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Act now: Reduce the impact of COVID-19 on the cost of achieving SDG 4

There is a US\$148 billion annual financing gap in low- and lower-middle-income countries to achieve SDG 4 from now until 2030. Additional costs due to COVID-19 related school closures risk increasing this financing gap by up to one-third, or US\$30 to US\$45 billion. But investing now in remedial and re-enrolment programmes could reduce this additional cost by as much as 75%.

COVID-19 has transformed the world, and with it, the education landscape in every country. Public health research continues to chart virus transmission channels and infection mortality rates. However, contagion is not the only uncertainty. The societal and economic impacts of restrictions must also be reckoned with. Choosing which activities should be authorized presents serious moral dilemmas. In spite of the risks, there is a growing consensus that education is one activity that must resume. But if schools are to be reopened safely and effectively, there will be considerable financial and organizational costs.

These new costs come at a moment when education systems in low- and middle-income countries were already facing a growing financing gap. Slow progress towards achieving Sustainable Development Goal 4 (SDG 4) means that the annual costs are rising, if the goal is still to be achieved by 2030. COVID-19 adds even more expense to the SDG ambition – but if governments act quickly and invest wisely, they can still avert the worst of the damage.

This paper outlines the costs of achieving SDG 4 as assumed in 2015, as well as the revised costs projected before the outbreak of the pandemic in 2020. It also explains the drivers that will increase costs now that COVID-19 has become a global reality and the steps that must be taken to mitigate the pandemic's effects

on learners. It demonstrates how, by spending more now, governments can prevent the worst education outcomes of this crisis, thereby lessening later costs as well as securing a better future for the learners of the COVID-19 generation.

THE COST OF ACHIEVING SDG 4, AS ESTIMATED IN 2015, WAS HIGH

In 2015, the *Global Education Monitoring Report* team estimated that the cost of achieving the headline SDG 4 targets, that is, ensuring universal pre-primary, primary and secondary education by 2030 in low- and lower-middle-income countries, would cost a cumulative US\$5.1 trillion, equivalent to about US\$340 billion per year in 2015–2030. This cost was about 2.3 times higher than the annual total cost in 2012, reflecting a combination both of greater numbers of students (e.g. five times more students in pre-primary and upper secondary education in low-income countries) and higher per-student costs, which were mostly the result of falling pupil/teacher ratios in pre-primary and higher teacher salaries at pre-primary and primary levels. In relative terms, the total cost would increase from 3.5% to 6.3% of GDP between 2012 and 2030. The increase was steeper in low-income countries where it would triple both in volume (from US\$14 billion in 2012 to an average of US\$50 billion in 2015–2030) and as a percentage of GDP (UNESCO, 2015).

In addition to the universal education objective in SDG targets 4.1 and 4.2, these estimates also reflected the cost of achieving other SDG 4 targets. In particular, the costing model recognized that in fulfilling the pledge for equity, as reflected in target 4.5, reaching the last out-of-school students entailed a higher cost per student than the cost incurred for students already in school. The marginal cost of attracting and retaining children from marginalized backgrounds was assumed to be higher (up to 40%) for interventions reducing barriers to school access (e.g. nutrition programmes, free uniforms, tuition support, etc.); mother-tongue instruction in regions where children do not speak the majority or school language; remote or mobile schools for hard-to-reach children; health interventions against illness (e.g. malaria or worms); interventions for children with disabilities; and programmes for children in emergencies.

Likewise, the model recognized that to fulfil the pledge for quality, as reflected in targets 4.a and 4.c, core standards would need to be met to improve learning. In terms of *pupil/teacher ratios*, starting from commonly accepted ceilings at each level (e.g. 40 students per teacher in primary education), it was noted that these ratios would fall as countries become wealthier. The assumption was made that countries would gradually converge at a lower global average. It was projected, for instance, that the average ratio in primary education would be 29 students per teacher by 2030. In terms of *teacher salaries*, which tend to be higher in poorer countries as multiples of GDP per capita since relevant skills are scarce, the model assumed that, to ensure that pay is sufficient to attract the best candidates to the profession, countries would converge towards the teacher salary levels as share of GDP per capita of the highest-paying 50% of countries.

