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STUDIES AND PERSPECTIVES 137

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Implications for labour productivity and sustainable development

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Abstract

Labour productivity has been on a declining trend in the Caribbean. An examination of this trend revealed a growing concern of skills mismatch in the labour market. At the same time, youth unemployment is high in many countries, with young women and girls twice as likely not to be in education, employment or training. These are troubling signs for human capital formation at a time when Caribbean economies are experiencing low growth, the global economy is becoming increasingly knowledge-based, and a new tariff regime is threatening global trade.

In this study, we identify falling quality of education and the inadequate preparedness of school leavers and graduates for the world of work as notable challenges to human capital formation in the Caribbean. We also identify a role for productive development policies to drive transformation by creating an enabling environment for the key drivers of human capital formation in the Caribbean —population dynamics, education, and employment— to shape the workforce, enhance labour productivity and create a path to sustainable development. However, this will not be achieved unless the subregion addresses the gender disparities in education and employment, the debilitating effect of non-communicable diseases, and the looming social protection burden of ageing from the demographic transition. Amidst these challenges, investment in information and telecommunication technologies offers the Caribbean a path to develop and earn dividends from its human capital.

Introduction

Labour is an essential factor of production. Although the nature and role of labour in production and economic growth have changed over time, labour remains a critical factor in driving productivity, economic growth, and sustainable development. From the agricultural revolution to the industrial revolution and the current knowledge economy, labour as a factor of production has become progressively less dominant and more skilled. The accumulation of this skilled labour, the knowledge and innovation they generate, and the experiences they acquire constitute human capital formation. Human capital formation, therefore, requires that the labour force continues to perfect existing skills while acquiring new ones through education, experience, and innovations. It also requires that the labour force stay healthy to be productive for the benefit of the economy and society.

Individuals and households, educational and training institutions, employers of labour, and the government are key stakeholders in the human capital formation of a nation. Individuals must have a self-interest to acquire education and skills, and households must be committed to investing in the education and skills acquisition of household members. The education system must not only seek to teach and test students, but also intrinsically champion instilling functional skills in students and trainees. The acquisition of skills does not end in school, and employers of labour have a role in facilitating, if not sponsoring, continuous learning for their employees, especially in areas of practical relevance to their jobs and functions within the organization. Overall, the government has a duty to provide quality education as a social good for citizens and create an enabling environment for labour to be productive, including through investment in research and innovation and promulgation of policies, for labour to play its part in contributing to economic growth. Connecting the different roles identified for stakeholders is the common social responsibility of all to ensure that the workforce is sufficiently skilled to advance sustainable development.

The global community is committed to the advancement of sustainable development through the 2030 Agenda for Sustainable Development. The 2030 Agenda was devised as a plan of action for people, planet and prosperity. Through this agenda, world leaders are "determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological

progress occurs in harmony with nature".[1] The Sustainable Development Goals (SDGs) embodying this plan of action, especially Goal 4 (*Ensure inclusive and equitable quality education and promote lifelong learning)*, Goal 5 (*Achieve gender equality and empower all women and girl)*, Goals 8 (*Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all*), Goal 9 (*Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*), and Goal 10 (*Reduce inequality within and among countries*) promote education, skills, innovation, employment, income growth, or economic growth and set targets for countries to achieve in promoting these human capital-related outcomes.

However, midway through the 2030 Agenda, the Sustainable Development Goals Report of 2023,[2] a global progress report on the implementation of the SDGs, points to an education crisis with implications for skills formation. The COVID-19 pandemic was noted to have caused learning losses in three-quarters of 104 countries with data. The report highlighted the inadequacy of qualified, trained teachers in the education system and reported a high proportion of youth (23.5% globally) not in education, employment or training during 2022, with young women (32.1%) twice as likely as young men (15.4%) to be in this category. Although the Latin America and Caribbean (LAC) region performed better than the global average, young women (26.9%) in the LAC region were also twice as likely as young men (13.9%) to not be in education, employment or training during 2022. In a dampening of the prospect for global prosperity that leaves no one behind, the report indicated that COVID-19 has resulted in the largest rise in between-country inequality in three decades.

