

INTERNATIONAL MONETARY FUND

REGIONAL ECONOMIC OUTLOOK

ANALYTICAL NOTE

SUB-SAHARAN AFRICA

Building Tomorrow's Workforce: Education,
Opportunity, and Africa's Demographic Dividend

2024
APR



Building Tomorrow's Workforce: Education, Opportunity, and Africa's Demographic Dividend

April 2024 Regional Economic Outlook: Sub-Saharan Africa Analytical Note

Michele Fornino and Andrew Tiffin (AFR)¹

DISCLAIMER: The IMF Analytical Notes aim to quickly disseminate succinct IMF analysis on critical economic issues to member countries and the broader policy community. The views expressed in IMF Analytical Notes are those of the author(s), although they do not necessarily represent the views of the IMF, or its Executive Board, or its management.

RECOMMENDED CITATION: International Monetary Fund (IMF). 2024. "Building Tomorrow's Workforce: Education, Opportunity, and Africa's Demographic Dividend." In *Regional Economic Outlook: Sub-Saharan Africa—A Tepid and Pricey Recovery*. Washington, DC, April.

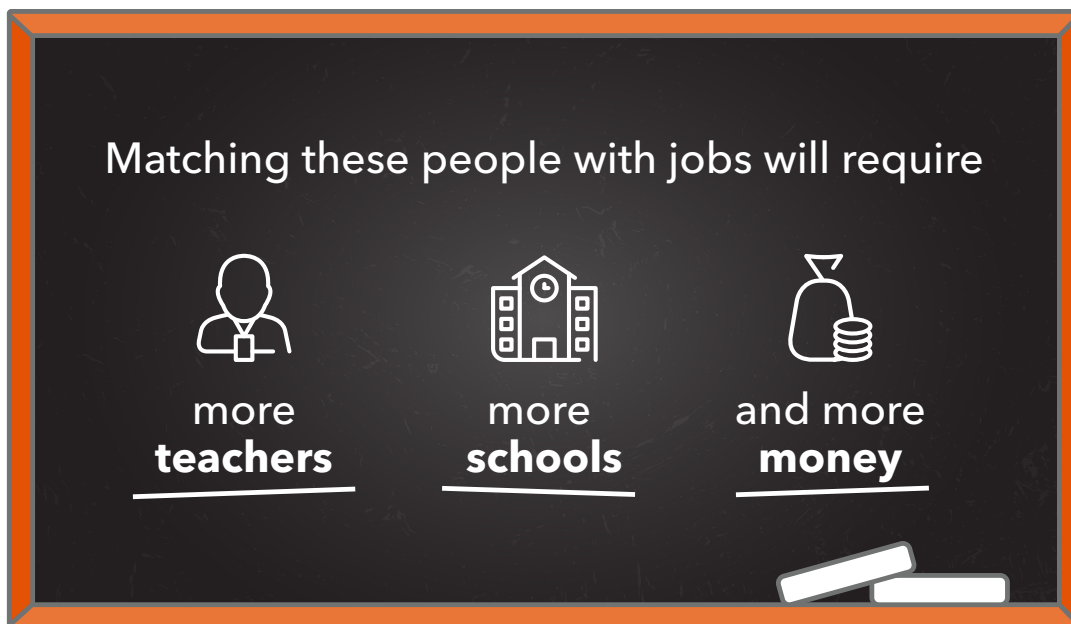
JEL Classification Numbers:	H52; I22; I25; I28; J11.
Keywords:	Sub-Saharan Africa; education; education expenditure policy; human capital; long-term growth; demographic change; demographic dividend; Sustainable Development Goals; SDG4.

¹ **ACKNOWLEDGMENTS:** The April 2024 issue of the *Regional Economic Outlook: Sub-Saharan Africa* (REO) Analytical Note was prepared by the staff from the IMF African Department under the guidance of Luc Eyraud and Catherine Pattillo.

Building Tomorrow's Workforce: Education, Opportunity, and Africa's Demographic Dividend.

