

EDUCATION
AND SKILLS:

EQUIPPING A LABOR FORCE FOR THE FUTURE

ESSAY

Strengthening education systems in Africa	58
Educate to adapt, adapt to educate	63

VIEWPOINT

International education financing will make or break the SDGs	67
STEM education in Africa: Risk and opportunity	69
To prosper, Africa's children and youth must learn	72
Foundational skills for a more inclusive Fourth Industrial Revolution (4IR) in Africa	74
Learning on the move: Resetting the agenda for education and learning in conflict-affected settings	76

Strengthening education systems in Africa

**H. E. JAKAYA
KIKWETE**

Board Chair, Global Partnership for Education (GPE) and former President of Tanzania

@GPEChair

Schools in African countries were closed on average nearly eight months—in some countries much longer. Despite heroic and innovative efforts to keep children learning, there is mounting evidence that academic losses have been severe.

Almost three years since the COVID-19 pandemic became a global threat and governments around the world shut down schools, the magnitude of the pandemic's impact on children is still emerging. What is clear is that without swift action, the costs to Africa's future could be staggering.

Even before COVID-19, nearly half the 10-year-olds in low- and middle-income countries could not read and comprehend a simple written story (see Figure 18). The pandemic has driven that to an alarming 70 percent.¹ Even before COVID-19, a quarter of a billion children were already out of school. Now, because of pandemic-related disruptions, an additional 24 million students may drop out permanently, many of them in Africa.²

For the most vulnerable children and youth, the impacts were far worse, extending to their health, safety, and psychosocial well-being.

Child labor and early pregnancy rates have risen, and interrupted learning has put 10 million more girls at risk of early marriage, effectively ending their schooling altogether.³ More than 370 million children globally missed out on school meals during closures, losing what is often their only reliable daily source of nutrition.⁴ In some countries, this has translated to half of all children experiencing physical violence during school closures, and three quarters having to skip meals because of economic hardship related to the pandemic.

The pandemic exposed the fragility of education systems, including in Africa, but also their centrality to our vision of a flourishing future built on sustainable and inclusive growth. After all, children and young people represent our greatest hope—and our greatest resource—to build a fairer, more prosperous, and greener Africa.

This is why as we recover from the impacts of the pandemic, we must seize the moment to revolutionize the future of education in Africa, starting with transforming our education systems.

First, this means prioritizing education as a critical part of national and pan-African strategies to recover and rebuild. Governments must sharpen their focus on delivering **12 years of quality education for every child**, regardless of their gender, household income, or whether they live in rural areas or with a disability. **Sufficient and well-trained teachers** are an essential enabler of this success, as is **investing in at least one year**

- 1 World Bank. 2022. "70% of 10-Year-Olds now in Learning Poverty, Unable to Read and Understand a Simple Text." Press release for the State of Global Learning Poverty: 2022 update. World Bank Group.
- 2 UNESCO. 2020. "UN Secretary-General warns of education catastrophe, pointing to UNESCO estimate of 24 million learners at risk of dropping out." Press Release. United Nations Educational, Scientific and Cultural Organization.
- 3 UNICEF. 2021. "10 million additional girls at risk of child marriage due to COVID-19." Press Release. United Nations Educational, Scientific and Cultural Organization.
- 4 UNICEF. 2020. "Futures of 370 million children in jeopardy as school closures deprive them of school meals – UNICEF and WFP." Press Release. United Nations Educational, Scientific and Cultural Organization.

of preschool for every child. We must **redouble our efforts to eradicate violence**, including gender-based and sexual violence, from our school and our communities so that every child is safe to learn. And we need a whole-of-society approach to **combat gender inequalities** that mean girls drop out of school to be married, or boys are forced out of classrooms to work.

During the U.N. Transforming Education Summit in September 2022, I was encouraged to see many African leaders pledging action to deliver on these priorities.

Second, education ministries and their partners need to **identify and prioritize reforms that will deliver changes at scale**; a transformation that reaches every school, teacher and child, starting with those who are being left furthest behind. The Global Partnership for Education (GPE) which I chair, is currently supporting over 40 African countries to do just this, starting by identifying and unblocking the political, technical, or financial obstacles that get in the way of children's learning, and that keep the most marginalized out of school entirely. Some of the key obstacles to transforming education include limited domestic financing, owing to high debt costs, which mean countries are not spending enough on education, or are not spending efficiently and equitably. This is why GPE focuses on **leveraging more and better domestic financing** as the most significant and sustainable form of funding for education.

Third, we need to scale up investments to **transform education systems, putting the most vulnerable children at the center**. Investments in education can spur and work alongside other social investments, like health, nutrition, and psychosocial services to boost children's health, safety, and well-being; as well as equip them with the skills they need to thrive in 21st century economies.

However, with food and energy prices stoking inflation globally, funds that should be rushing back to repair COVID's damage to education systems, risk being redirected to other competing priorities.

We must not allow this to happen. I commend the 20 GPE partner countries, 16 of them in Africa, who have already signed on to the Heads of State Declaration on Education Finance, a powerful statement of intent to **allocate at least 20 percent of national spending on education**. I hope many more will join their ranks and translate these commitments into action for Africa's children.

With rising debt costs and global inflation, it is also imperative that governments look for ways to expand their fiscal space and **fund education investments in ways that do not drive up borrowing costs**. At GPE we are looking at ways to collaborate with partner countries by supporting new agreements that divert debt payments to education budgets, or by supporting donors and creditors who will pay off debt costs, in return for results or additional spending in education (these can work alongside a swap where payments are diverted to education from a cancelled debt service; or a buydown where an entity which is not the creditor, nor the debtor, pays some of the debt costs in return for increased education spending). Innovative investment from international funders can also augment domestic budgets to bolster national efforts. This has been GPE's approach for two decades, uniting broad coalitions from the development community and the private sector in support of country-led reforms.

This year, as we mark 10 years since adopting Agenda 2063, let us put children and young people at the heart of our strategies for inclusive and sustainable growth, and commit to transforming education for a transformed future.

Finally, we must **build on the learning, innovations, and investments made during the past three years**. The pandemic inspired new and innovative efforts by many teachers, parents, community leaders, and education officials in delivering lessons to children; any way they could. GPE was proud to support such efforts in 40 African countries.

In Eswatini, Rwanda, and Somalia, for example, television and radio stations offered daily lessons while some students in Zambia could tune into similar programming on solar-powered radios distributed to those without electricity. In Zimbabwe and Sudan, GPE supported the rapid expansion of UNICEF's Learning Passport, an online and offline tech platform where children can access high-quality learning materials from anywhere, anytime.

In Burundi, specially printed materials were developed for remote learning while some children with disabilities in Gambia received regular phone check-ins as well. In Malawi, the government also focused on training teachers and staff to be prepared for school reopening, with adjusted curricula and improved, hygienic facilities with clean water and proper sanitation.