On the positive side, the Sustainable Development Goals Report of 2023 revealed that global expenditure on research and development (R&D) as a proportion of the Gross Domestic Product (GDP) grew, increasing from 1.69% in 2015 to 1.93% in 2020. During the same period, the LAC region experienced a decline in R&D expenditure from 0.72% to 0.63% of GDP. Such disparity in R&D investment has implications for human capital formation in the region and could further widen inequalities among nations.

As small island developing States (SIDS),[3] Caribbean countries are confronted with capacity limitations and the need to enhance the human capital of SIDS featured prominently in the Fourth International Conference on Small Island Developing States (SIDS4). It is also reflected in the conference's outcome document, *The Antigua and Barbuda Agenda for SIDS (ABAS) – a Renewed Declaration for Resilient Prosperity.*[4] During SIDS4 held in Antigua and Barbuda from 27 to 30 May 2024, representatives of governments, the United Nations system, international financial institutions, other development partners, civil society, academia, and youth held an interactive dialogue on investing in human capital in SIDS. The background document[5] prepared by the United Nations system to inform this dialogue identified demographic shifts leading to ageing of the population; labour market and migration patterns that have resulted in brain drain from SIDS; persistent health crises in the form of disproportionate premature mortality from non-communicable diseases, prevalence of mental health conditions that contribute to high rates of suicides; increasing adolescent birth rates that delay or hinder girls from receiving quality education; and constraints in capacity and resources, including in the education and labour sectors that undermine the development of human capital, as key human capital challenges of SIDS. At the Interactive Dialogue, participants emphasized the importance of investment in people by

[1] United Nations, Transforming our world: the 2030 Agenda for Sustainable Development A/RES/70/1. Available at 21252030 Agenda for Sustainable Development web.pdf.

[2] The Sustainable Development Goals Report 2023; Special edition. Towards a Rescue Plan for people and Planet. Available at https://unstats.un.org/sdgs/report/2023/The-Sustainable-Development-Goals-Report-2023.pdf.

[3] For a complete list of the 39 SIDS and 18 associate members of the United Nations regional commissions see: https://www.un.org/ohrlls/content/list-sids.

[4] The Antigua and Barbuda Agenda for SIDS (ABAS) – a Renewed Declaration for Resilient Prosperity. Available at https://sdgs.un.org/sites/default/files/2024-04/SIDS42020Co-Chairs%20FINAL.pdf.

[5] Investing in Human Capital: Addressing Health Crises in SIDS and Building the Potential of Youth in SIDS. Available at https://sdgs.un.org/sites/default/files/2024-05/ID%205%20clean.pdf.

strengthening the health, nutrition, education and skills of citizens and communities as a way of promoting human capital. Notably, the youth representative argued that two key assets of SIDS are their natural capital and human capital and submitted that the lack of investment in these resources is stalling the growth of innovation and promoting emigration. Therefore, addressing human capital challenges of SIDS will require expanding access to higher education and investing in vocational training, especially for the youth. It will also require revamping the education system and enhancing the health system to ensure a healthy and skilled productive future workforce that can propel economic growth and promote the competitiveness of SIDS.

Realizing the human capital challenges facing SIDS, ABAS calls for SIDS to have productive populations by providing quality education, including lifelong-learning opportunities, that ensure that those receiving education have functional skillsets that are in demand in the labour market. Relatedly, ABAS calls for SIDS to harness science, technology, and innovation and invest in digitalization. It also appeals to development partners to assist SIDS in developing policies and legislation to create an enabling environment for innovative transformation of SIDS economies.

Within the context of providing an enabling policy environment for a more productive economy, the Economic Commission for Latin America and the Caribbean (ECLAC) has identified productive development policies (PDPs) as the main instrument for fostering higher, sustained, inclusive and sustainable growth. In its flagship publication, *Panorama of Productive Development Policies in Latin America and the Caribbean*,[6] ECLAC identified low labour productivity as a development challenge in LAC and noted the important role that workers' education and skills play in productivity. Unfortunately, despite improvements in years of schooling, the education system in LAC has not produced the desired outcomes of skills, competencies, and capabilities that result in a more productive labour force. Even in situations where these outcomes are generated, the region's economies have not effectively leveraged their human capital in high-productivity sectors. Therefore, to break the low-growth trap in which the LAC region finds itself, it is essential that countries employ productive development policies to drive productive transformation that will raise productivity, lead to economic growth, and engender sustainable development in a more inclusive and resilient way.