In coming decades, a sizable proportion of the global labor force will come from sub-Saharan Africa. This can potentially lift regional growth and prosperity, but reaping this demographic dividend will require increased investment in education. Despite steady progress in school access and literacy rates, significant gaps persist and have even widened compared to other developing regions. In sub-Saharan Africa, evidence points to an education system under strain—owing to tight budgets, difficulties hiring trained teachers, and rapid population growth. Making progress towards the Sustainable Development Goal of universal enrollment by 2030 may require doubling education expenditures as a share of GDP. While governments should act to safeguard and expand education budgets, while also ensuring that each dollar is well spent, the donor community should also ensure that education remains at the forefront of their efforts.

1 in 5 workers globally will come from Africa by 2050



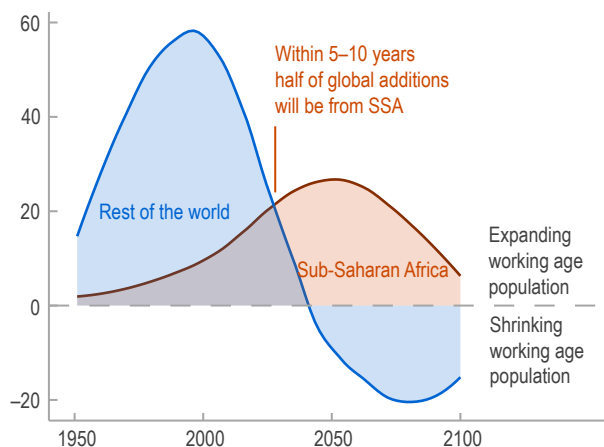
Africa's Demographic Wave.

Over the next 25 years or so, sub-Saharan Africa's population is projected to double from 1 billion to 2 billion. This will account for half of global population growth, with the region's working-age population growing faster than any other age group. Indeed, as the rest of the world ages rapidly, sub-Saharan Africa will represent an increasingly critical portion of the global workforce, accounting for more than 20 percent in 2050 (Figure 1).

This trend is perhaps the region's single greatest opportunity. It embodies a growing pool of human talent coupled with an expanding market—all at a time when the world will very much need both. But capitalizing on this potential is far from guaranteed. Africa's future prosperity will depend in large part on decisions that are taken today, decisions that will ensure that the workforce of tomorrow has the support and skills needed to participate fully in the global economy.

Figure 1. Annual Additions to Global Working Age Population, 1950-2100

(Millions of people per year, ages 15-64)



Sources: UN World Population Projections; and IMF staff calculations.

Demographics Are Not Enough: No Participation without Education.

Securing a demographic dividend requires education as well as people...

While a growing working-age population can be expected to lift output and growth in the long run, evidence suggests that the potential benefits of demographic change can be sharply limited unless they are also accompanied by investment in supporting services. For example, investment in human capital is critical—which mostly entails high-quality educational opportunities, both at the primary and secondary levels, as well as tertiary education to meet the demands of key growth sectors.¹

Looking at the experience of East Asia as an illustration, evidence suggests that near-universal secondary school enrollment and good quality of education provision were among the key elements of these countries' success (Page 1994). Indeed, Lutz and others (2019) suggest that, if educational attainment had not improved during South Korea's remarkable growth episode, that country's GDP per capita would be only 30 percent of its current value. More generally, the effects of demographic change and education on growth are crucially intertwined—favorable demographics, in the form of a higher share of working age population, tends to increase growth, but the size of this benefit depends crucially on the level of education (Kotschy and others 2020). Of particular relevance to sub-Saharan Africa, this positive effect is estimated to be higher for low-income countries, suggesting significant gains from improved educational attainment (Figure 2).

...but sub-Saharan Africa is struggling to provide quality education...