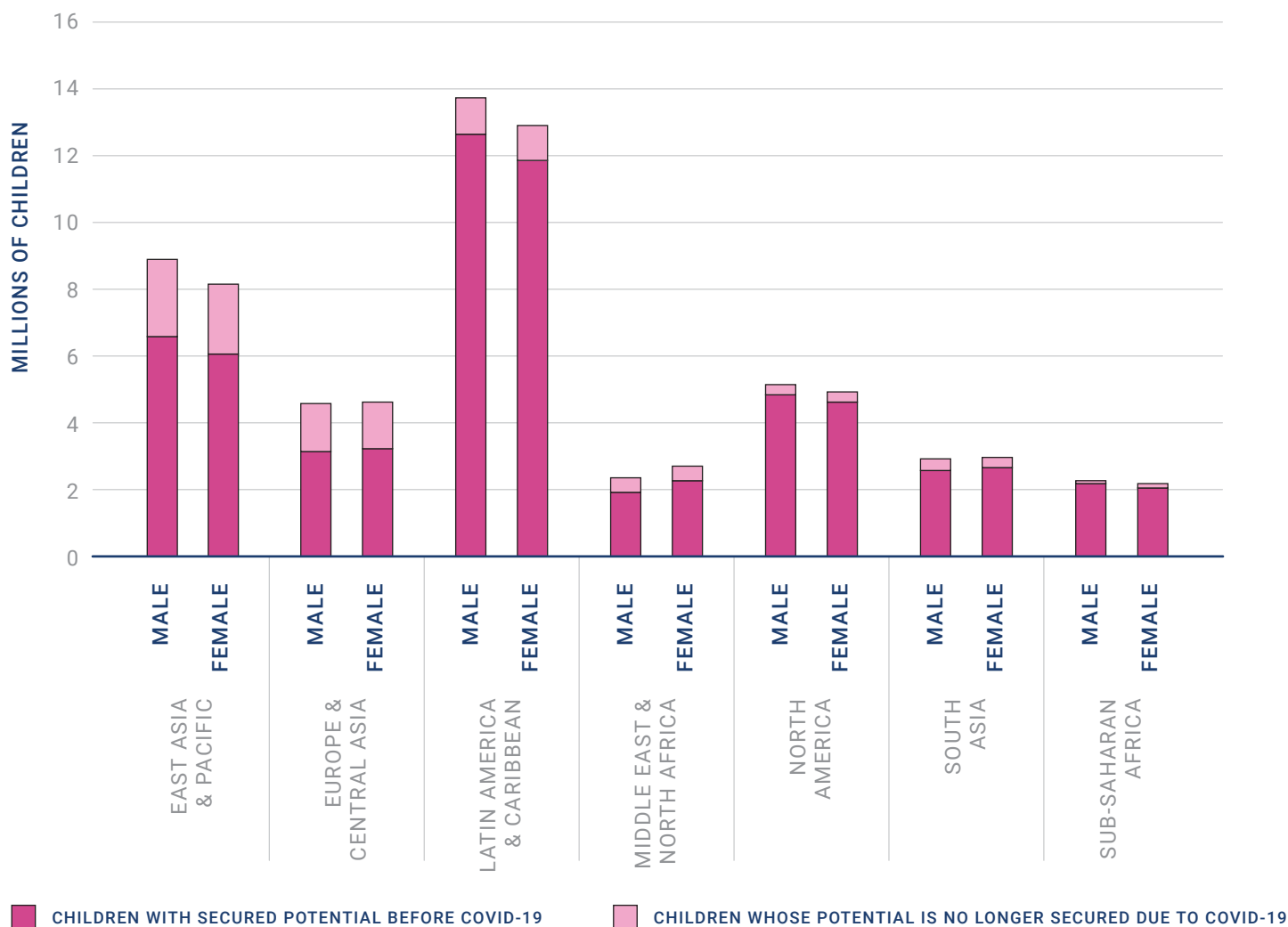
These examples provide a glimpse of African resilience and innovation in the face of crisis. But without a radical reinvigoration of our education systems, the Africa we aspire to is at stake. This year, as we mark 10 years since adopting Agenda 2063, let us put children and young people at the heart of our strategies for inclusive and sustainable growth, and commit to transforming education for a transformed future.

We must recognize that education itself is in extreme peril across Africa. Governments can, and must, put children first and ensure they can learn and learn well.

FIG.18

THE PANDEMIC THREATENS TO PERMANENTLY INTERRUPT LEARNING AND SKILL DEVELOPMENT IN SUB-SAHARAN AFRICA

The pandemic has had grave effects on children's education. In sub-Saharan Africa alone, it is estimated that 2.8 million children are at risk of not attaining basic literacy skills by the age of 10, as a direct result of the pandemic. Children that have not gained basic literacy skills by the age of 10 are missing a critical milestone to "secure their potential for a better future," according to ONE Campaign.



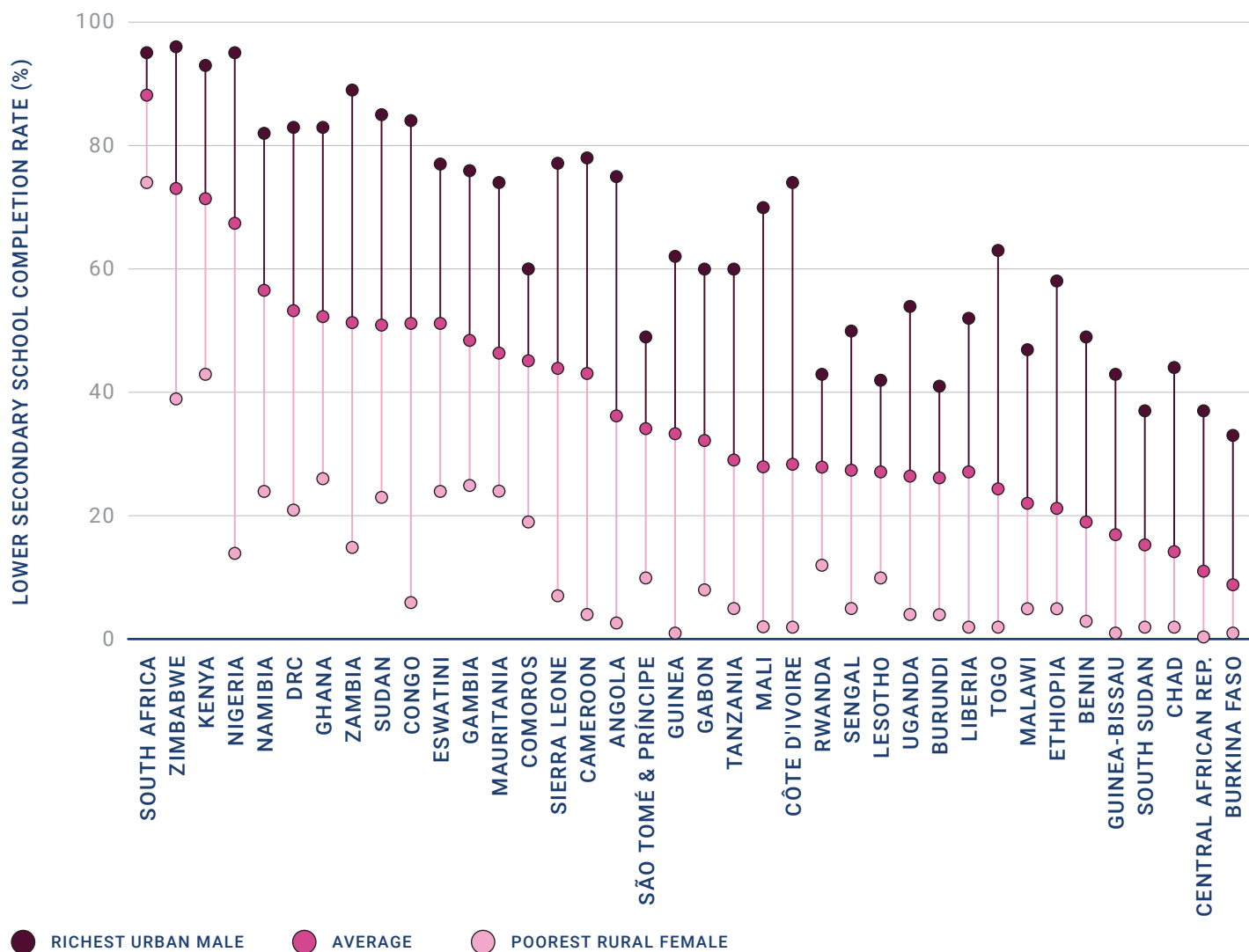
Note: Secured potential is defined as having gained basic literacy skills by the age of 10.

Source: ONE Campaign. 2022.

FIG.19

DISADVANTAGED DEMOGRAPHICS LAG FAR BEHIND THEIR ADVANTAGED PEERS IN EDUCATIONAL ATTAINMENT

Education is not meeting its objective as the “great equalizer.” Improvements in national average completion rates at lower secondary level mask huge disparities in completion between the poorest rural girls and the richest urban boys. In fact, the poorest rural girls in most African countries have a less than 10 percent chance of completing lower secondary school.



Source: Mastercard. 2020. Secondary education in Africa: Preparing youth for the future of work." Focus 1. Mastercard Foundation.

Educate to adapt, adapt to educate

CHRISTINA KWAUK

Head of Climate and Education, the Education Commission

@CKwauk

LIESBET STEER

Executive Director, the Education Commission and President/CEO-elect, Education Development Center (EDC)

@LiesbetSteer

Underlying the climate and adaptation crisis in Africa lies a human crisis. This includes a silent crisis in education which threatens the prosperity of individuals, communities, and nations. It is making people more vulnerable to the impacts of climate change and prevents them from becoming a much needed and critical part of climate solutions.

Around the world, there is growing recognition of the relationship between climate change and education.¹ Article 12 of the Paris Agreement recognizes the critical role of education in empowering all members of society to engage in and take climate action—both adaptive and mitigative. Climate action is also a thematic priority of UNESCO's (2020) global framework on Education for Sustainable Development. In Africa, the Coalition for Education and Training on Climate Change acknowledges the role education plays in reducing the impact of climate change.

