer term, including accelerated payment of invoices (Chad, Sierra Leone) and temporary deferment of the payment of taxes or social security contributions until a future date (Chad, Sierra Leone, Togo, Uganda) (IMF, 2020a).

Fiscal deficit

Fiscal deficits in LDCs have been widening before COVID-19 resulting in limited fiscal space. Thus, many LDCs entered the current crisis with significantly less fiscal space than it had at the beginning of the global financial crisis a decade earlier (UN-OHRLLS, 2017 and IMF, 2020a).

Due to COVID-19 fiscal deficits in most LDCs are expected to increase. On average for LDCs they are projected to increase by almost 2 percentage points of GDP from 3.4 percent in 2019 to 5.3 percent in 2020. The largest deficits of more than 8 percent are expected in Burundi, Guinea-Bissau, Kiribati, Malawi, Timor-Leste, Tuvalu and Yemen. In several LDCs, the fiscal deficit as a share of GDP is projected to increase dramatically, for example by 28 percentage points in Kiribati, 12 points in Vanuatu, 9 points in Togo and 7 points in Mozambique due to COVID-19 related expenditures (see Table E.2). Some countries are also trying to contain fiscal deficits. For example, Angola increased several taxes in July to offset pandemic-related tax relief measures leading to a deficit of less than 3 percent of GDP. Angola was also among the first LDCs to discontinue support measures. Bangladesh used off-budget measures and reduced capital spending to contain the deficit, which only increased by 1.4 percentage points in 2020. The average fiscal deficit for LDCs is projected to narrow slightly in 2021 assuming growth recovers and anti-crisis measures are scaled down as projected (IMF, 2020a and 2020d).

Many LDCs have financed growing fiscal deficits through concessional finance and in some cases increasing external debt but in several LDCs governments domestic borrowing also rose sharply (ADB, 2020a).

[39] The database records income support if the government is covering the salaries or providing direct cash payments, universal basic income, or similar, of people who lose their jobs or cannot work. (Includes payments to firms if explicitly linked to payroll/ salaries). See Hale et al. (2021).

[40] The database records contract relief if a government is freezing financial obligations (e.g. stopping loan repayments, preventing services like water from stopping, or banning evictions).

E.4 CONCLUSIONS AND RECOMMENDATIONS

The initial economic conditions of LDCs have a large impact on their economic resilience. This includes their economic structure, fiscal space, level of debt and the robustness of external buffers. Countries that are commodity dependent or have large fiscal and current account deficits, high debt levels and low external reserves are likely to be the least resilient (AfDB, 2020).

Growth that relies more on domestic demand than on often concentrated exports (both in few products and markets) would be more resilient but the necessary transformation will take time and considerable policy effort. The vulnerability of LDCs, with often small size, remoteness, and high vulnerability to natural disasters make it exceptionally difficult to reorient away from tourism, commodities, and remittances (IMF, 2020c).

The fundamental constraints of LDCs already forced them to dedicate scarce resources to address vulnerabilities in their macroeconomic fundamentals after the economic and financial crisis of 2008. This crisis had not only resulted in reduced growth but also altered their development path through changes in strategic investment and development plans due to more stringent credit conditions, reduced Official Development Assistance (ODA) and decreasing revenue, features that are already reappearing in the current crisis (UN-OHRLLS, 2018).

Due to the nature of the COVID-19 crisis, the associated loss of growth and investment as well as deterioration of a country's external position and debt position depend not only on the conventional macroeconomic policy instruments but crucially on the effectiveness of public health measures as well as economic and social support to households and enterprises. Furthermore, success in managing the pandemic includes management of expectations, which requires effective communication through various means, including reaching the poorest and most disadvantaged communities (Addison et al., 2020).

The phasing out of fiscal and monetary policy interventions will need to be carefully calibrated, maintaining a balance between reducing support too early, which could lead to additional suffering by the most affected people or business failures with long-term effects on the economy, or maintaining interventions for too long, which could create risks for fiscal, macroeconomic and financial stability. As uncertainties remain high exit strategies need to be flexible but also coherent and credible (AfDB, 2020).

Fiscal and monetary measures in LDCs should channel liquidity to SMEs, households, and informal workers, in order to deal with the effects of COVID-19 and boost fiscal multipliers to lay the foundation for a successful recovery. It is crucial to support individuals and firms to resume their activities and repair the damage sustained during the pandemic (OECD, 2020a).