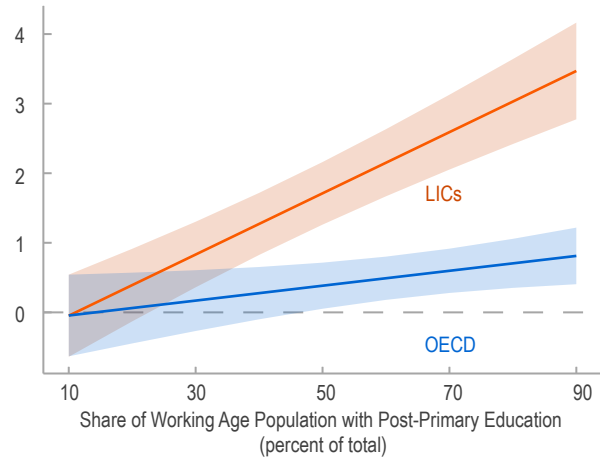
Over the past few decades, the region has made notable progress in expanding access to education, but it nonetheless lags other emerging markets and developing economies. At the primary and secondary levels, almost 3 in 10 school-age children are out-of-school. For those who make it to primary school, the completion rate is around 65 percent, against a world average of 87 percent. And the literacy rate for persons aged 15-24

¹ While the focus of this note is on Education, research has shown that human capital development is intertwined with investments in other key services, such as health. For example, Ahuja and others (2015) demonstrate the positive impacts of deworming campaigns on both educational outcomes and living standards.

is only 75 percent, compared to almost 90 percent in other EMDE regions (UIS 2023). In fact, the adult literacy gap with other developing countries outside Africa seems to have gradually widened over the last couple of decades (UNESCO 2023). To better understand what this implies for the economic potential of future generations, the Human Capital Index (HCI) measures the future productivity of a newborn child relative to a hypothetical benchmark of a child with full educational attainment and good health. In 2020, in the face of current health and education opportunities, the HCI stood at 37 percent on average for countries in sub-Saharan Africa, one third below the level seen in other EMDEs and almost half the level in AEs. Finally, addressing gender disparities in education is a key element of efforts to improve female labor force participation, which in turn underpins the broader goal of gender equity and empowerment. In this regard, progress in sub-Saharan Africa has been relatively slow by global standards, with significant gaps at all levels of education, in both enrollment and completion rates.

Figure 2. Interaction between Post-primary Education and Working Age Share, Impact on Growth.

(Change in GDP growth from 1-unit change in working age share, percent)



Sources: Kotschy and others (2020); and IMF staff calculations.

Note: The plots are derived from Kotschy and others (2020), Figure 1A. Based on a global sample, they show the marginal effect on growth of the working age population share, conditional on different levels of post-primary education among the working age population. Bands are 90-percent confidence intervals.

Access is an enduring challenge, but the quality of education is also often lacking. Securing enough trained teachers in the face of accelerating demand, for example, has proven to be particularly problematic (Figure 3), as training rates in sub-Saharan Africa have fallen steadily and compare unfavorably with other developing regions.² Evidence also points to gaps in the quality of infrastructure, with only 30 percent of primary schools having access to electricity in 2020, compared to a world average of more than 70 percent. Security is also a key issue in some countries, with the region accounting for 35 percent of the global number of attacks on educational facilities since 2013. As a guide, Filmer and others (2020) propose learning-adjusted school years of education (LAYS) to improve on the more traditional measure of educational attainment (years of education) by adjusting for cross-country differences in test scores. The median sub-Saharan African country provides only 5 LAYS of education, compared to slightly less than 8 in the median non-sub-Saharan African EMDE, which is likely a consequence of the shortcomings outlined above. But it should be noted that the situation across countries differs significantly. For example, some countries—including Kenya, Lesotho, Togo, and Zimbabwe—perform at a level well above what their level of economic development would suggest (Figure 4).