Despite its strategic importance to adaptation efforts, however, education has remained largely overlooked by the Parties to the UNFCCC. In mid-2022, only 40 of the 133 nations² that had submitted an updated, revised, or new Nationally Determined Contribution (NDCs) mentioned climate change education as an adaptation or mitigation strategy in their NDCs. Out of the 43 African countries that had submitted their updated, revised, or new NDC, 16 mentioned climate change education. In most East African countries, prioritizing education to empower the public with skills for climate adaptation is not consistently part of the sustainable development discourse.³

The impacts of climate change on education, and education on climate action, are insufficiently understood due to a lack of consistent and reliable data and research on interlinkages between climate and education (See Figure 20).⁴ This includes data on the direct impacts of extreme storms leading to destruction of infrastructure, of extreme heat leading to degradation of the learning environment and of droughts or famines stressing essential water, sanitation, and hygiene facilities critical for school attendance and retention. It also includes missing data on the indirect impacts through household coping responses in the face of loss of income and livelihoods or displacement, leading households to withdraw children (especially girls) from schooling. Climate change also impacts the health and well-being of educators and learners, reducing their readiness to teach and learn. These vulnerabilities are further compounded by systemic challenges in society such as gender and structural inequalities.

At the same time, education's potential as a key instrument to help countries and communities adapt to climate change is hampered by the lack of understanding of the education crisis and its role as a key climate and adaptation strategy. Average years of schooling are the lowest in Africa compared to other regions. Progress in

1 UN Climate Action. 2022. "Education is key to addressing climate change."

2 Global Center on Adaptation. 2022. "Section 3 – Cross-Sectoral Themes."

3 Abigael Apollo and Marcellus Forh Mbah. 2021. "Challenges and Opportunities for Climate Change Education (CCE) in East Africa: A Critical Review."

4 ACE. 2022. "Lack of Education Causes Climate Denial."

If Africa continues at its current pace of educational investment, the continent will not be able to respond to the climate crisis.

enrollment in secondary and tertiary education in Africa is slow, and enrollment in primary education has stagnated after experiencing a period of rapid progress around the turn of the new millennium.⁵ Yet a deeper and more structural problem lies in the quality of education in Africa. Of those that do go to school, millions leave school without basic literacy and numeracy skills. In sub-Saharan Africa and the Middle East and North Africa, only 11 percent and 23 percent of all 15–24-year-olds have basic secondary literacy and numeracy skills, respectively.⁶

Limited available data on the link between education and adaptation point to a strong relationship. UNICEF estimates that improving educational outcomes could reduce the climate risks borne by 275 million children globally. Recent analysis for the *State and Trends in Adaptation 2022 Report* also confirms that more education—specifically at the upper secondary and tertiary levels—is associated with higher adaptive capacity. With more education, individuals and households can better prepare for and respond to climate shocks through risk reduction, migration, the adoption of climate-resilient technologies, practices and/or behaviors, or by having more flexibility to learn new skills and/or to take on new jobs or find new livelihoods.⁷

Acting on the greater integration of education in adaptation is urgent. If Africa continues at its current pace of educational investment, the continent will not be able to respond to the climate crisis. Making education systems climate-adapted and ensuring investments in education can in turn drive adaptation, and will require action across four distinct areas:

- **Monitor, diagnose, and plan for integrated education and adaptation strategies.** More data is needed on a regular basis to better monitor, diagnose, and address local climate vulnerabilities on the education sector across the continent. In addition, greater efforts should be made to include education investments in adaptation policies and to give priority to the most climate-vulnerable communities or those least ready to adapt.
- **Invest in climate adapted infrastructure.** Schools could be designed not only as zero-emission buildings, but also capable of withstanding and/or adapting to climate-related shocks. African countries should avoid further investments in traditional “gray” education infrastructure that is vulnerable to damage or destruction, and places people at higher risk of exposure to climate-related hazards. African countries can also tap into locally available renewable energy and material resources to build green, climate-adapted infrastructure that is both feasible and cost-effective.
- **Invest in a climate adapted education workforce.** Strengthening the climate resilience and adaptive capacity of the education sector’s human resources—including teachers, trainers, facilitators, counsellors, staff, administrators, school leaders, and others—is critical to support the readiness of Africa’s education systems to adapt to (and respond to) climate impacts; and to unlock

5 David K. Evans and Amina Mendez Acosta. 2020. “Education in Africa: What Are We Learning?”

6 The Education Commission 2015. “Number Of Youth Without Secondary Education Level Skills.”

7 Walker et al. 2022. “Education and adaptive capacity: the influence of formal education on climate change adaptation of pastoral women.”

broader efforts across the continent to build a more climate-adapted, climate resilient workforce across economic and social sectors. This must include overcoming Africa's teacher shortage, achieving better and more consistent compensation and training, and building cross-sectoral climate resilience teams. To enable the effective design of climate-adaptive education systems, a new form of workforce collaboration will be required that reaches across sectoral boundaries.⁸

- **Invest in climate literacy and breadth of green skills.** At a minimum, all learners must first acquire basic foundational and secondary skills, including literacy and numeracy, and climate literacy skills. But learners will also need to build specific technical skills that green jobs require—"portable skills" such as critical thinking and communication to facilitate climate adapted thinking, and transformative skills to enable work in complex realities and catalyze deeper systemic change.

To make progress on these four levers, a global effort is needed to establish an irresistible case for investment in education as a climate impacted sector—but also as a key solution to the problem. This global consensus should support countries to invest in education, and to build a movement for climate action and adaptation through education.

Note: This contribution draws heavily on the education chapter for the State and Trends in Adaptation 2022 report authored by Christina Kwauk, Ludwig Chanyau, Martina Grecequet, and Liesbet Steer

8 The Education Commission & Dubai Cares. 2022. "Rewiring Education for People and Planet report calls for cross-sectoral collaboration."

FIG.20

MANY AFRICANS REMAIN UNAWARE OF CLIMATE CHANGE DESPITE IMMENSE DAMAGES

Only 30 percent of Nigerians have heard of climate change, yet the country lost an estimated \$455 billion between 1990 and 2014 as a result of climate change, an amount equivalent to 80 percent of the country's GDP in 2014. And Nigeria is not alone: In Tunisia, Namibia, Ghana, and others, less than 50 percent of people have heard of climate change, despite their respective countries sustaining significant damages as a direct result of it.



Note: For more details on how damages as a result of climate change are calculated, consult section "Attribution of climate damages to each country" in Callahan and Mankin (2022).

Source: Callahan, C.W., Mankin, J.S. National attribution of historical climate damages. *Climatic Change* 172, 40 (2022). Logan and Amakoh. 2022. "As Africa Climate Week begins, Africans want action, research finds". *Afrobarometer*.

International education financing will make or break the SDGs

DAVID MOININA SENGEH

Minister of Basic and
Senior Secondary
Education for Sierra
Leone

@dsengeh

MATHIAS ESMANN

Education Adviser,
Ministry of Basic and
Senior Secondary
Education, Sierra Leone

@mathiasesmann

In Sierra Leone, we have been transforming our education system since 2018 with our Free Quality School Education program. The COVID-19 pandemic slowed us down, but we are already seeing very promising returns. All the while, the global macroeconomic environment is undermining our progress. The cost of our debt obligations dwarfs our ambitious education sector spending. If we do not continue to build international financing partnerships and simultaneously review our debt obligations, we will not meet our SDG 4 targets.

Our purpose for transforming education is clear. Investing in human capital is the only sure path to sustainable development. We have **invested at least 20 percent of our discretionary budget in education since 2018 and removed school and exam fees for pupils**. Enrollments have increased by 50 percent, adding over a million children to our school system. More qualified teachers lead in our classrooms and more students sit and pass our national transition exams than ever before. We now have gender parity at all levels in schools.

Simultaneously, we are overhauling our pedagogical core. We are reviewing all education legislation and have introduced innovative policies. Our **Policy on Radical Inclusion ensures that historically marginalized groups are put first in our education system**. We hosted the Freetown Manifesto on gender-transformative leadership in education. All of this gives us a foundation on which to position and align the components of our education system.

Overall, the litmus test of any education system should be whether all children are learning the basic skills necessary to progress through the education system and contribute to national development. In Sierra Leone, having conducted the first nationwide learning assessments since 2014, we still have a way to go. In response, President Bio, one of the United Nations Secretary General's five education champions, has made improving foundational learning a key priority. We have launched the Sierra Leone Alliance for Foundational Learning and entered a major compact with our education partners to pool our efforts and **build the systems to support and track learning outcomes**.

We have also launched the Sierra Leone Education Innovation Challenge. Five service providers will support more than 100,000 children to improve foundational learning. **Crucially, payment is tied to improved learning outcomes** that will be rigorously assessed in a randomized controlled trial.