The pandemic could also present an opportunity to further reform the tax system to make it more equitable and enhance its effectiveness due to the notion that this unprecedented crisis requires bold measures. There is evidence that introducing new taxes is less difficult at a time of major policy reforms, as it allows for the impacts of a wide range of policy measures to be balanced. There is also widespread agreement that increased public expenditures to protect the vulnerable and build resilience against future shocks is needed, which could enhance a sense of solidarity, including larger contributions to government revenue for those who are able to pay. It could also give a boost to reforms of domestic revenue mobilization efforts, including broadening of the tax base and enhancing compliance that are under way in many LDCs. Digitizing tax systems can also contribute towards improving tax collection and transparency of public financial management. To compensate for higher spending and lower revenues during the crisis the tax to GDP ratio, which is very low in most LDCs, needs to increase in the medium term. Likewise, an increased use of property taxes and taxes intended to improve health, such as on tobacco, should be considered (Granger et al., 2020; OECD, 2020b and UN, 2020c).

While many companies are negatively affected by COVID-19 there are also some that have received windfalls due to increasing prices (for example for gold) or increased demand, like IT services. These firms could contribute more to tax revenue through temporary increases to the rate of corporate income tax. Countries could also introduce a solidarity tax for individuals with high income or wealth as income and property taxes are under-utilized in many LDCs (Granger et al., 2020).

Another area to increase domestic resource mobilization are the reduction of subsidies and incentives. For example, due to the historically low oil prices fuel or energy subsidies could be reduced to free resources for social spending as they are often benefitting the rich more than the poor. This would at the same time contribute towards fostering a greener economy (Granger et al., 2020).

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In addition to efforts by the LDCs themselves, they need support to enhance their tax systems, including through capacity building and training. Transparency, including the monitoring of domestic revenues, aid, and the spending of both, will be critical. Support needs to be better coordinated and also include equipment, especially modern IT systems. International tax cooperation has improved recently but needs to focus more on LDCs (UN-OHRLLS, 2017 and Gaspar et al., 2020).

Further work will also be needed with respect to international cooperation in combating corporate tax avoidance to ensure that low income and low capacity countries, such as LDCs, are able to effectively tax cross-border activity and offshore assets. Currently only 8 LDCs are part of the Multilateral Convention on Mutual Administrative Assistance. This will not only require financial support, including assistance to build digitalized tax systems as well as capacity in developing analytical and interpretative skills to be able to act on information from the country-by -country reporting of the Base Erosion and Profit Shifting (BEPS) Package, but more significantly a review of international standards and instruments may be needed. It is essential to ensure wide and more inclusive participation of developing countries, including LDCs, in international discussions on tax norms. (OECD, 2020b and UN, 2020b and 2021).

Due their limited fiscal space LDCs will face difficult choices in upcoming budgets as most government planning efforts will require considerable revision. Due to the increase in poverty and the need to enhance basic services for health, education, water, and sanitation etc. as well as social protection, there will be a need to reduce spending in other areas. Thus, prioritization of expenditures, especially investments, needs to be done in line with meeting long term development goals including the SDGs, with a focus on addressing inequality, including gender inequality. Spending for crucial sectors that contribute to resilience and wellbeing of the most disadvantaged groups needs to be ringfenced. In addition, stimulus packages need to be well timed and contribute towards restoring fiscal sustainability. Incentives should be targeted towards investments that strengthen resilience, generate decent employment, and prioritize SMEs (Gaspar et al., 2020; OECD, 2020b and UN, 2020c; IMF, 2020d).

In addition, LDCs need continued and increasing access to financial resources to be able to protect their people and economies from the worst effects of COVID-19 and to ease adjustments and maintain confidence in currencies. While some liquidity has been provided quickly by international organisations there is a need to replenish resources, enhance debt relief and expand Special Drawing Rights (SDRs) (Addison et al., 2020). This is further discussed in section G.