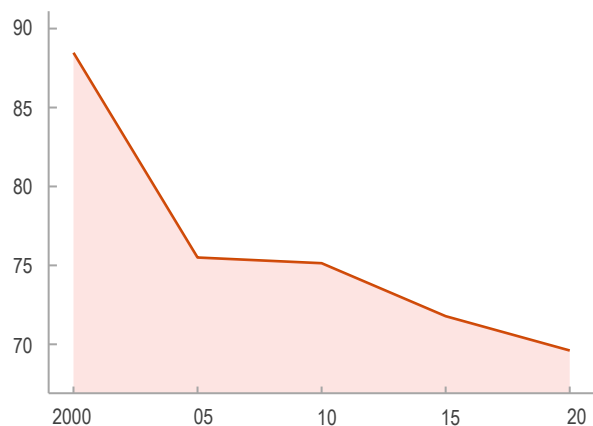
...amid tight budgets.

Public expenditure on education falls short of international benchmarks. The median sub-Saharan African government allocated about 3.5 percent of GDP on education in 2020 (UNESCO 2023). Expenditures have ticked up slightly in the last two decades, but they are below the SDG implementation targets contained in the [Education 2030: Incheon Declaration](#) (UNESCO 2015). Notably, a significant share of education expenses is shouldered outside the public system, with an estimated 14 percent of primary school, and 21 percent of secondary school students attending private schools. Private education spending stood at about 1.8 percent of GDP in 2020, playing an important role as a source of funding.

² According to UIS (2023), the decline since 2000 is explained by the need to quickly expand the teacher body in the face of binding capacity constraints. Furthermore, contract teachers are sometimes hired without the required qualifications, to cover access gaps at relatively lower cost.

Figure 3. Sub-Saharan Africa: Teacher Training Rates in Primary School, 2000-20

(Share of teachers meeting minimal requirements, percent)

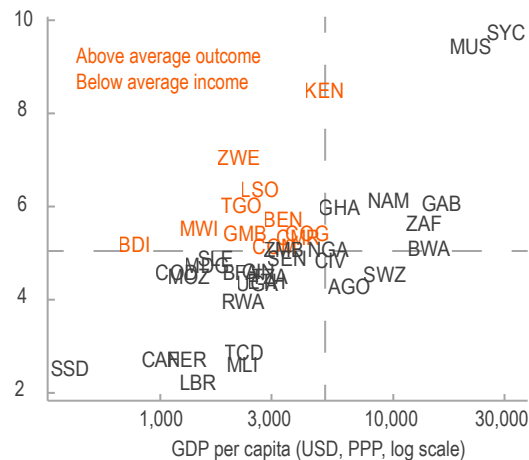


Source: UNESCO Institute for Statistics (UIS).

Note: According to UNESCO UIS, “minimally trained teachers are those fulfilling at least the minimum organized teacher-training requirements (pre-service or in-service) to teach a specific level of education according to the relevant national policy or law.”

Figure 4. Sub-Saharan Africa: Learning-Adjusted School Years, 2020

(Years. Dashed lines = sub-Saharan Africa mean)



Sources: World Development Indicators; IMF, World Economic Outlook database; and IMF staff calculations.

Note: Learning-Adjusted Years of School are calculated based on methodology in Filmer and others (2020).

The Cost: Implications for Government Budgets.

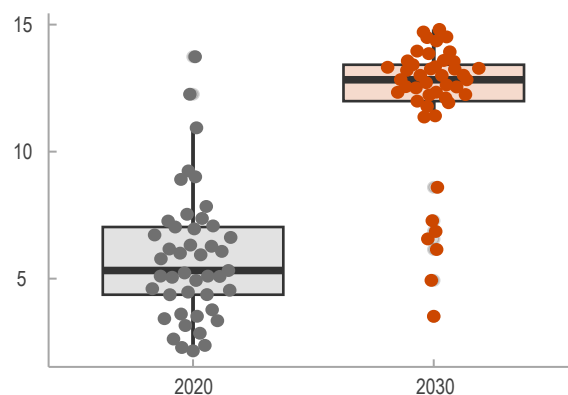
Ensuring that all children attend school is a formidable challenge...