In line with the global and regional call to action to address human capital challenges and low productivity, this study is conducted to examine the issue of human capital formation in the Caribbean as economies of the subregion, with the exception of a few, continue to experience low growth in an environment of high youth unemployment, continued emigration of skilled labour, growing concerns of skill mismatch in the labour market, and poor student performance on standardized tests. We examine these issues to understand how they combine to undermine human capital formation in the Caribbean and how they contribute to entrenching the narrative of the Caribbean as a subregion with limited capacity.

Following this introduction, Chapter I provides a brief background to human capital development in the Caribbean. The drivers of human capital in the subregion are then discussed in Chapter II. Given the relationship of human capital with labour productivity, Chapter III focuses on recent trends in labour productivity in the Caribbean and provides an explanation for these trends. In Chapter IV, we discuss some cross-cutting issues that have significantly influenced or have the potential to shape human capital formation in the subregion. The study concludes with some policy recommendations for building human capital and promoting labour productivity in the Caribbean.

[6] Economic Commission for Latin America and the Caribbean (ECLAC), Panorama of Productive Development Policies in Latin America and the Caribbean, 2024. Executive summary (LC/PUB.2024/17), Santiago, 2024. Available at https://repositorio.cepal.org/server/api/core/bitstreams/ef207540-b0d4-4cc9-8248-63b3ebac878d/content.

I. Situation of human capital in the Caribbean

The Caribbean has a tradition of quality education, and the subregion has, over the decades, recorded significant progress in primary and secondary school enrolment, including a higher rate of female participation in education at upper secondary and tertiary education levels (Abdulkadri et al., 2022). While the improved access to education has been hailed as a subregional achievement, there are worrying signs of lower academic performance of students completing secondary education and lack of functional skills in graduates of tertiary level institutions (Abdulkadri et al., 2022; ECLAC, 2018).

In early post-independence periods, Caribbean countries made investments in education and recorded significant strides in their human capital development. However, starting from the 1990s, studies began to point to a mismatch between the skillsets possessed by school leavers and graduates and those required by the labour market (ECLAC, 2018). Among the contributing factors to the lack of functional skills in the future workforce is their deficiency in critical thinking and creativity skills (ECLAC, 2020). Addressing these and other underlying factors have prompted action at the national level by governments and at the regional level by the Caribbean Community (CARICOM).

The CARICOM Human Resources Development (HRD) 2030 Strategy was developed as a regional policy instrument to unlock the human capital potential of the subregion. At the center of this strategy is the realization of the need for systemic educational reform, and in that process, the strategy took special note of the top ten skills the World Economic Forum projected for 2020. The top three on this list being complex problem solving, critical thinking, and creativity—the same skills that are increasingly lacking in the Caribbean workforce. In Jamaica, for example, an education transformation commission was set up to advise the government on education reform in the country. In its 2021 report,[7] the Jamaica Education Transformation Commission provided a snapshot of the perspectives of tertiary level students on their preparedness for the job market. Essentially, these students opined that tertiary education has not prepared them for the world of work as academic programmes at the tertiary level did not reflect the demands of the labour market.

It is already well-established that low workforce skill levels are an obstacle to innovation in enterprises (AfDB et al., 2018). Nonetheless, low skills continue to be prevalent among the Caribbean workforce. As part of its efforts to accelerate economic growth and development in the Caribbean by

[7] The Jamaica Education Transformation Commission (2021), The Reform of Education in Jamaica, 2021 – Report, September.

boosting the participation of the private sector in key sectors, the World Bank conducted a Regional Private Sector Diagnostic (RPSD) (IFC, 2023) covering 12 Caribbean States.[8] The diagnostic noted that quality issues persist with education in these countries and that their levels of tertiary education attainment are low in comparison with countries at similar stages of development. Furthermore, the diagnostic revealed that the private sector is predominantly composed of low-productivity small and medium enterprises and continues to witness increased levels of skills mismatch.

ECLAC (2022) noted this recent trend of under-achievement of the Caribbean in human capital formation and suggested that the subregion is under-performing in transforming learning and knowledge into functional skills. Redressing this will require examining the key drivers of human capital in the subregion, how they contribute to human capital formation, and ways to enhance these drivers to achieve the desired outcome.