The number of *new classrooms* to be constructed was based on two assumptions: that there would be one classroom per teacher; and that old classrooms would need to be replaced. New classroom construction would be spread over 10 years. The cost of each classroom would be equal to a base construction cost multiplied by a durable furniture cost. A maintenance cost of 1.5% was also assumed. Overall, one-quarter of recurrent expenditure was assumed to be allocated for purposes other than teacher salaries. This assumption covers a wide range of cost items to improve quality.

The model did not cost the remaining SDG 4 targets, that is, those related to tertiary education, skills for

work, adult literacy, education for sustainable development and global citizenship, and scholarships.

The base scenario of the costing exercise made some critical assumptions. For instance, it assumed that the long-term average GDP growth rate would be 5%. It also assumed that tax ratios as a share of GDP and the share of budgets allocated to education would increase at a declining rate.

THE COST OF ACHIEVING SDG 4, RE-ESTIMATED IN 2020, HAD ALREADY INCREASED BEFORE COVID-19

In 2020, the *Global Education Monitoring Report* team updated the data in the model and checked whether the assumptions made in 2015 had been proven accurate. With a few exceptions mentioned below, critical parameters, such as teacher salary multipliers of GDP per capita, remained constant and do not affect the analysis.

But as the analysis for the 2019 High-level Political Forum had indicated, progress towards SDG 4 targets had been slow. For instance, the ultimate secondary completion rate had barely increased from 18% in 2015 to 20% in 2020, when it should have already reached 46% (UNESCO, 2019).

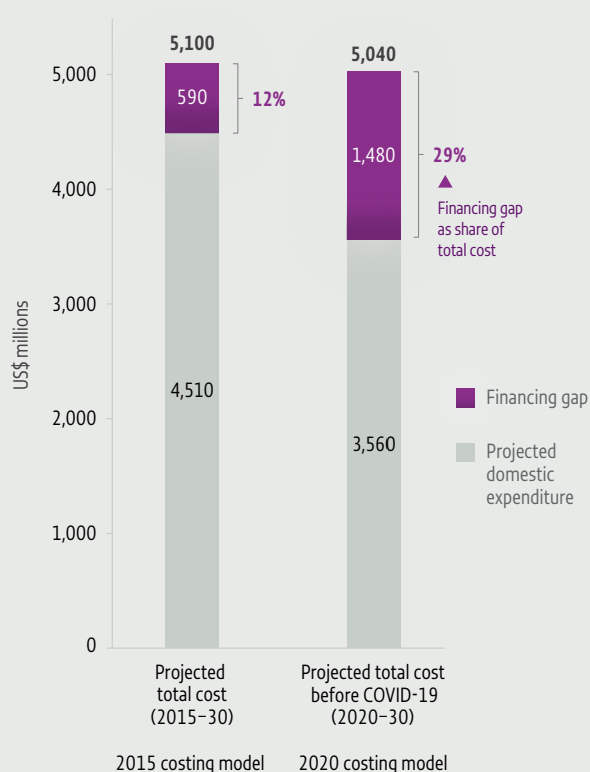
Between 2015 and 2020, before the onset of COVID-19, the cumulative financing need to achieve SDG 4 by 2030 in low- and lower-middle-income countries has therefore remained the same, at just over US\$5 trillion – but, given the shorter time horizon to achieve the targets, the annual financing need had increased from US\$340 billion to US\$504 billion (**Figure 1**).

Out of the US\$504 billion annual financing need, the updated estimate before the onset of COVID-19 was that US\$356 billion would be covered by available domestic financing resources, increasing the annual financing gap from US\$39 billion to US\$148 billion, or from 12% to 29% of the total cost.

Five factors account for the increased total financing gap relative to that estimated in 2015. First, as already implied, because the enrolment and completion indicators have only slightly increased since 2015, the same targets now need to be achieved not over

FIGURE 1:**The cost of achieving SDG 4 has remained constant**

Cumulative total cost of achieving SDG 4 in low- and lower-middle-income countries by 2030, disaggregated by projected domestic expenditure and financing gap, 2015 costing model and 2020 update, US\$ million



Source: GEM Report team calculations based on the 2015 costing model update.

15 years but in a compressed 10-year timeframe. Second, the assumed 5% annual GDP growth rate has been replaced by the actual growth trajectory. While the GDP of lower-middle-income countries has grown on an annual basis at the assumed 5% between 2016 and 2019, growth has fallen below the target in low-income countries, with GDP rising at an average of 3.7%. In the updated model, GDP projections have also been updated for 2020–2030. There is insufficient information to establish whether tax ratios as a share of GDP and education as a share of total budget have increased. Third, projected numbers of students have slightly increased. Fourth, classroom construction cost parameters have been adjusted and have also been updated to include investments for water, sanitation and hygiene.