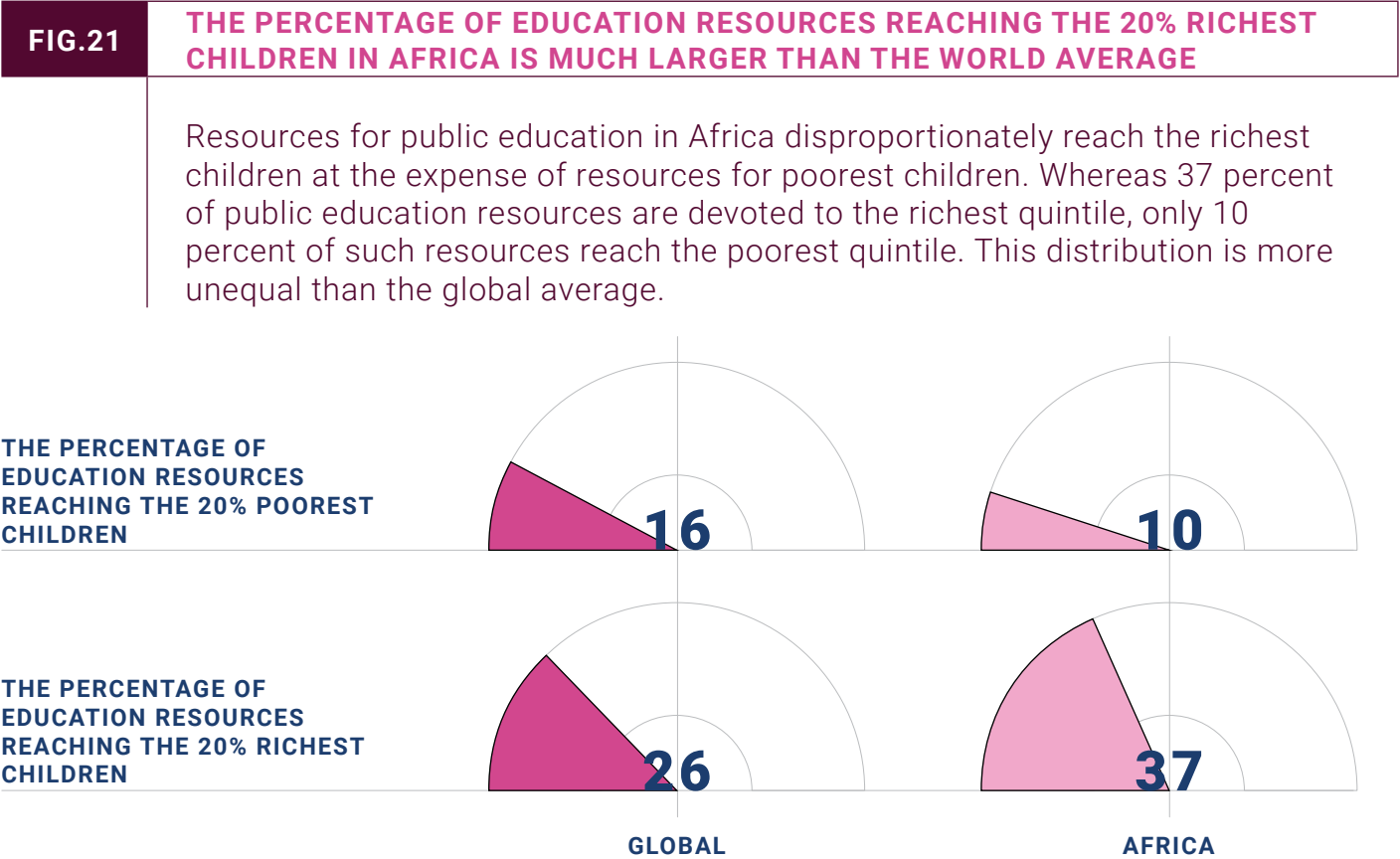
In extension of our domestic investments, we have entered several important international education financing partnerships. Yet we need to reach a completely different scale. One estimate from the ONE campaign and Fab Inc says that it **takes at least \$116 of targeted and efficient spending per child for six years to ensure that a child avoids learning poverty**.¹ Last year, our per student budget in basic education was less than half of that.

1 One Campaign. 2022. Lost Potential Tracker. Data from Fab Inc.

It is a certainty that if we do not all commit to transforming international education financing, even countries such as ours, who will continue to invest everything we can in education, may see all of our progress reversed.

In 2022 our currency lost more than half its value against the dollar. Since much of our debt is denominated in dollars, the amount of Leones we need to collect to service it has doubled this year. The TCX fund² (The Currency Exchange Fund) estimates that **this additional cost is equal to more than our education and health budgets combined**. Already, debt service risks eating into our education budget.

To transform education globally, we must make education finance and the macroeconomic climate the central topic in all World Bank, IMF, and bilateral conversations. While there is no silver bullet, it is a certainty that if we do not all commit to transforming international education financing, even countries such as ours, who will continue to invest everything we can in education, may see all of our progress reversed.



Source: African Union. 2022. Transforming Education in Africa: An evidence-based overview and recommendations for long-term improvements.

2 In 2022, the Dutch development bank, FMO (Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V.), issued the first-ever *synthetic bond* in Sierra Leonean leone (SLL). TCX covered the foreign exchange risk, through a local currency bond.

STEM education in Africa: Risk and opportunity

RUTH KAGIA

Ex-Deputy Chief of Staff
and Senior Advisor for
former President of
Kenya, H.E. President
Uhuru Kenyatta

**You cannot code
without basic
numeracy, neither
can you innovate if
you lack the basic
skills to acquire and
apply knowledge.**

"It is within the possibility of science and technology to make even the Sahara bloom into a vast field with verdant vegetation for agricultural and industrial developments."¹

Former President of Ghana Kwame Nkrumah's statement above on the promise of science and technology is as pertinent today as it was in 1963. It is indeed breakthroughs in science and technology, driven by a workforce skilled in science, technology, engineering, and mathematics (STEM), that will enable Africa to overcome crippling development challenges including climate change, food insecurity, inequality, and poverty. And the one-fifth of the global population under the age of 25 who currently reside in sub-Saharan Africa will need STEM skills to drive economic transformation and competitiveness.

STEM education inculcates problem-solving, critical-thinking, communications, collaboration, and digital skills. Young people need these skills to build the resilience to navigate an uncertain future where technological advances will fundamentally alter industries and eliminate about one-half of the jobs today.

The STEM education landscape in Africa is characterized by risk and opportunity. While effectiveness is hampered by resource and capacity constraints, opportunity lies in centers of excellence and promising pathways of policy and practice.

The Science, Technology, and Innovation Strategy for Africa (STISA) provides the regional STEM policy framework. Centres of excellence such as the Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA), provide implementation support to countries. And with varying degrees of success, at least 10 countries, are implementing a competency-based curriculum (CBC) which emphasizes inquiry-based learning, STEM, and Technical and Vocational Education and Training (TVET). For example, coding and computer programming is part of the CBC digital learning program in Kenya.

Low education quality is however a binding constraint. And yet, even before the COVID-19 pandemic exacerbated the situation, more than 50 percent of children in basic education in sub-Saharan Africa were unable to read and understand a simple age-appropriate story.²

A critical first step towards improving STEM education, therefore, is to **get the basics right**. We can achieve vast improvements in strengthening foundational skills by integrating into teaching and learning: new and exciting knowledge on the science of learning, and recent evidence from neuroscience on how the human mind works.

1 President Kwame Nkrumah. 1963. "Foundation Summit of the Organization of African Unity". Addis Ababa Summit.

2 WB.2022. "The State of Global Learning Poverty: 2022 Update". World Bank.

There are also huge benefits to achieving universal basic skills. It would raise future world GDP by \$700 trillion over the remainder of the century which would be transformative for low-income countries.³

Recent studies (ADEA and ACET 2022), indicate that **the two greatest constraints to STEM education are inadequate facilities and sub-optimal teacher classroom practices.**⁴ Schools can provide minimum STEM and other facilities if countries allocate at least 20 percent of their budget to education.

In the countries surveyed, STEM and computer labs exist but less than half of them are functional, while a lack of facilities inhibits practical training. Second, the STEM gender gap widens progressively through school in part because of under representation of female STEM teachers. In Ghana, only 5 percent of STEM teachers in the upper grades are female. Less than 25 percent of students pursue STEM-related career fields in higher education in sub-Saharan Africa as a result of a compounding of these issues reduces.