[8] These countries are Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

II. Drivers of human capital in the Caribbean

A. Population dynamics

Human capital can be thought of as the skills, knowledge and experience possessed by a country's population. As populations change over time, for example, in respect of their size, age structure, migration patterns, fertility rates, etc., the stock of human capital and its distribution among the population also changes, under the influence of these demographic trends. Three specific interactions between demographic trends and human capital that shape human capital accumulation in the Caribbean are considered here: levels of formal education by age cohort and their implications for the future stock of human capital; the impact of migration on human capital; and the impact of adolescent fertility.

1. Population changes

As occurred in developed countries, there has been a major expansion of higher education in the Caribbean, which means that most recent age cohorts have benefited from more years of schooling than previous cohorts and a higher proportion of young people have tertiary level education. The gross enrollment rate for tertiary education increased from 10% in the late 1990s to 22.5% in 2016 (figure 1). It is notable that starting in the 1980s, a large gender differential opened up between the tertiary enrollment rates for women and men. This trend accelerated during the 1990s, so that by the early 2000s, the female enrollment rate for tertiary education was double that for males. In 2016, females were 1.74 times more likely to enrol in tertiary education.

This rapid increase in participation in tertiary education means that people in their 20s or 30s, especially women, are more likely to have a higher level of formal education than people in their 40s or 50s, who tended to leave school earlier. Those who left school earlier may have subsequently developed skills through training and employment, but, nevertheless, this differential in the level of formal education across age cohorts affects the stock of human capital that is present in the workforce and therefore available to the economy. The full benefit of increased participation in higher education is only fully felt when those higher levels of formal education are seen throughout the workforce.

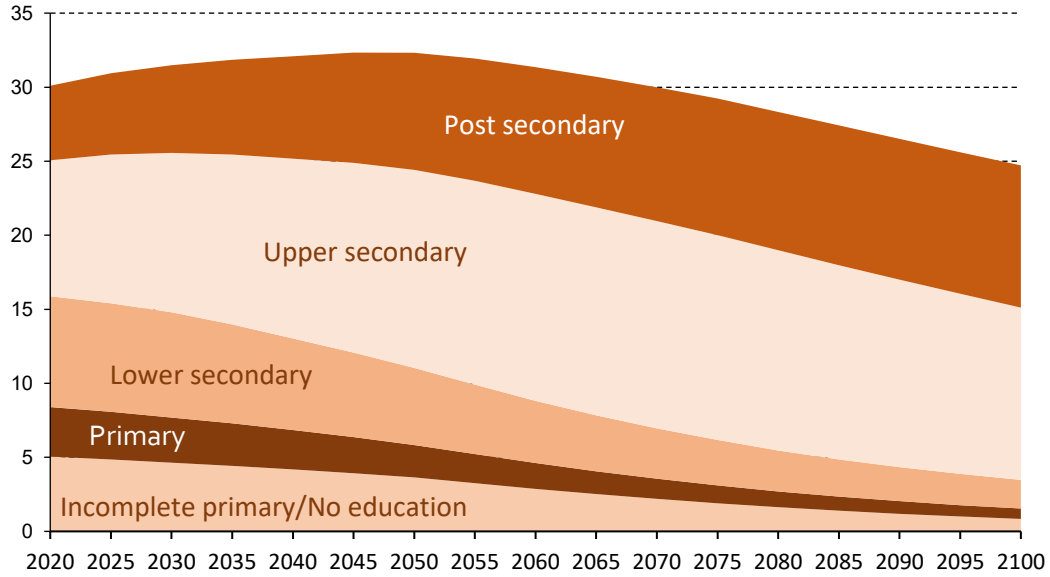
Figure 1
School enrollment in the Caribbean, tertiary (gross)
(Percentages)

Source: Prepared by the authors, on the basis of World Bank (2024g).
Note: The gross enrolment ratio is the enrolment in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education. This figure shows an estimate for the 13 Caribbean member States excluding Cuba, the Dominican Republic and Haiti.