Finally, while many countries did not improve their pupil/teacher ratios, overall convergence towards pupil/teacher ratio targets has been faster than expected, which has had a considerable upward effect on unit costs. While recurrent costs can be kept in check as long as pupil/teacher ratios remain high, updated pupil/teacher ratios were considerably lower than in the 2015 model at all levels except primary education. For instance, pupil/teacher ratios in sub-Saharan Africa were lower by 6% in pre-primary, 14% in lower secondary and 23% in upper secondary (in upper secondary, 20:1 compared to 26:1). In South Asia, the pupil/teacher ratio in pre-primary education was 55% lower (14:1 compared to 31:1). Many of these adjustments are the result of increasing data availability, since the 2015 model used regional averages when country data were missing.

COVID-19 FURTHER INCREASES THE COST OF ACHIEVING SDG 4

Already facing this financing gap in their efforts to achieve SDG 4, low- and lower-middle-income countries now have to contend with the additional challenge of COVID-19. Recognizing that many countries will be unable to take all necessary measures, four cost drivers related to COVID-19 need to be taken into account.

First, and most importantly, it has been well documented that school closures have led to loss of learning. Distance learning solutions have failed to reach hundreds of millions of learners: according to one estimate, based on a joint UNESCO-UNICEF-World Bank survey, at least 580 million students in low- and middle-income countries were not reached at all, representing 38% of total students in the countries surveyed. Where distance learning exists in these countries, they reach at most 46% of learners in the case of television and 25% in online delivery (UNICEF, 2020). For the vast majority of learners who were reached, lessons were infrequent and curriculum coverage was incomplete. And even in the best case scenario of smooth transition to distance learning in high-income countries, distance learning solutions offer an imperfect substitute to face-to-face interactions between teachers and learners. **Remediation**, therefore, will be needed to address the loss of learning, especially for disadvantaged students who are more likely to lack the means to follow classes from a distance or to have an appropriate learning environment at home.

Second, there is a high risk that families facing increased hardship may withdraw their children from school. For instance, the World Bank estimated that 6.8 million children and adolescents of primary and secondary school age are at risk of dropout (Azevedo et al., 2020), while UNESCO estimated that 11 million children may not return to school (United Nations, 2020). To mitigate the damage, countries will need to design and implement **re-enrolment** strategies consisting of national campaigns and incentives targeted at encouraging marginalized students to return to school. In addition, due to COVID-19, extra teacher salaries may be needed to retain students in school and to maintain the pupil/teacher ratio at target levels. For instance, it has been reported that some parents have struggled to pay private school fees. Governments can choose to take over the salary burden of private schools to prevent them from closing down, a policy reportedly under consideration in Kenya (Wafula, 2020). Alternatively, they may choose not to pay private school salaries but instead to hire more public school teachers to absorb students leaving private schools, while keeping the pupil/teacher ratio constant. These indicative assumptions abstract from the need to lower the pupil/teacher ratio below target levels to respect physical distancing norms in currently overcrowded classrooms.

Third, even if re-enrolment strategies are employed, some students will not return to school. If SDG 4 is to be achieved, governments will need to provide **second chance education** solutions to reach those students.

Fourth, schools and classrooms will require new or refurbished **infrastructure** and equipment to be able to function in line with public health protocols. For instance, schools will need to repurpose additional spaces and make changes to the layout of rooms to enable physical distancing. In addition, infrastructure and supplies to ensure basic hygiene capabilities will need to be installed and maintained to minimize the spread of the virus. It should be recalled that schools in many countries lack water, sanitation and hygiene facilities. As of 2018, only 24% of schools in the average low-income and 73% in the average lower-middle-income country had basic handwashing facilities according to the UNESCO Institute for Statistics database.

To outline a cost scenario that accounts for these four drivers, a series of specific assumptions were made. First, the cost of remediation depends on the

link between school closure duration and the effort required to recover the learning loss incurred. It has been assumed that one day of remedial classes will be required for each week of school closure. One day of remedial classes has been budgeted at the cost of one day of general education. Costs for remedial classes of marginalized students are assumed to be five times higher than the general unit cost of remediation. Remediation costs therefore depend on the length of school closures and the share of marginalized students involved.