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Table E.1. Summary of Country Fiscal Measures in Response to the COVID-19 Pandemic

	ABOVE THE LINE MEASURES			LIQUIDITY SUPPORT		
	Additional spending or foregone revenues			Subtotal	Below the line measures: equity injections, loans, asset purchase or debt assumptions.	Contingent liabilities
	Subtotal	Health sector	Non-health sector			Guarantees and Quasi-fiscal operations
Afghanistan	2.9	0.4	2.5			
Angola	0.5					
Bangladesh	1.3	0.1	1.2			
Benin	2.6	1.4	1.2	1.6	0.7	0.9
Bhutan						
Burkina Faso	4.3	1.9	2.4			
Burundi	4.9	1.9	3.0			
Cambodia	2.6	0.4	2.2	2.3		2.3
Central African Republic	1.2	0.7	0.4			
Chad	5.7	0.7	5.0	1.8	1.8	
Comoros	2.8	2.0	0.9			
Congo, Dem.Rep.	1.1	0.2	0.9			
Djibouti	2.4	0.8	1.6			
Eritrea						
Ethiopia	1.5	0.5	1.0	0.6	0.6	
Gambia, The	2.9	0.8	2.1			
Guinea	1.8	0.8	1.0	0.1		0.1
Guinea-Bissau	5.2	4.3	0.8	1.8	1.8	
Haiti	1.3	1.0	0.2			
Kiribati	9.6	3.5	6.0			
Lao PDR	0.0	0.0	0.0			
Lesotho	10.2	2.0	8.2	1.3		1.3
Liberia	2.1	2.0	0.1			
Madagascar	1.5	0.8	0.7			
Malawi	0.6	0.4	0.2			
Mali	2.2	0.4	1.9			0.0
Mauritania	4.9	0.6	4.3			
Mozambique	4.8	0.8	4.0			
Myanmar	0.9	0.2	0.7	0.3	0.3	
Nepal	1.8	1.3	0.5	1.4	1.4	
Niger	0.8	0.3	0.4	1.3	0.6	0.6
Rwanda	6.3					0.0
São Tomé and Príncipe	3.1	1.5	1.6			
Senegal	3.2	0.6	2.6	0.5		0.5
Sierra Leone	3.3	1.0	2.3			
Solomon Islands	2.9	1.2	1.7	0.7	0.7	
Somalia	0.1	0.2	-0.1			
South Sudan	0.2	0.1	0.1	1.2	1.2	
Sudan	0.9	0.5	0.5			
Tanzania, United Republic of	0.0	0.0	0.0			
Timor-Leste	13.0					
Togo	2.9	1.6	1.3			
Tuvalu	9.9	0.0	9.9			
Uganda	0.6	0.3	0.3	0.4	0.4	
Vanuatu	4.6	0.0	4.6	0.7	0.7	
Yemen	0.5	0.1	0.4			
Zambia	2.1	0.3	1.8	0.3	0.3	

Source: IMF (2021)

Note: Estimates as of end-December 2020. Implementation of the measures could span across 2020, 2021, or beyond. Numbers in U.S. dollar and percent of GDP are based on January 2021 World Economic Outlook Update.

Table E.2: General government net lending/borrowing (percent of GDP)