The Shared Socioeconomic Pathways (SSPs) Global Population and Human Capital Projections produced by the Wittgenstein Center (WIC, 2023) make it possible to assess how these higher levels of formal education, seen in recent years, will translate into higher levels of education among the population, and specifically the working-age population, over the coming decades. These projections, which update the WIC2013 and WIC2018 versions, incorporate national population projections disaggregated by level of education and are calculated based on assumptions about education-specific fertility levels, education differentials in mortality, and education-specific migration rates.

Figure 2 shows the projected Caribbean working-age population (aged 15 to 64) disaggregated by level of education from 2020 to 2100. The population is projected to increase slowly until 2050, whereupon it will begin to decline. In 2020, 5.0 million (17%) of the working age population had post-secondary education, 9.2 million (31%) had upper secondary education, while at the other end of the scale, 5.0 million (17%) had incomplete primary or no education (of these 5.0 million, more than half are in Haiti). Due to improved rates of participation, the level of formal education of the working-age population is projected to improve significantly over the coming decades. By 2050, 7.9 million (23%) of the working age population will have post-secondary education and 13.4 million (39%) will have upper secondary education. Meanwhile, just 3.6 million (11%) will have incomplete primary or no education. By 2100, 21.2 million (81%) will have upper secondary or post-secondary education. All countries will see improvements in the level of formal education of their populations. These figures illustrate the benefit that will continue to accrue to Caribbean countries from increased rates of participation in education, and the value of seeking to achieve further improvements, particularly in tertiary education.

Figure 2
Projected Caribbean population aged 15 to 64 by level of education, 2020 to 2100
(Millions)



Source: Prepared by the authors, on the basis of Wittgenstein Center (WIC, 2023).

2. Migration trends

Migration trends also affect the stock of human capital. In the simplest terms, every immigrant is an addition and every emigrant is a loss of human capital. If migration were independent of education level, then these additions and losses of human capital would not be particularly concerning, affecting only the size of a population and having no significant impact on the quality of a country's human capital. However, patterns of migration are closely related to education level because many migrants move for economic reasons, and the economic opportunities available to migrants depend heavily on their level of education. Migration of skilled workers, in particular, has had significant impacts on the availability of human capital in Caribbean countries.

The WIC2023 projections provide some indication of the likely effect that migration has on the stock of human capital in Caribbean countries. The projections include a zero migration variant, which, when compared with the medium projection, isolates the contribution of migration. Table 1 shows the projected population of Caribbean countries and territories in 2050, by level of education, based on both the medium projection and the zero migration variant. This table illustrates how all Caribbean countries will see significant increases in the general level of education of their working-age populations over the coming decades. Comparing the zero migration variant with the medium projection also makes clear that while migration, in most cases, has a negative effect on the stock of human capital, its impact is much smaller than the positive impact of increased participation in education. For example, for the Caribbean as a whole, the proportion of the working-age population with post-secondary education would increase from 16.7% to 25.1% under the assumption of zero migration. Taking into account migration only reduces this to 24.5%. Puerto Rico is an exception. The proportion of the population with post-secondary education is projected to rise from 34.2% in 2020 to 42.8% in 2050, but under the assumption of zero migration, it would rise to 49.0%, making clear the strong negative impact of migration on human capital in this territory. This analysis highlights the importance of education enrollment rates (and completion rates) and makes clear that, even where migration leads to a loss of human capital (a brain drain), this does not prevent the countries from building the human capital of their populations.

Table 1
Population aged 15 to 64 by level of education: 2020, medium projection (SSP2) 2050, and zero migration projection (SSP2ZM) 2050
(Percentages)