Closing the gender gap in STEM education is a “best buy.” Women are key to addressing the existential challenges that face the continent. They account for 60 percent of the farmers in Africa and are the primary providers of water and firewood. With strong STEM skills, women could be at the vanguard of environmental sustainability and adoption of agricultural technology. A quantum leap in child survival, national health, and education attainment could be achieved if women as the gatekeepers to child health and family welfare obtain at least 12 years of science-driven basic education.

Successful interventions include **targeted scholarships, mentorship using role models, and early exposure to STEM based career opportunities.**⁵ Moreover, through digital technology, students in resource constrained environments can tap into expert STEM training. Rwanda’s One-Laptop-Per-Child (OLPC) flagship program, Kenya’s digital learning program, the university of Colorado science simulation program, PhET, and massive open online courses (MOOCs) such as EdX, have demonstrated the leapfrogging potential of **digital learning.**⁶

But we can go even further to nurture and build upon these green shoots that are sprouting on the continent by:

- **Creating an interactive classroom-industry interface.** Kenya has over 1,000 start-ups that could provide such an interface to give students relevant work exposure, sharpen their focus, and raise their ambition in STEM.
- **Nurturing and rewarding excellence in STEM.** Africa is brimming with creative, home grown innovations. Norah Magero’s Vaccibox, a small, mobile, solar-

3 Hanushek, Woessmann. 2022. “The Basic Skills Gap. International Monetary Fund”. International Monetary Fund.

4 ACET.2022. “Youth Employment and Skills (YES) Multi-Country Study”. African Centre for Economic Transformation.

5 UNESCO.2021. “Unlocking the Potential of Girls in STEM in Kenya: An Assessment Report on the Impact of the UNESCO/GOK STEM Mentorship Programme.”

6 International Commission on Financing Global Education Opportunity.2016. “The Learning Generation: Investing in Education for a Changing World”. New York.

powered fridge that safely stores and transports medicines, for use in remote clinics and Charlot Magayi's Mukuru Clean Stoves, which uses processed biomass to create 90 percent less pollution than an open fire, demonstrate the huge reservoir of talent in the continent. These two women innovators from Kenya have recently won international awards. Competitions such as the Young Scientists Kenya (YSK), which aim to catalyze and spotlight the quality of STEM, have proved useful in tapping into the innovative energy of secondary school students.

- And finally, we need to strengthen the training of STEM trainers. We can do so by providing targeted financing incentives to higher education institutions that offer STEM programs. Furthermore, we need to reinvigorate and protect specialization of universities, such as the Technical University of Kenya or Jomo Kenyatta University of Technology and Agriculture, that were originally designed as centers of excellence in STEM.

To prosper, Africa's children and youth must learn

**SAFAA EL TAYEB
EL-KOGALI**

Manager for East
and Southern Africa,
Education Global
Practice, World Bank

@safaa_elkogali

More African children have access to education than ever before. But learning outcomes are low. The World Bank estimates that 89 percent¹ of African children are “learning poor”—unable to read and understand a basic text at age 10 or when they complete third grade. The World Bank coined the term “**learning poverty**” to highlight the crisis in education and call the world to action.

Moreover, the COVID-19 pandemic, climate shocks, and conflict left many African children out of school and set them back further in terms of learning losses. But the real challenge facing Africa is the speed by which the population is growing. Today, the continent has half a billion children ages zero to 14, and this number is expected to reach 580 million in 2030. In 2023, Africa will surpass South Asia as the region with the largest zero to 14 population.² The size of this young population and the speed of its growth is historically unprecedented, making all efforts to educate children a massive undertaking.

However, the pandemic has taught us some critical lessons. Most important among them are:

- Schools are important spaces, not just for learning, but for socialization and providing equal opportunity for all children to access education.
- While teachers remain the most important input in the learning process, the role of parents is key in laying the path for their children's future.
- Technology is an enabler; but it cannot replace schools and teachers.
- There is evidence on how kids learn and how teachers can teach better—countries can adapt approaches and don't have to start from scratch.

Looking ahead and taking these lessons into account, African countries can ensure a stronger, resilient, and more inclusive recovery by focusing on five areas: First, **getting children, especially girls, in safe schools and keeping them there**. While African countries have succeeded in closing the gender gap in primary education, only 29 percent of children are enrolled in secondary schools at a grade appropriate for their age. Also, a third of teenage girls are out of school³ making them vulnerable to gender-based violence. Focusing on girls' education is the smartest investment any country can make. When girls enter safe schools and complete their education, not only will they be able to reach their full potential as women and contribute to their communities, societies, and economies, but they also delay childbirth, have fewer, healthier children, and reduce the pace of population growth.

1 World Bank. 2022. “*The State of Global Learning Poverty: 2022 Update*”. World Bank.

2 World Bank. 2015. “*Opportunities and Challenges for Youth Employment in Africa*”. World Bank.

3 World Bank. 2020. “*Learning Poverty in The Time of Covid-19: A Crisis Within a Crisis*”. World Bank.

A push for learning is critical—this can be achieved by ensuring children start school ready, supporting teachers and school leaders, providing learning and teaching material, and measuring performance to ensure children are learning. Children should be able to read and understand a basic text by the time they complete third grade.

Second, **a push for learning** is critical—this can be achieved by ensuring children start school ready, supporting teachers and school leaders, providing learning and teaching material, and measuring performance to ensure children are learning. Children should be able to read and understand a basic text by the time they complete third grade. While reading is the most fundamental skill to succeed in their education and in life, children also need to acquire other sets of skills as they progress in school. This includes socio-emotional skills in how to manage complex situations, and practical, relevant skills that allow them to contribute to their societies and economies as adults.

Technology⁴ is not the silver bullet but if leveraged appropriately, it can help accelerate learning, support teaching, measure learning, and support more efficient systems. A push for learning must be coupled with a pull for skills.⁵ Parents and employers need to demand from the education system applicable skills that help children continue to learn and succeed in life. That is, economies and societies should pull the system for competencies and not credentials (grades and diplomas).

The third important area of focus is for African countries to ensure a shared vision for their citizens and future generations. This would require **a pact by all stakeholders**—educators, politicians, leaders, employers, and parents. Education is everyone's business. This is not easy where interests and ideologies vary. A shared vision requires strong leadership, commitment to roles and responsibilities, and robust governance systems that promote accountability.

Fourth, it is important to **sustain structural education reforms** that are comprehensive and sequenced even when politically difficult. Piecemeal reforms that keep changing with new governments will limit impact. Education is a long-term process and results take time. Changing policies before they reap their results will delay their impact further.

Finally, African countries need to **prioritize education finance** and ensure national resources allocated to education are ringfenced against shocks to the economy. Donors and development institutions can provide financial assistance, but the amounts are dwarfed when compared to what national resources can contribute. Recent shocks have put pressure on the fiscal situation of most African countries. Seeking to create greater efficiency in public spending is important, but it should not come at the expense of much needed financing for education.

I believe that the vision of Africa, powered with universal access to clean energy; a connected Africa with universal access to broadband internet, roads, and infrastructure; a healthy Africa with universal access to health, water, and sanitation; and an economically booming Africa with a thriving private sector can only be attained through investments in education. **Only when we give Africa's children and youth the foundations for learning and skill building, can this rich continent prosper.**

4 World Bank. 2020. *"Reimagining Human Connections: Technology and Innovation in Education at the World Bank"*. World Bank.

5 El-Kogali, Safaa El Tayeb; Krafft, Caroline. 2020. *"Expectations and Aspirations: A New Framework for Education in the Middle East and North Africa"*. World Bank.

Foundational skills for a more inclusive Fourth Industrial Revolution (4IR) in Africa

LOUISE FOX

Nonresident Senior Fellow, Africa Growth Initiative, Global Economy and Development, Brookings Institution

@LouiseFox_econ

LANDRY SIGNÉ

Senior Fellow, Africa Growth Initiative, Global Economy and Development, Brookings Institution; Professor and Executive Director, Thunderbird School of Global Management in Washington, DC

@landrysigne

Adoption of Fourth Industrial Revolution (4IR) technologies in sub-Saharan Africa could not only bring substantial economic growth and welfare benefits,¹ but also social and economic disruption, including widening inequality if countervailing policies are not adopted, as discussed in our recent report.² With a high share of the labor force working informally—a trend expected to continue for several decades—Africa's education and industrial policies need to strike a balance between encouraging the private investment necessary to create new formal jobs using advanced technology and ensuring that all new labor force entrants have the basic skills and infrastructure to make an adequate living.³

Rapidly growing labor supply and the challenges of structural transformation suggest that majority of new entrants to the labor force will find work as employees or working for themselves and their families (on farms, or in informal microenterprises).⁴ And while the pool of young African professionals in the IT sector is growing rapidly, the sector still employs less than 1 percent of the African labor force. For example, professional developers represent about 0.4 percent of Africa's non-agricultural workforce, or 716,000 people with a job growth of 3.8 percent—only slightly higher than the population growth.⁵ To be more productive, young people not entering the IT sector need better access to (i) higher-quality primary and secondary education, including development of problem-solving and foundational literacy, digital, and STEM skills and (ii) access to cheaper mobile phones and tablets, mobile internet, and digital services to develop their farms and businesses or to search for available wage employment. Providing an inclusive job creation platform for these workers through public investment in foundational skills and internet access should remain the spending priority.