	GENERAL GOVERNMENT NET LENDING/BORROWING (% OF GDP)										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Africa											
Angola	3.40	8.08	4.13	-0.30	-5.72	-2.92	-4.52	-6.30	2.19	0.79	-2.81
Benin	-0.28	-0.98	-0.22	-1.37	-1.65	-5.55	-4.29	-4.20	-2.98	-0.54	-3.74
Burkina Faso	-4.06	-2.04	-2.76	-3.55	-1.74	-2.09	-3.09	-6.88	-4.36	-3.47	-6.09
Burundi	-3.64	-3.49	-3.79	-1.81	-3.75	-7.21	-6.78	-4.77	-6.76	-8.26	-9.52
Central African Republic	-1.35	-2.14	0.35	-5.94	-3.94	-0.59	1.07	-1.06	-0.97	1.43	-2.29
Chad	-4.15	2.39	0.47	-2.07	-4.18	-4.38	-1.94	-0.23	1.94	-0.17	-0.64
Comoros	4.20	0.86	1.96	10.49	-0.33	2.60	-4.48	0.35	-1.04	-2.20	-3.90
Congo, Dem. Rep.	-1.00	-0.99	1.75	1.87	-0.02	-0.41	-0.50	1.36	-0.05	-2.05	-1.90
Djibouti	-1.05	-1.19	-2.04	-4.25	-6.88	-15.42	-8.31	-4.53	-2.78	-0.85	-1.52
Eritrea	-17.69	-6.00	-5.59	-8.02	-0.36	-3.14	-1.66	-6.04	4.21	-1.61	-5.16
Ethiopia	-1.32	-1.61	-1.17	-1.93	-2.58	-1.95	-2.34	-3.24	-3.03	-2.53	-3.55
Gambia, The	-2.93	-3.01	-2.82	-5.56	-3.94	-5.38	-6.40	-4.98	-6.06	-2.53	-3.78
Guinea	-9.66	-0.94	-2.51	-3.87	-3.21	-6.89	-0.15	-2.06	-1.06	-0.47	-3.71
Guinea-Bissau	-0.23	-1.35	-2.12	-1.67	-2.44	-3.16	-5.34	-1.32	-4.92	-4.61	-8.27
Lesotho	-8.24	-14.70	-1.54	-2.87	3.07	-1.27	-8.56	-1.84	-4.17	-5.60	-7.31
Liberia	1.14	-4.32	-2.81	-5.96	-3.12	-4.40	-3.74	-4.79	-5.10	-4.55	-3.54
Madagascar	-0.76	-2.04	-2.24	-3.40	-1.96	-2.85	-1.11	-2.10	-1.33	-1.42	-5.52
Malawi	1.83	-4.12	-1.77	-6.43	-4.84	-6.34	-7.28	-7.33	-5.50	-6.36	-9.19
Mali	-2.57	-3.42	-0.96	-2.37	-2.89	-1.82	-3.94	-2.86	-4.77	-1.68	-6.20
Mauritania	-0.45	0.07	1.67	-0.66	-2.64	-2.44	0.13	0.53	3.42	2.75	-3.28
Mozambique	-3.50	-4.41	-3.62	-2.59	-10.26	-6.66	-5.48	-2.92	-6.85	-0.15	-7.06
Niger	-0.98	-2.19	-0.83	-1.93	-6.11	-6.75	-4.46	-4.12	-3.00	-3.56	-4.82
Rwanda	-0.64	-0.86	-2.37	-1.26	-3.90	-2.67	-2.26	-2.52	-2.58	-5.19	-7.72
Sao Tome and Principe											
Senegal	-3.91	-4.90	-4.15	-4.33	-3.39	-3.66	-3.27	-2.97	-3.64	-3.83	-6.23
Sierra Leone	-5.00	-4.54	-5.16	-2.39	-3.61	-4.55	-8.46	-8.78	-5.59	-2.74	-6.37
Somalia											
South Sudan		4.61	-14.81	-3.47	-9.08	-17.05	-15.10	3.26	6.32	0.34	-1.89
Sudan	0.11	-2.33	-7.37	-5.76	-4.72	-3.82	-4.56	-6.45	-7.92	-10.89	-6.83
Tanzania, United Republic of	-4.70	-3.51	-4.06	-3.81	-2.91	-3.17	-2.08	-1.16	-1.93	-1.72	-1.86
Togo	-2.30	-6.27	-6.48	-5.20	-6.85	-8.83	-9.54	-0.28	-0.78	2.13	-7.12
Uganda	-4.65	-2.04	-2.39	-3.19	-2.74	-2.55	-3.56	-2.75	-2.74	-5.02	-6.55
Zambia	-2.43	-1.78	-2.83	-6.21	-5.80	-9.54	-6.10	-7.59	-8.43	-8.14	-6.00
Average, Africa	**-1.11**	**0.26**	**0.26**	**-2.44**	**-4.13**	**-3.81**	**-3.52**	**-3.77**	**-2.15**	**-2.57**	**-4.23**
Asia and the Pacific											
Afghanistan	0.92	-0.67	0.18	-0.63	-1.72	-1.38	0.13	-0.67	1.63	-1.06	-2.79
Bangladesh	-2.68	-3.59	-2.98	-3.38	-3.08	-3.98	-3.36	-3.34	-4.64	-5.36	-6.80
Bhutan	7.91	-1.76	-2.47	-5.93	2.94	-0.20	-1.93	-4.79	-2.58	-1.15	-5.46
Cambodia	-3.80	-4.70	-4.53	-2.62	-1.64	-0.65	-0.30	-0.78	0.68	3.21	-2.40
Kiribati	-8.26	-19.33	-6.32	12.39	38.76	47.38	23.16	40.38	-1.68	15.02	-13.24
Lao People's Dem. Rep.	-1.47	-1.43	-2.34	-4.03	-3.13	-5.57	-5.06	-5.49	-4.66	-5.02	-6.42
Myanmar	-4.96	-4.43	-2.65	-1.72	-1.32	-2.78	-3.87	-2.86	-3.40	-3.92	-6.02
Nepal	-0.77	-0.82	-1.34	1.81	1.53	0.66	1.35	-3.09	-6.65	-4.56	-7.93
Solomon Islands	5.03	7.47	3.27	3.64	1.84	-0.01	-4.17	-3.44	0.85	-1.66	-5.59
Timor-Leste	-19.79	-25.08	-39.12	-14.37	-37.53	-33.06	-55.19	-33.38	-28.08	-32.08	-17.52
Tuvalu	-24.12	-9.13	10.02	29.30	-6.14	15.32	28.21	3.21	32.04	-8.60	-12.30
Vanuatu	-2.52	-2.13	-1.63	-0.23	-3.48	-9.31	-3.94	-1.20	7.67	4.64	-7.62
Yemen	-4.06	-4.51	-6.32	-6.90	-4.14	-8.75	-8.53	-4.91	-7.85	-5.32	-9.21
Average, Asia and the Pacific	**-2.86**	**-3.50**	**-3.15**	**-3.03**	**-2.56**	**-3.89**	**-3.54**	**-3.29**	**-4.24**	**-4.50**	**-6.51**
Latin America and the Caribbean											
Haiti	-2.68	-2.47	-4.71	-7.01	-6.28	-2.50	0.03	0.04	-1.72	-2.28	-5.87
Average, all LDCs	**-1.76**	**-1.11**	**-1.96**	**-2.70**	**-3.57**	**-3.83**	**-3.50**	**-3.53**	**-3.06**	**-3.44**	**-5.32**