		No Education	Incomplete Primary	Primary	Lower Secondary	Upper Secondary	Post Secondary	Total
Antigua and Barbuda	2020	2.3	1.5	31.8	9.9	35.3	19.3	100
	2050 (Medium projection)	2.5	2.3	12.7	6.1	42.5	34.4	100
	2050 (Zero migration)	1.9	0.8	13.4	5.3	44.5	34.1	100
Aruba	2020	3.7	3.0	19.7	33.9	15.4	24.5	100
	2050 (Medium projection)	1.5	1.0	11.7	20.4	28.6	36.3	100
	2050 (Zero migration)	1.0	0.2	12.2	22.6	26.7	37.1	100
Bahamas (The)	2020	1.0	0.3	1.5	5.6	60.6	31.0	100
	2050 (Medium projection)	0.5	0.2	0.5	3.1	53.7	41.9	100
	2050 (Zero migration)	0.2	0.0	0.2	2.4	54.9	42.1	100
Barbados	2020	2.1	1.5	33.2	10.1	33.8	19.3	100
	2050 (Medium projection)	1.9	1.6	13.0	6.0	43.9	33.6	100
	2050 (Zero migration)	1.7	1.0	13.0	5.4	44.7	34.0	100
Belize	2020	2.7	16.6	29.1	12.9	22.9	15.7	100
	2050 (Medium projection)	1.0	8.6	15.0	12.0	34.3	29.1	100
	2050 (Zero migration)	0.5	8.7	15.3	12.2	34.6	28.9	100
Cuba	2020	0.9	1.3	6.0	27.9	42.3	21.6	100
	2050 (Medium projection)	0.4	0.4	2.0	13.3	47.8	36.1	100
	2050 (Zero migration)	0.3	0.3	2.0	13.2	47.7	36.5	100
Curaçao	2020	0.0	1.7	14.1	37.9	29.7	16.5	100
	2050 (Medium projection)	1.0	1.9	11.3	16.7	40.5	28.6	100
	2050 (Zero migration)	0.0	0.5	11.3	18.5	42.0	27.7	100
Dominican Republic	2020	8.1	12.1	9.8	26.6	24.5	18.9	100
	2050 (Medium projection)	2.4	5.3	4.7	16.5	36.4	34.8	100
	2050 (Zero migration)	2.1	5.1	4.4	16.4	36.0	35.9	100
French Guiana	2020	12.9	2.4	24.4	17.3	29.1	13.8	100
	2050 (Medium projection)	8.0	0.8	16.0	14.0	37.5	23.7	100
	2050 (Zero migration)	8.2	0.3	16.4	14.2	37.8	23.2	100
Grenada	2020	2.1	1.6	30.0	9.8	36.4	20.2	100
	2050 (Medium projection)	2.0	1.4	12.9	5.9	44.8	32.9	100
	2050 (Zero migration)	1.7	1.1	12.6	5.5	45.0	34.4	100
Guadeloupe	2020	1.3	2.6	16.5	15.2	45.5	18.8	100
	2050 (Medium projection)	1.2	0.8	8.8	8.1	51.2	30.0	100
	2050 (Zero migration)	0.9	0.2	8.4	7.7	51.5	31.2	100
Guyana	2020	1.4	2.9	12.9	29.3	42.9	10.5	100
	2050 (Medium projection)	0.7	1.9	5.3	17.6	56.8	17.6	100
	2050 (Zero migration)	0.4	1.7	5.0	17.5	57.7	17.6	100
Haiti	2020	20.0	24.3	17.3	17.1	20.1	1.2	100
	2050 (Medium projection)	4.3	22.5	11.8	16.5	41.9	3.1	100
	2050 (Zero migration)	4.1	22.7	11.7	16.5	42.1	2.9	100
Jamaica	2020	0.3	1.4	7.4	54.0	16.7	20.1	100
	2050 (Medium projection)	0.3	0.5	3.2	32.6	32.2	31.3	100
	2050 (Zero migration)	0.2	0.3	3.0	33.1	31.4	32.1	100
Martinique	2020	0.6	2.6	14.6	15.3	45.8	21.1	100
	2050 (Medium projection)	0.4	0.6	7.4	8.5	50.0	33.0	100
	2050 (Zero migration)	0.1	0.1	7.2	8.0	49.9	34.4	100
Puerto Rico	2020	1.2	2.0	4.8	11.6	46.3	34.2	100
	2050 (Medium projection)	1.1	1.2	3.2	7.5	44.1	42.8	100
	2050 (Zero migration)	0.3	0.2	1.8	6.0	42.6	49.0	100