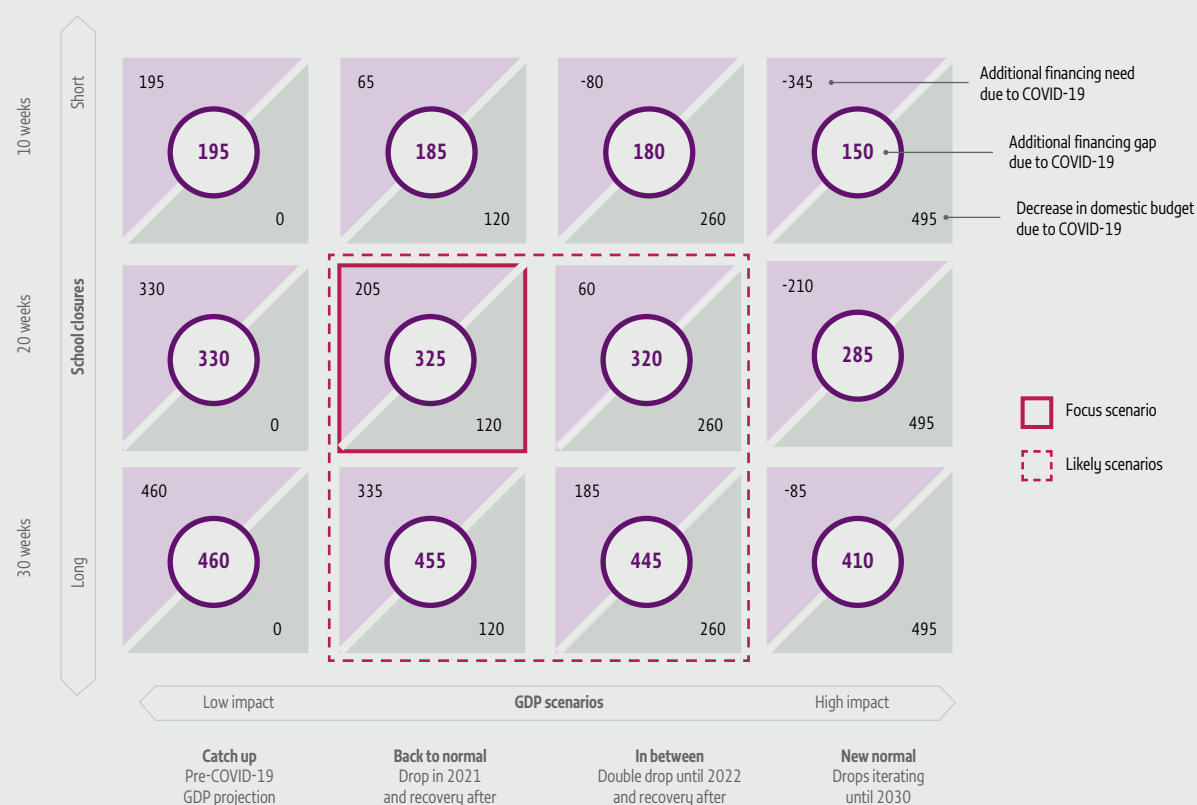
Second, the cost of ensuring that, when schools re-open, at-risk learners re-enrol rather than dropping out has been assumed to consist of two components. A national campaign would cost 2% of the unit cost, while targeted incentives for marginalized students would cost 1.2 times the cost per student of the national campaign. Additional teacher salary costs have also been budgeted linked to the share of private school teachers in a country. As mentioned above, this amount could be used to either help keep private schools open or to absorb in public schools those students who leave private schools, with the objective of keeping pupil/teacher ratios constant.

Third, the cost of second chance education is assumed to be twice the unit cost of general education. The purpose of this assumption is to ensure that education systems have no incentive to avoid trying to re-enrol students at risk of dropout. A re-enrolment friction rate is assumed equal to 2%, indicating the share of marginalized students who cannot be reached, irrespective of policy interventions.

Fourth, the cost of refurbishment assumes a mark-up of 10% for classrooms to repurpose additional spaces and 5% for furniture to make changes to room layout to enable physical distancing. A cost of investing in hygiene facilities and kits to prevent the spread of the virus is also taken into account.