Source: IMF (2020f)

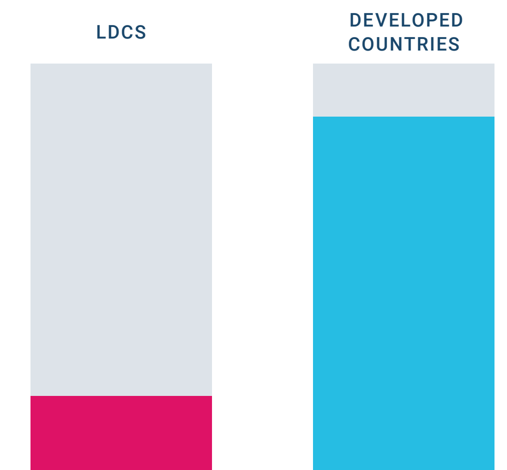
F. THE ROLE OF SCIENCE, TECHNOLOGY AND INNOVATION (STI) DURING A PANDEMIC: HOW CAN STI HELP TO BUILD BACK BETTER

The important role of Science, Technology and Innovation (STI) for development is recognized in a plethora of reports and international agreements. In 2001, the Human Development Report stressed that "technologies are tools of human development that enable people to increase their incomes, live longer, be healthier, enjoy a better standard of living, participate more in their communities and lead more creative lives" (UNDP, 2001). In the SDGs, specific aspects on STI were included in the Means of Implementation and Global Partnership section, including specific STI targets in SDG 17.6 to 17.8.

The COVID-19 pandemic has highlighted the central role of STI and digitalization: from prevention and treatment of the health crisis to new and innovative ways of learning, working, communicating and the growing importance of e-Commerce and digital finance.

The section highlights key STI challenges that LDCs were facing prior to the COVID-19 pandemic and highlights the increasing role played by STI during the pandemic, including teleworking, e-education, telemedicine and digital finance.

In general, access to the internet remains a key challenge that hampers adoption of STI in LDCs



Most of the offline population live in LDCs, where only 19% use the internet, compared with 87% in developed countries

F.1 STI CHALLENGES IN LDCs[41]

LDCs are often unable to benefit from the economic and social benefits related to technological development. One of the causes for this can be found in structural limitations, as there are marked gaps between LDCs and other countries in the area of STI. Traditional development approaches based on the trickle-down assumption that increasing imports of capital goods and direct foreign investment would lead, through the diffusion of technology and innovation, to development gains, does not happen to the extent expected. Low levels of investment in research and development, low enrolment rates in higher education and thus a limited supply of skilled labor, and inadequate or unstable policy and regulatory environments capable of promoting progress, all play a role in the poor state of science, technology and innovation in LDCs.

While data on STI indicators in LDCs are scarce, those LDCs with data show a significant lag in major indicators relating to STI. The ratio of research and development expenditure

[41] See also Chibuye and Zampetti, 2019