African countries will also need some highly skilled workers with high-quality post-secondary education to adapt and use new technology. How should these important skills be built? Sub-Saharan Africa countries already spend about 4.5 percent of their GDP on education (including both public and private expenditures), but education systems are often inadequate to meet the needs of current students, much less those about to enter the system.⁶ Furthermore, the cost per student at African universities is

-
- 1 Ndung'u, Njuguna and Landry Signé. 2020. "The Fourth Industrial Revolution and digitization will transform Africa into a global powerhouse." The Brookings Africa Growth Initiative.
 - 2 Fox, Louise and Landry Signé. 2022. "From subsistence to disruptive innovation: Africa, the Fourth Industrial Revolution, and the future of jobs." The Brookings Africa Growth Initiative.
 - 3 Fox, Louise and Dhruv Gandhi. 2021. "Youth employment in sub-Saharan Africa: Progress and prospects." The Brookings Africa Growth Initiative.
 - 4 Ibid.
 - 5 Google and Accenture. 2021. "Africa Developer Ecosystem 2021: Creating opportunities and building for the future".
 - 6 Arias, Omar, David K. Evans, and Indhira Santos. 2019. "The Skills Balancing Act in Sub-Saharan Africa: Investing in Skills for Productivity, Inclusivity, and Adaptability." Book. World Bank Group.

Where could this money come from in today's fiscally-constrained environment? African countries face tough choices. We argue that the priority for additional public spending should be on improving primary and secondary education to improve skills for all new entrants.

higher than other developing countries. The African Union is suggesting that member countries spend another 1 percent of GDP on developing STEM skills at the secondary and post-secondary levels.⁷ Where could this money come from in today's fiscally-constrained environment? African countries face tough choices. We argue that the priority for additional public spending should be on improving primary and secondary education to improve skills for all new entrants.

Improving access and the quality of tertiary education are still priorities, but policies should encourage private sector partnerships, including aggressive policies to attract more private investment in tertiary education, and encouraging public universities to partner with tech companies, philanthropic development organizations, and NGOs to upgrade tech training programs in order to meet projected needs for high-skilled labor.⁸ For example, South Africa's Ministry of Communications and Digital Technologies has partnered with the digital learning platform Coursera to offer free courses to young South Africans in areas such as data science, digital marketing, artificial intelligence, coding, and app development.

The skill needs of a 21st century economy are much broader than digital skills or engineering. Improvements in AI technology have revealed the importance of socio-emotional skills for secondary and tertiary graduates, another area where African education systems need substantial improvements.

The experience of the OECD countries, especially the U.S., suggests that 4IR technology is not an inherently benign change agent. Despite its positive impact, unequal employment and earnings outcomes have been observed. African countries cannot—and should not—avoid 4IR technology given the potential to accelerate economic transformation. Some factors—such as the labor saving, skill bias of these technologies—are outside of African countries' control. But education policies can still contribute to an inclusive transformation if the focus remains on a cost-effective education system for all.

7 Sadeski, Francie et al. 2019. "Potential of the fourth industrial revolution in Africa." African Development Bank.

8 Månsson, Cecilia Väreñdh. 2022. "Africa's youths can help solve the global tech talent shortage." The Brookings Africa Growth Initiative.

Learning on the move: Resetting the agenda for education and learning in conflict-affected settings

**HALIMATOU
HIMA**

Echidna Global Scholar
2022, Brookings
Institution (CUE)

@HalimaHima

Conflict, insecurity, and the resulting humanitarian crises have imposed major disruptions on education systems in many parts of the African continent. Between 2020 and 2021, over 2,000 attacks on schools and educational infrastructures were documented in 14 African countries, with the Democratic Republic of the Congo and Mali most affected.¹ In the Central Sahel (namely Burkina Faso, Mali, and Niger), the confluence of armed conflict and threats of attack have led to the closures of 7,000 schools, affecting the education of 1.3 million children and young people, while over 30,000 teachers are unable to teach.² Girls are particularly affected and are less likely to return following these school closures.³

In 2022, the number of forcibly displaced people reached 36 million on the African continent—a threefold increase over the last ten years—and the majority are children and young people.⁴ If prevailing trends persist, the number of children and young people in need of education support in conflict-affected settings is likely to soar. Forced displacement acutely affects access to education and the continuation of learning,⁵ yet current education systems are not equipped to cope with the prolonged forced displacement facing conflict-affected settings. Forcibly displaced children, on average, benefit from fewer years of schooling, and are less likely to transition to secondary school.⁶

- 1 Global Coalition to Protect Education from Attack (GCPEA). 2022. "Education Under Attack 2022". A report by the Global Coalition to Protect Education from Attack, 2022, https://protectingeducation.org/wp-content/uploads/eua_2022.pdf.
- 2 Cluster Education, "Aperçu Général de l'ensemble Des Écoles Non Fonctionnelles Mai 2022" (Bamako, 2022); MEN, "Situation Des Écoles Fermées Au Niger - Aout 2022" (Niamey: Ministère de l'éducation nationale du Niger, 2022); OCHA, "Education Cluster Burkina Faso | Humanitarian Response," January 2022, <https://www.humanitarianresponse.info/fr/operations/burkina-faso/education>.
- 3 Onyango, Monica Adhiambo et al. 2019. "Gender-Based Violence Among Adolescent Girls and Young Women: A Neglected Consequence of the West African Ebola Outbreak." in *Pregnant in the Time of Ebola*, ed. David A. Schwartz, Julianne Ngoundoung Anoko, and Sharon A. Abramowitz (Springer Cham, 2019), 121–32, https://doi.org/10.1007/978-3-319-97637-2_8; Peterman, Amber et al. 2020. "Pandemics and Violence Against Women and Children." Center for Global Development. <https://www.cgdev.org/sites/default/files/pandemics-and-vawg-april2.pdf>.
- 4 Africa Center for Strategic Studies. 2022. "Record 36 Million Africans Forcibly Displaced". Infographic, July 19, 2022.
- 5 UNICEF. 2019. "Equitable Access to Quality Education for Internally Displaced Children." United Nations Children's Fund; Kirk R. Person. 2020. "Displaced Children Need Education Support in a Language They Understand | Blog | Global Partnership for Education." GPE, <https://www.global-partnership.org/blog/displaced-children-need-education-support-language-they-understand>.
- 6 United Nations. 2020. "Education during COVID-19 and Beyond." New York City; Susan Raqib. 2017. "Far-Reaching Consequences of Wartime Attacks on Education," *Nature Human Behaviour*, <https://doi.org/10.1038/s41562-017-0220-4>.

Why does the provision of education matter in conflict-affected settings?

It is worth highlighting why education matters in conflict-affected settings. Education alone does not prevent conflict from erupting. However, education is central to sustainable peacebuilding and offers a tangible opportunity to break cycles of inequality that are a salient feature of fragile and conflict-affected states on the continent.⁷ In addition, education can address some of the drivers of violent extremism,⁸ although evidence shows that unmet expectations among educated youth could still fuel grievances and drive support for violent extremism.⁹ Third, keeping children in school during crises or conflict, provides a sense of normalcy, which is essential to their psychological well-being and cognitive development.¹⁰

From a rights-based perspective and capability framework,¹¹ the continuation of learning is central to how forcibly displaced communities reimagine their futures.¹² In an effort initiated and coordinated by Niger and Norway, the United Nations Security Council (UNSC) unanimously adopted the landmark resolution on the protection of education in armed conflict zones (UNSCR2601).¹³ Realizing the promise of this binding commitment (applicable to all U.N. member states) will require a more intentional response and coordinated approach—amidst crises that are increasingly protracted in nature, complex, and often with a regional dimension.

What should policymakers do to realize the promise of resolution UNSC 2601?

To safeguard quality education in conflict-affected settings, African states and their development partners could address three critical issues related to financing, evidence, and agenda setting.