Achieving the key Sustainable Development Goal (SDG) of universal primary and secondary school enrollment by 2030 will require a dramatic expansion of education budgets, both public and private. Accelerating education provision won't be easy. Schools and related infrastructure need to be built, and necessary supplies procured at scale. Teachers and other service providers need to be trained, and the trainers themselves must be trained. Given the speed of population change in many countries, the challenge will only increase if authorities delay. Multiyear plans will be vital, balancing the trade-off between investing in ramping up services to needed capacity against prioritizing their provision in the near term.³

Drawing on the costing methodology developed by Gaspar and others (2019), we calculate the additional spending that would be required to achieve the SDG objective of universal primary and secondary enrollment.⁴ Annual public and private expenditures on education would need to roughly double by 2030 as a share of GDP (Figure 5).

Figure 5. Sub-Saharan Africa: Total Education Spending, Current and Projected

(Percent of GDP, SDG4 Convergence Scenario)



Sources: IMF SDG Costing Tool (3rd edition, 2022); and IMF staff calculations.

Note: The grey boxplot portrays the current distribution of total spending on education as a percent of GDP in sub-Saharan African countries. The orange boxplot portrays education spending in the benchmark SDG4 convergence scenario.

³ While the focus of the SDG4 target is on primary and secondary education, vocational training of those children who could not attend school in recent years, or who dropped out, may serve as an important tool to provide useful skills that are in demand in the labor market. See UNESCO (2023) for a more thorough discussion of the labor market and equity implications of vocational training.

⁴ Carapella and others (2023) detail the methodology of the IMF SDG Costing Tool, Third edition, 2022. Enrollment rates are assumed to be 100 percent in primary and secondary school, and 50 percent in pre-primary and tertiary. Other factors, such as teacher wages as a share of GDP per capita, the ratio of school age to total population, the student to teacher ratios, and the non-teacher-compensation expenditures are benchmarked against those of leaders in suitably specified income groups to which countries are assigned based on 2030 projected GDP per capita.

Public education budgets will have to increase to 6.6 percent on average from about 4 percent in 2020 (7 percent for the median country from about 3.5 percent). Naturally, individual countries vary. In this scenario, for example, the increase in spending reaches more than 10 percent of GDP for the Democratic Republic of the Congo, Central African Republic, Angola, Chad, and South Sudan. In other countries, including Cape Verde, Mauritius, or Namibia the projection of required spending is mostly flat or slightly decreasing.

Under a more conservative scenario, where we simply move each country to current best practice—defined as in Gaspar and others (2019) as setting each country's enrollment target in line with the best performer by income group—public budgets would, on average, increase instead to 5.5 percent of GDP.

...as millions of additional teachers are needed to expand access and reduce the size of classes.

In both scenarios, the costing methodology results largely reflect the **dramatic required expansion in the number of pupils from current levels**, as well as the need to hire more teachers to **ensure that class sizes are aligned with regional best performers**. Indeed, countries with the greatest projected increase in spending currently fare particularly poorly in both enrollment rates and student to teacher ratios. By contrast, the few countries for which the projection is flat or even decreasing typically face easing demographic pressures or are assumed to lower unit costs of education provision by converging to the efficiency observed in best performers.

The impact of **future** demographic change on the simulation results is somewhat nuanced. The region's coming surge in its working-age population share will naturally have been preceded by a surge in its school-age share. But in many countries **much of this surge has already happened**, so that the proportion of school-age children has stabilized as a percent of (an increasing) total population. In absolute numbers, however, the region will still need to accommodate more than 120 million **additional** school age children between now and 2030.

Action Today, Jobs Tomorrow.

Getting from where we are today to a brighter future will require careful planning and implementation, and solutions to challenging logistical problems, especially in rural areas. For example, aiming at universal secondary enrollment by 2030 requires that almost all primary-school age children today be given the chance to attend primary and lower-secondary school and also provided with the means to reach the required learning objectives. Therefore, in the short run, emphasis should be placed on expanding primary and lower-secondary school access.

Education budgets must be protected...