		No Education	Incomplete Primary	Primary	Lower Secondary	Upper Secondary	Post Secondary	Total
Saint Lucia	2020	2.0	1.3	30.6	9.9	36.2	20.0	100
	2050 (Medium projection)	2.0	1.5	13.3	5.6	44.1	33.4	100
	2050 (Zero migration)	1.7	1.0	13.2	5.5	44.6	34.0	100
Saint Vincent and the Grenadines	2020	0.0	2.0	38.8	15.8	28.1	15.0	100
	2050 (Medium projection)	0.0	1.0	16.1	11.2	45.7	25.0	100
	2050 (Zero migration)	0.0	0.1	16.2	11.4	46.9	25.4	100
Suriname	2020	4.3	0.0	21.5	42.0	23.6	8.7	100
	2050 (Medium projection)	0.8	0.4	10.7	29.5	43.4	15.2	100
	2050 (Zero migration)	0.7	0.0	10.7	30.6	43.8	14.2	100
Trinidad and Tobago	2020	0.9	2.6	12.0	24.6	32.5	27.4	100
	2050 (Medium projection)	0.4	0.4	2.1	13.1	42.3	41.9	100
	2050 (Zero migration)	0.3	0.1	1.7	12.9	42.0	43.0	100
United States Virgin Islands	2020	2.3	1.6	35.1	10.4	32.3	19.0	100
	2050 (Medium projection)	2.5	1.9	12.5	6.5	44.0	32.6	100
	2050 (Zero migration)	1.8	1.3	12.5	5.5	45.1	34.6	100
The Caribbean	2020	7.3	9.5	11.1	24.9	30.5	16.7	100
	2050 (Medium projection)	2.3	9.0	6.8	16.1	41.4	24.5	100
	2050 (Zero migration)	2.1	8.8	6.5	16.1	41.3	25.1	100

Source: Prepared by the authors, on the basis of Wittgenstein Center (WIC, 2023).

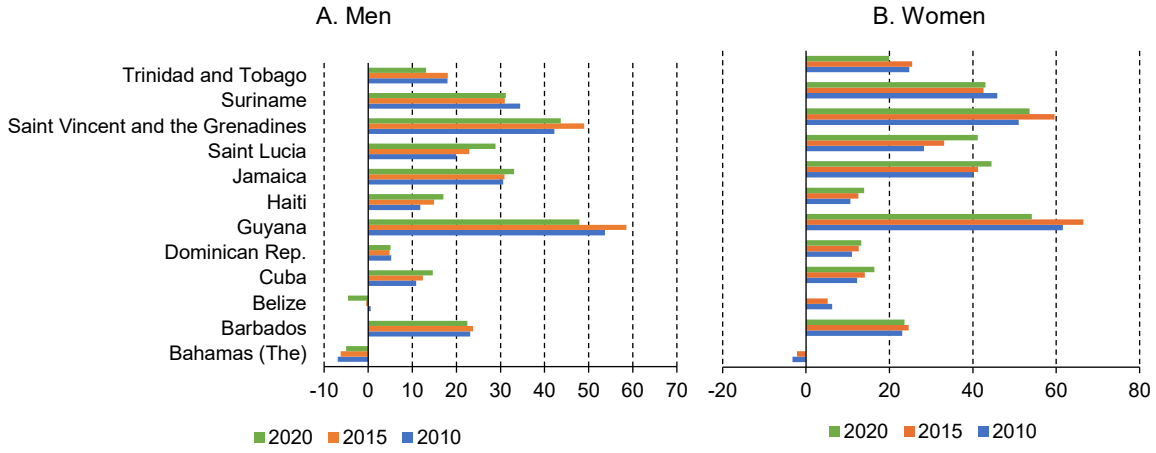
This broad analysis of trends in the stock of human capital suggests that migration will have less impact on human capital than increased participation in education over the coming decades. However, the impact of migration is still important because of the way in which it creates mismatches between the supply and demand for skills, and the role that it can play in reconciling those mismatches. These impacts are more pronounced in small economies and will not be fully captured by a single variable, such as the level of education. Skills mismatch is created and/or reconciled much more quickly through migration than it is through education, training and re-training. This immediateness and directness of the impact that migration can have on a country's human capital means that the interaction of migration, human capital and development will continue to be an important concern for policymakers. Migration policy must seek to temper the effect of brain drain from the subregion by creating incentives for persons of equal and higher human capital to migrate to the Caribbean, whilst providing a conducive environment for skilled nationals to stay in the subregion or return to it.