-
- 7 Berton, Eleonora et al. 2019. "Education Is Forbidden: The Effect of the Boko Haram Conflict on Education in North-East Nigeria." *Journal of Development Economics*, volume 141: 102249, <https://doi.org/10.1016/j.jdeveco.2018.06.007>.
 - 8 UNESCO. 2017. "Preventing Violent Extremism through Education: A Guide for Policy-Makers" Paris, www.unesco.org/open-access/terms-use-ccbysa-en.
 - 9 Bhatia, Kartika and Hafez Ghanem. 2017. "How Do Education and Unemployment Affect Support for Violent Extremism? Evidence from Eight Arab Countries." The Brookings Institution.
 - 10 Bene, Konabe. 2022. "Gauging Secondary School Students' Terrorism-Related Resilience in the Sahel Region of Burkina Faso: A Quantitative Study," *Psychology in the Schools*, <https://doi.org/10.1002/PITS.22779>.
 - 11 Walker, Melanie and Elaine Unterhalter. 2007. "The Capability Approach: Its Potential for Work in Education." in Amartya Sen's Capability Approach and Social Justice in Education, 1–18, https://doi.org/10.1057/9780230604810_1; Hart, Caroline Sarojini. 2013. "Aspirations, Education and Social Justice: Applying Sen and Bourdieu." *London Review of Education* 11, no. 2, <https://doi.org/10.1080/14748460.2013.800263>; Saito, Madoka. 2003. "Amartya Sen's Capability Approach to Education: A Critical Exploration." *Journal of Philosophy of Education* 37, no. 1 (February 1, 2003): 17–33, <https://doi.org/10.1111/1467-9752.3701002>.
 - 12 OCHA. 2015. "An End in Sight: Multi-Year Planning to Meet and Reduce Humanitarian Needs in Protracted Crises.", <https://reliefweb.int/report/world/end-sight-multi-year-planning-meet-and-reduce-humanitarian-needs-protracted-crises>.
 - 13 UNSCR. 2021. "Security Council Resolution 2601," United Nations Security Council §, <https://doi.org/10.1525/curh.1950.19.108.110>.

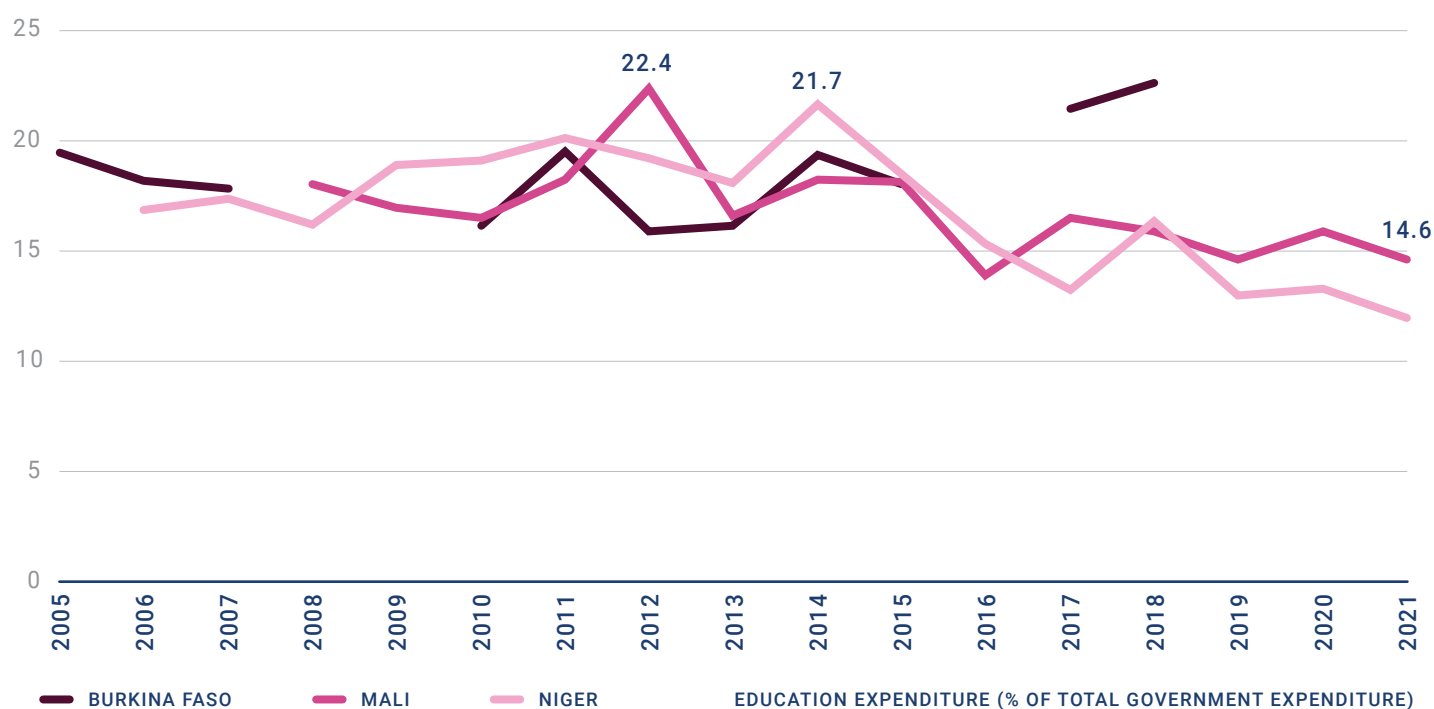
1. Reverse trends of declining government and humanitarian funding for education: Insecurity imposes fiscal pressure on governments, which often lowers the proportion of government spending on education. This adversely impacts the ability of education systems to address the needs of children and youth affected by conflict, insecurity, and violence (see Figure 22 below).

Moreover, to be effective, interventions must draw on joint humanitarian and development praxes—yet in many African countries, notably in the Sahel, the humanitarian leg of education is direly underfunded: In Mali and Burkina Faso, respectively, less than 7 percent and 3 percent of humanitarian appeals for education have been met—compared to the global average of 50.7 percent.

FIG.22

A SMALLER SHARE OF GOVERNMENT RESOURCES ARE BEING SPENT ON EDUCATION

In recent years, government budgets for education have shrunk. Mali and Niger exemplify this trend. Security concerns and conflict are an important reason for this, as they exert pressure on existing government resources and limit fiscal space.



Source data: Author's compilation based on data from Financing Tracking Services, OCHA, United Nations (OCHA, 2022a)

- 2. Strengthen data and evidence on learning outcomes and trajectories of children and youth forcibly on the move:** There is a dearth of data particularly on internally displaced children, who often find themselves absorbed in the wider host communities.¹⁴ Consequently, their educational needs are often not fully accounted for, as they are not measured by conventional data.¹⁵ Quality data that is disaggregated, safely and ethically collected, as well as standardized can also support better diagnostics and the design of policies and programs. Beyond quantitative data, the use of qualitative measures that document the educational experiences and trajectories of girls and boys who are internally displaced can lay the foundations for more inclusive approaches, both for forcibly displaced children and their host communities.
- 3. Revisiting how education gets provided and for what purpose:** Much of education in emergencies focuses on primary education, with little attention afforded to post-primary and vocational training which young people in forced displacement cite as a valuable way to link education with economic opportunities.¹⁶ Moreover, the recognition that education is indeed already a priority for forcibly displaced communities can help reframe the angle of interventions, with a renewed focus on structural barriers. Lastly, quality matters, and even more so for populations facing crises: Without an environment that fosters learning and provides clear value, staying in school becomes nearly impossible for populations facing so many competing needs.¹⁷ Continuity of education in crisis settings, especially for girls, depends on quality and perception about the value of schooling.

In conclusion, it is imperative for African countries to invest in education in crisis settings, despite the associated challenges in fragile and conflict-affected countries. By doing so, Africa has an opportunity to reset the agenda for education in crisis settings and devise effective strategies to provide quality education for the growing population of children and youth who are affected by armed conflict.

14 Mooney, Erin and Colleen French. 2016. "Barriers and Bridges: Access to Education for Internally Displaced Children" (Washington, D.C.); UNICEF. 2019. "Equitable Access to Quality Education for Internally Displaced Children." United Nations Children's Fund.

15 Halimatou, Hima. Forthcoming 2022. "Learning on the move: Facilitating the continuation of learning for girls and boys in conflict-affected settings in the Sahel."