Like much critical development spending, human capital investment provides longer-term gains, but upfront costs. The region has made only limited progress in improving literacy and numeracy over the last two decades, sometimes widening the gap with countries in south-east Asia or Latin America. In this context, the impact of the ongoing funding squeeze on public budgets in sub-Saharan Africa has been severe and wide-ranging. **As new emerging priorities come into focus, especially on climate change, it should be clear that funding for these new challenges will need to be additive.** To this end, governments in the region should continue in their efforts to expand the tax base, not only to ensure that resources are available to meet these new requirements, but also for **existing, fundamental development needs such as education**. The accompanying Analytical Note "[Cutting Budget Deficits in sub-Saharan Africa Without Undermining Development](#)" expands on ways in which the much-needed fiscal consolidation may be reconciled with safeguarding development spending.

...and be spent more efficiently.

Added spending to improve access is important, but ensuring that every dollar spent is used efficiently is equally crucial. A wealth of academic and policy research has shown that, beyond tracking education spending at the aggregate level, it is important to ensure that resources are spent efficiently.

From the education quality dataset developed by Angrist and others (2020), the median sub-Saharan African country only had about 15 percent of students reaching above the minimum learning outcome, with many leaving school unable to read or write. The same statistic for other EMDEs stood at about 35 percent. Using this data, Figure 6 shows that, globally, education outcomes typically improve as spending per student increases, with some decreasing returns to scale even for the most efficient countries. But outcomes in sub-Saharan countries are often far from best practice, even accounting for spending constraints. In many countries, there is space to improve learning outcomes for students currently in school without necessarily requiring a parallel increase in spending.⁵ Looking forward, advances in AI suggest that some of these future efficiency gains may come from increased adoption of digital technologies in schools. The role of technology in education is comprehensively discussed in the 2023 *Global Education Monitoring Report* (UNESCO 2023), where it is pointed out that digital technology has dramatically increased access to teaching and learning resources and proved vital in offsetting COVID-19 school closures. However, access remains unequal, and requires investment in supporting digital infrastructure.

International solidarity will be essential.

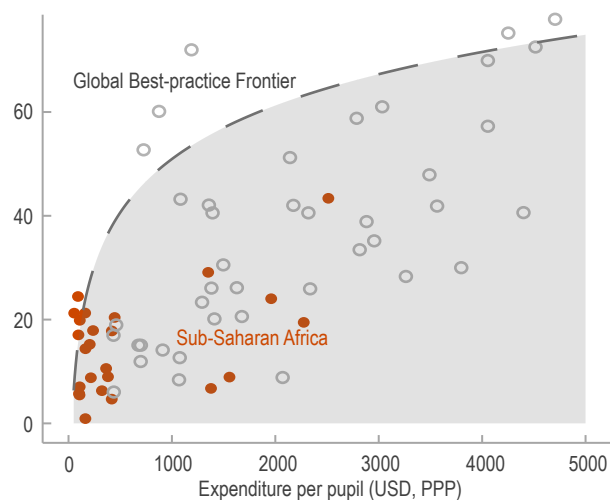
Donors should recognize the important role of their contributions at this critical juncture. Universal enrollment, even interpreted narrowly at the primary school level, is a difficult goal, which may be out of reach for some countries given the sheer size of the funding gap. Indeed, filling the gap requires an increasing budgetary effort, sustained over the medium-term even as the economic benefits of this spending arrive only after a considerable lag.

In this context, the need for support has never been higher. Official aid for basic education in sub-Saharan Africa has been stagnant since 2010 but is now even more vital, especially for those countries with limited fiscal space who are looking to safeguard education spending in the face of mounting demographic pressures. Finally, capacity development may be useful to deploy international best practices at scale, with a view to improve efficiency and quality of education.

It is well understood that, at a national level, education is a critical public good, with a key role in economic development and with benefits that accrue for all. The same argument applies at a global level. Over the next few decades, it is Africa that will supply the labor force needed by a rapidly ageing global population. And with help, it is Africa that will provide one of the world's most dynamic sources of new demand for consumption and investment. The international community therefore has an interest in Africa's success, and in helping ensure that the forthcoming demographic transition takes place as smoothly as possible.