The extent to which the four cost drivers need to be deployed will depend on two exogenous factors that are largely outside governments' direct control (**Figure 2**). First, epidemiological developments affect the duration of school closures. The longer the school closure, the higher the cost, because a higher number of students will need to be prevented from leaving school early (and will need to be educated in an alternative system), while learning losses will be considerably higher.

FIGURE 2:
Under alternative school closure and GDP impact scenarios, COVID-19 will increase the financing gap for achieving SDG 4
 Additional financing need, decrease in domestic budget and additional financing gap due to COVID-19 in low- and lower-middle-income countries between 2020 and 2030, by school closure duration and GDP scenarios, US\$ billion



Source: GEM Report team calculations.

Second, lockdowns and related constraints on economic activity also affect the context. Four different potential patterns are modelled, ranging from the most optimistic (under which GDP in 2030 would ultimately catch up to its 2030 level as projected before COVID-19) to the most pessimistic scenario (whereby decline and recovery would alternate year after year during the entire period between 2020 and 2030). Recessions lower the financing need baseline due to lower construction costs and salary increases. Under the most pessimistic scenarios, financing needs are lower.

The most likely scenarios involve a combination of a 20- or 30-week school closure with 1 of 2 economic growth paths: under the first, growth will suffer a dent in 2020, but then return to the earlier trajectory, which will persist to 2030; or, in a second, more severe path, growth will be negative twice before bouncing back. Under these scenarios, the additional financing needs range between US\$60 billion and US\$335 billion, while government spending on education will decline by between US\$120 billion and US\$260 billion, extending the financing gap by between US\$320 billion and US\$455 billion over the 10-year period to 2030. Relative to the financing gap of US\$1,480 billion, this is equivalent to an increase of 22% to 31%.

GOVERNMENTS CAN AVERT THE WORST POSSIBLE DAMAGE OF COVID-19

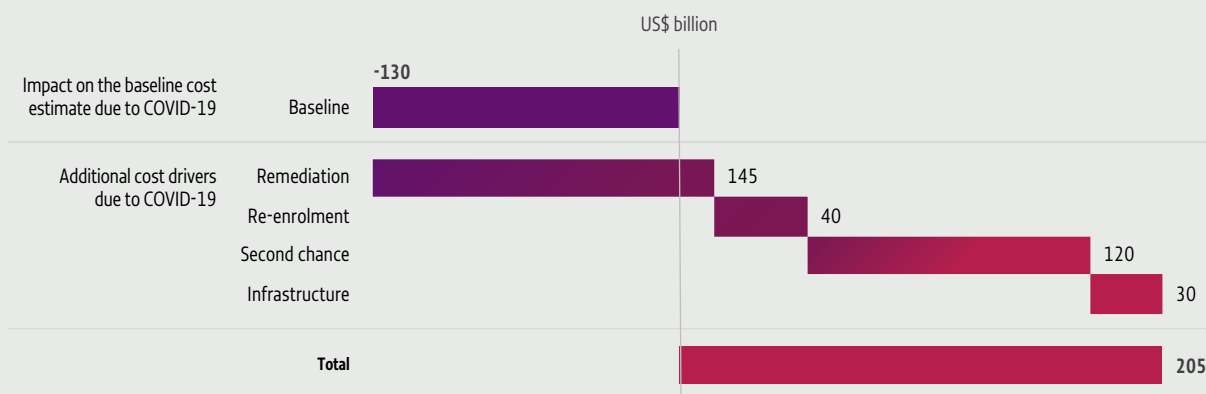
Given the considerable cost implications of COVID-19, education ministries could choose not to intervene. However, this would be short sighted, since taking early action could help to prevent the worst outcomes from emerging.

To simplify the discussion, the remainder of this paper focuses on the scenario of a 20-week closure with an economic scenario of a one-off slump episode followed by recovery. Under this combination, the cumulative additional financing need in 2020–2030 is US\$205 billion. On the one hand, COVID-19 reduces the baseline cumulative financing need by US\$130 billion as the projected slower GDP growth affects the level of teacher salaries and construction costs in the model. On the other hand, COVID-19 increases the cumulative financing need by US\$335 billion because of its impact on remediation (US\$145 billion), re-enrolment efforts (US\$40 billion), second chance programmes (US\$120 billion) and additional infrastructure costs (US\$30 billion), which result in a net increase of US\$205 billion on the cumulative financing need (Figure 3).