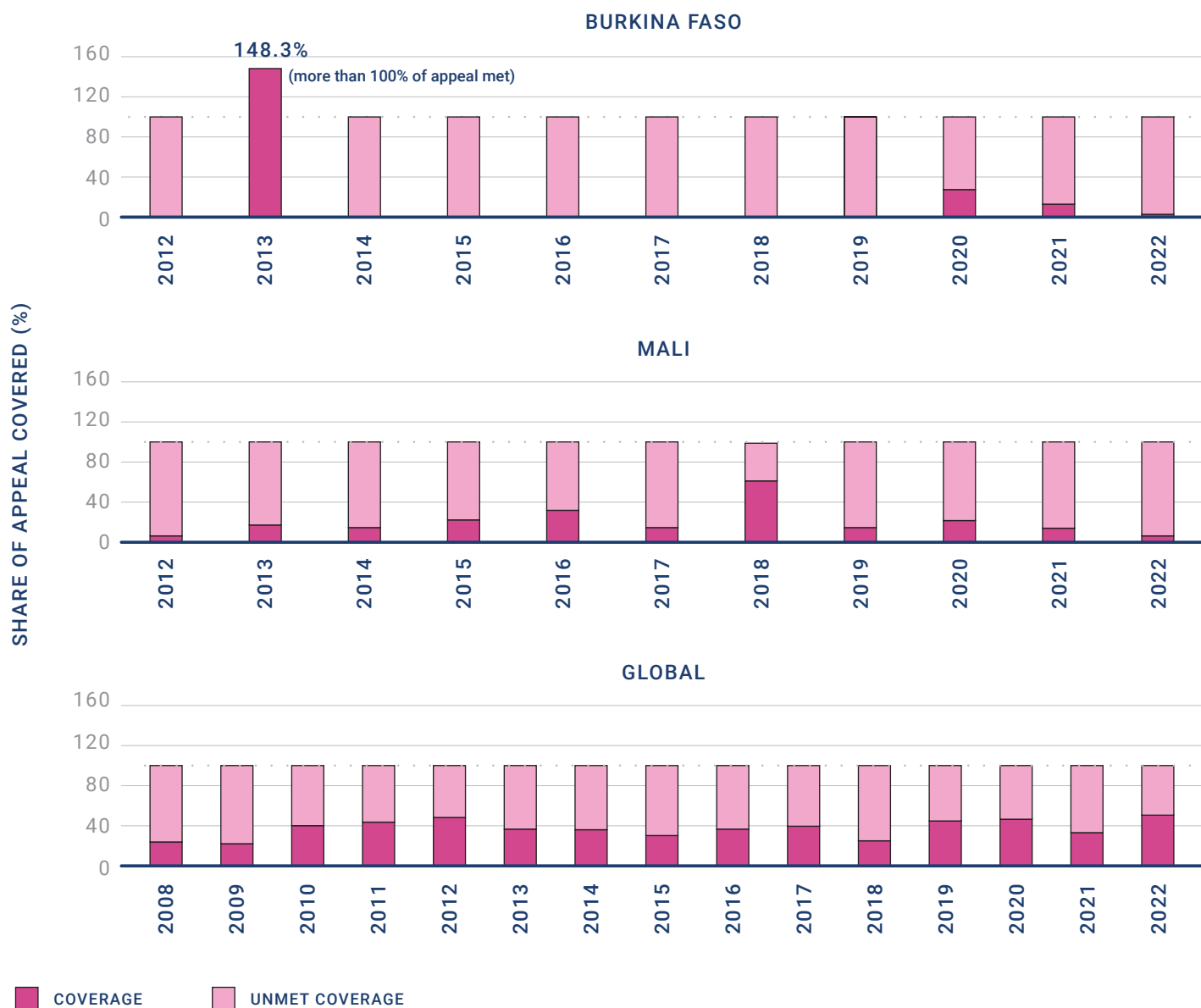
16 Ibid.

17 Hima, Halimatou. 2022. "'Schooling' Isn't Enough: The Urgency of Quality Education for Children Forcibly on the Move in the Sahel." The Brookings Institution. (Washington, D.C., 2022), <https://www.brookings.edu/blog/education-plus-development/2022/09/09/schooling-isnt-enough-the-urgency-of-quality-education-for-children-forcibly-on-the-move-in-the-sahel/>.

FIG.23

HUMANITARIAN ASSISTANCE FOR EDUCATION IN AFRICA, IS TYPICALLY FAR LESS THAN THE AMOUNT APPEALED FOR

Insecurity has diverted spending (both public and private) away from important social services like education. The humanitarian response has not been enough to meet the needs of countries experiencing conflict and fragility. In Mali, for example, humanitarian aid has not met the country's appeal for educational assistance in any year between 2012 and 2022. Moreover, the coverage met is significantly lower than the global average.

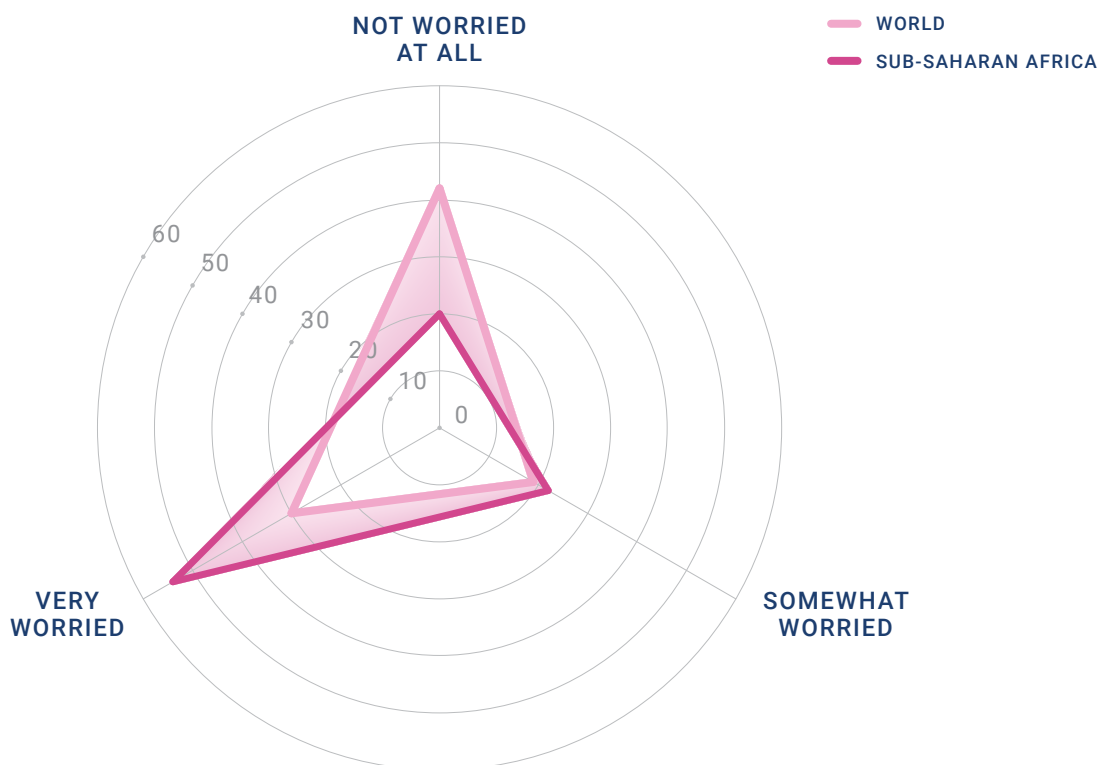


Source data: Author's compilation based on data from Financing Tracking Services, OCHA, United Nations (OCHA, 2022a)

FIG.24

SUB-SAHARAN AFRICANS ARE MORE WORRIED ABOUT PAYING EDUCATION FEES THAN THE GLOBAL AVERAGE

Respondents in sub-Saharan Africa are significantly more likely to worry about paying school fees (of any level) than the world average. In 2021, 84 percent of respondents in sub-Saharan Africa reported being either "somewhat worried" or "very worried" about paying school fees, compared to the global average of 49 percent. The worry conveyed by the survey reflects difficulties as governments try to make up for delayed or lost learning caused by the pandemic.



Note: Dataset includes respondents age 15+ from 153 countries, including 41 from sub-Saharan Africa. The countries included in sub-Saharan Africa include Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Central African Republic; Chad; Comoros; Democratic Republic of Congo; Republic of Congo; Côte d'Ivoire; Eswatini; Ethiopia; Gabon; The Gambia; Ghana; Guinea; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; Senegal; Sierra Leone; Somalia; South Africa; South Sudan; Sudan; Tanzania; Togo; Uganda; Zambia. Zimbabwe.

Source: World Bank. 2021. Global Findex Dataset. World Bank Group.