Figure 6. Students Achieving above Minimum Learning Outcome, 2005-15

(Share of Students, percent. Global sample.)



Sources: Angrist and others (2020); and IMF staff calculations.

Note: The x-axis represents the average 2006-14 government spending on primary education per pupil, while the y-axis represents the share of students achieving above the minimum Harmonized Learning Outcome (HLO) detailed in Angrist and others (2020). The global best-practice frontier is estimated using the methodology detailed in Battese and Coelli (1992).

⁵ Hassan and others (2022) and Conn (2017) provide useful overviews of the state of the art on the evaluation of educational interventions in sub-Saharan Africa. Some of these interventions do not necessarily require major budgetary support and have been shown to improve learning or socio-economic outcomes.

References

- Amrita Ahuja, Sarah Baird, Joan Hamory Hicks, Michael Kremer, Edward Miguel, Shawn Powers, When Should Governments Subsidize Health? The Case of Mass Deworming, *The World Bank Economic Review*, Volume 29, Issue suppl_1, 2015, Pages S9-S24, <https://doi.org/10.1093/wber/lhv008>
- Angrist, N., Evans, D.K., Filmer, D., Glennerster, R., Rogers, F.H. and Sabarwal, S., 2020. How to Improve Education Outcomes Most Efficiently?: A Comparison of 150 Interventions Using the New Learning-adjusted Years of Schooling Metric. World Bank Group, Education Global Practice & Development Research Group.
- Battese, G.E. and Coelli, T.J., 1992. Frontier production functions, technical efficiency and panel data: with application to paddy farmers in India. *Journal of productivity analysis*, 3, pp.153-169.
- Carapella, Piergiorgio, Tewodaj Mogues, Julieth Pico-Mejía, and Mauricio Soto 2023. "How to Assess Spending Needs of the Sustainable Development Goals; The Third Edition of the IMF SDG Costing Tool." IMF How to Note 2023/005, International Monetary Fund, Washington, DC.
- Conn, K.M., 2017. Identifying effective education interventions in sub-Saharan Africa: A meta-analysis of impact evaluations. *Review of Educational Research*, 87(5), pp.863-898.
- Filmer, D., Rogers, H., Angrist, N. and Sabarwal, S., 2020. Learning-adjusted years of schooling (LAYS): Defining a new macro measure of education. *Economics of Education Review*, 77, p.101971.
- Gaspar, Vitor, David Amaglobeli, Mercedes Garcia-Escribano, Delphine Prady, and Mauricio Soto. 2019. Fiscal Policy and Development: Human, Social, and Physical Investment for the SDGs. International Monetary Fund Staff Discussion Note SDN/19/03.
- Hassan, E., Groot, W. and Volante, L., 2022. Education funding and learning outcomes in Sub-Saharan Africa: A review of reviews. *International Journal of Educational Research Open*, 3, p.100181.
- Kotschy, R., Suarez Urtaza, P. and Sunde, U., 2020. The demographic dividend is more than an education dividend. *Proceedings of the National Academy of Sciences*, 117(42), pp.25982-25984.
- Lutz, W., Crespo Cuaresma, J., Kebede, E., Prskawetz, A., Sanderson, W.C. and Striessnig, E., 2019. Education rather than age structure brings demographic dividend. *Proceedings of the National Academy of Sciences*, 116 (26), pp.12798-12803.
- Page, J., 1994. The East Asian miracle: four lessons for development policy. *NBER macroeconomics annual*, 9, pp.219-269.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). 2015. Education 2030: Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). 2023. Global Education Monitoring (GEM) Report: Technology in education: a tool on whose terms?
- United Nations Educational, Scientific and Cultural Organization Institute for Statistics (UIS). 2023. Teaching requirement policies globally and their implications for monitoring SDG 4? Document UIS/FS/2023/ED/63.