However, this default estimate assumes that governments make no efforts in the short term to remedy learning losses and re-enrol learners at risk. This long-term financing need could be reduced if a combination of efforts were pursued to keep some of these long-term costs in check by mitigating dropout and learning losses that lead to higher repetition and, as a result, to longer and more costly duration of schooling per student. Under the first option, efforts could focus on ensuring students return to school without investing in remediation. Under the second option, remediation would complement re-enrolment efforts. This combination would lead to a decline in the number of students repeating a grade (i.e. shorter average schooling duration) and in the number of students in second chance education (i.e. lower average unit cost) (Figure 4a).

Under the second option, the big difference will be made by upfront costs in 2020 and 2021 associated with re-enrolment, remediation and infrastructure investment for safe classrooms. The remaining recurring costs can be distributed evenly over every year to 2030. In the case of re-enrolment and remediation, the impact of COVID-19 on the total financing need could be cancelled out if US\$90 billion were to be spent in upfront investment (Figure 4b).

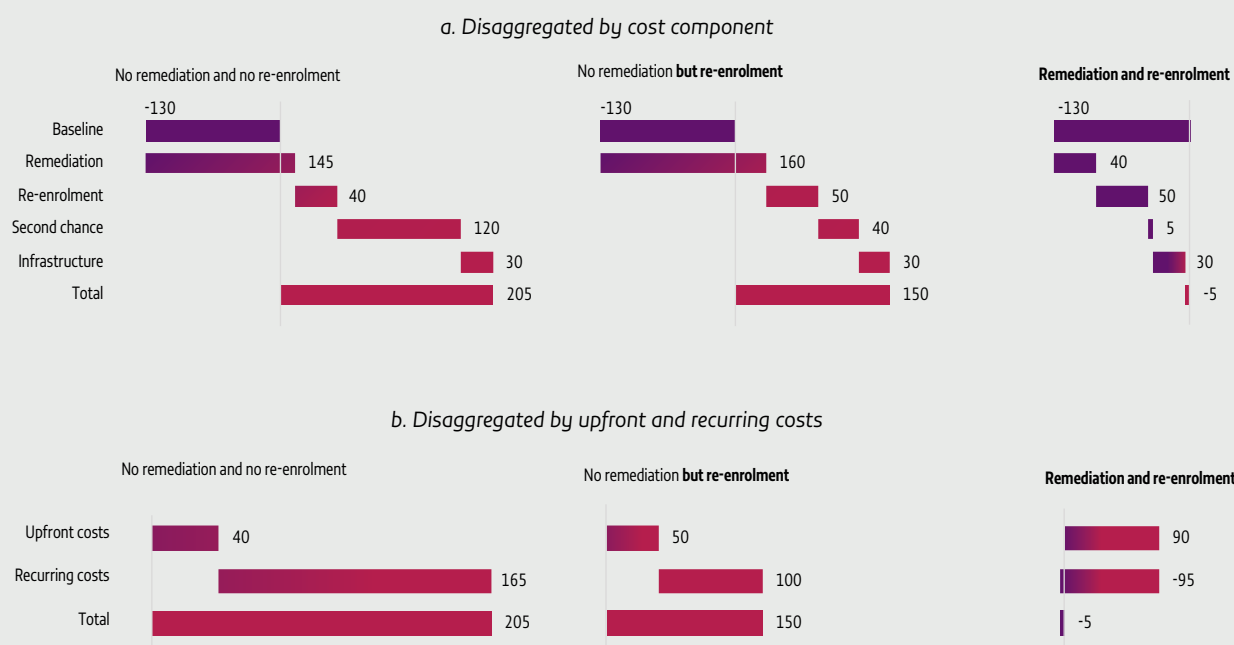
FIGURE 3:
In one likely school closure and GDP impact scenario, COVID-19 increases the cumulative cost of achieving SDG 4 by US\$205 billion
Cumulative (2020–2030) financing need due to COVID-19 in low- and lower-middle-income countries under a 20-week school closure and 'back to normal' economic growth scenario, US\$ billion



Source: GEM Report team calculations.

FIGURE 4:

In one likely school closure and GDP impact scenario, remediation and second chance programme needs increase the cost of SDG 4
Impact of two policy options to mitigate the cost (2020–2030) of COVID-19 in low- and lower-middle-income countries, US\$ billion



Source: GEM Report team calculations.

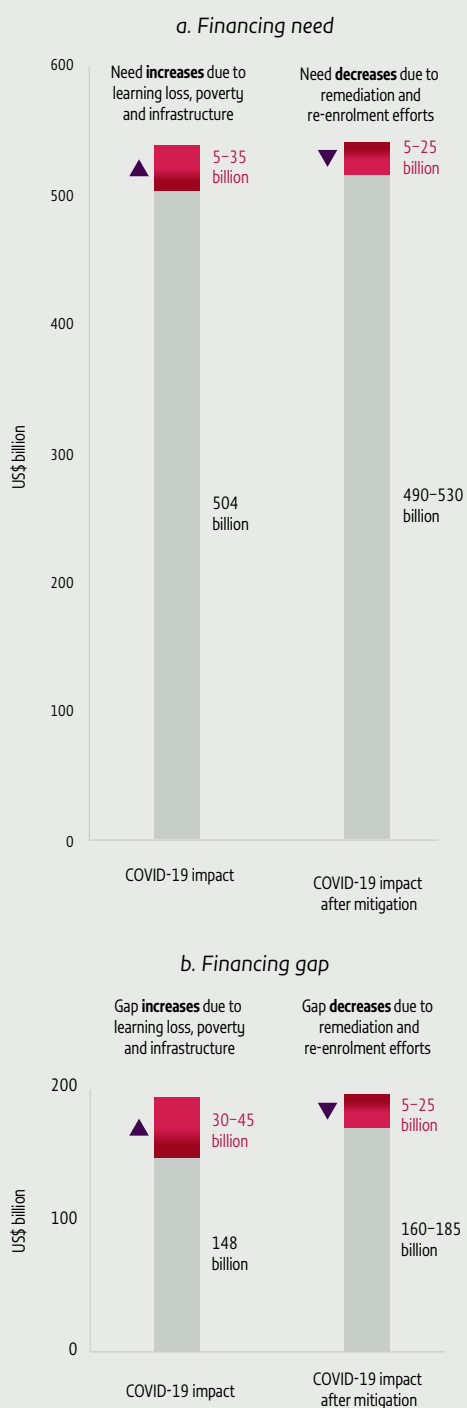
Overall, under four likely school closure and GDP scenarios, COVID-19 is estimated to increase the annual financing need from the baseline of US\$504 billion by about US\$5 billion to US\$35 billion. However, this effect can be reduced by policy action by about US\$5 billion to US\$25 billion (Figure 5a). Likewise, COVID-19 is estimated to increase the annual financing gap from its baseline of US\$148 billion by about US\$30 billion to US\$45 billion. But this effect, too, can be reduced by policy action by about US\$5 billion to US\$25 billion (Figure 5b). The additional financing gap depends not only on the additional financing need (which, in turn, depends on epidemiological and economic scenarios, as well as policy choices) but also on changes in government education budgets (which are linked in the costing model to assumptions about economic growth, tax rates and the prioritization of education).

CONCLUSION

Re-opening schools in the context of COVID-19 has cost implications. Some are related to public health protocols, while others are linked to the impact of prolonged school closures on learning and school attachment. This challenge comes to education systems in low- and lower-middle-income countries at a moment when slow progress towards SDG 4 means that the cost of achieving its headline targets has already increased considerably for the remaining period of the 2030 Agenda. This paper has estimated that the annual financing gap of US\$148 billion in 2020–2030 has increased by US\$30 billion to US\$45 billion, or by up to almost one-third under four likely school closure and GDP scenarios.

FIGURE 5:
Early action can absorb some of the cost increases caused by COVID-19

Annual financing need and financing gap to achieve SDG 4 pre-COVID-19, post-COVID-19 and post-mitigation measures in low- and lower-middle-income countries between 2020 and 2030, range for likely school closure duration and GDP scenarios, US\$ billion



Source: GEM Report team calculations.

Some of the costs are fixed and governments need to undertake them to respect the reopening protocols. However, the key message of this paper is that governments can choose to invest in re-enrolment and, especially, remediation strategies to address head-on a potential vicious circle of repetition, disengagement and eventual dropout. The coming months are a critical period to act in order not to turn this student cohort into a lost generation.

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