Emigration from the Caribbean, particularly of the highly educated and primarily women, hindered the development of human capital within the subregion, undermining its economic development. Outflows of migrants were at their highest in the late 1950s and 1960s (as a proportion of the Caribbean population). In subsequent decades, outflows continued, but were increasingly concentrated among those with higher levels of education. During the 20th century, migration in the Caribbean was characterized by net emigration. Moreover, women tend to emigrate more than men in the Caribbean, which is an atypical trend for developing countries. Data from 12 Caribbean member States shows that all apart from the Bahamas were net emigrant countries from 2010 to 2020 (figure 3). Of the 11 net emigrant countries, all but Haiti exhibited a greater proportion of emigrant women than men. Needless to say, Caribbean women are more represented in tertiary education than men, providing them with more pathways for South-North mobility.

Intra-Caribbean migration increased by about one third from 2000 to 2020, largely because of subregional human mobility schemes implemented by CARICOM and the Organization of Eastern Caribbean States (OECS) to ease residency requirements of member State nationals. However, by 2020, the intra-Caribbean migration stock (representing 1.9% of the subregion's population) was under one-tenth that of the overall Caribbean emigrant stock (which equalled 21.6% of the subregion's

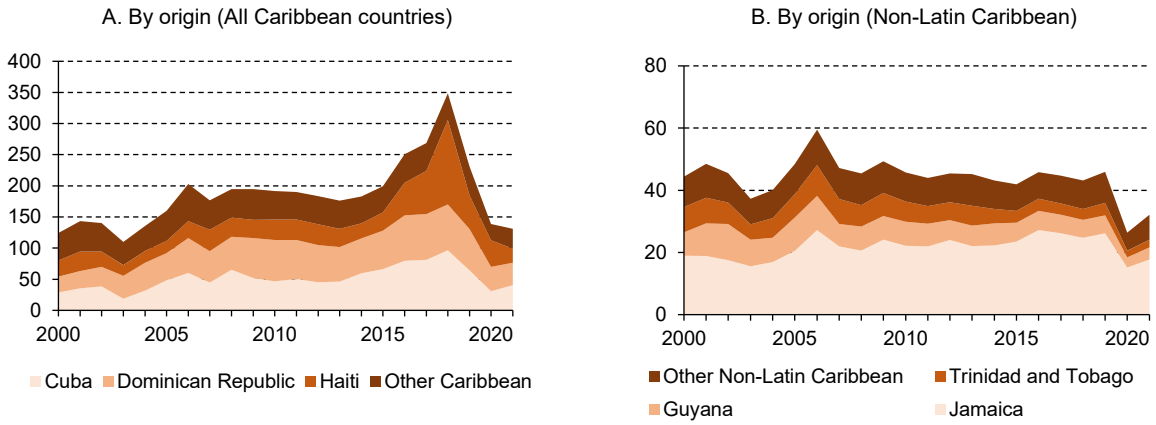
population) (Leon and Abdulkadri, 2024). Hence, extra-Caribbean migration trends, particularly to Global North countries, are of greater importance to understand the impact of human mobility on human capital formation.

Figure 3
Net emigration from the Caribbean (emigrant stocks – immigrant stocks) by gender, 2010 to 2020
(Percentages)



Source: Prepared by the authors, on the basis of Leon and Abdulkadri (2024).

Figure 4
Annual flows of migrants from the Caribbean to OECD countries, 2000 to 2021
(Thousands)



Source: Prepared by the authors, on the basis of OECD (2024).

Figure 4 shows the number of migrants leaving the Caribbean for member countries of the Organization for Economic Co-Operation and Development (OECD) over the last couple of decades.[9] Migration flows from the Caribbean to OECD countries increased for all Caribbean countries up to the late 2010s (Panel 4.A). This migration trend reduced significantly in 2020 and 2021 due to the COVID-19 pandemic, but it is likely that this is a short-term effect. The most recent data on immigration to the United States appears to bear this (CBO, 2024). Before 2020, there were increasing numbers of migrants leaving Cuba, Haiti and the Dominican Republic, with a notable spike in 2018 due primarily to migrants

[9] As of 2020, roughly 80% of Caribbean migrants resided in OECD countries (Leon and Abdulkadri, 2024).

from Haiti to Chile. In contrast, there was a steady flow of migrants from non-Latin Caribbean countries, but no evidence of an overall increase in numbers (Panel 4.B). There was some increase in the flow of migrants from Jamaica, but this was offset by reduced flows from Guyana and Trinidad and Tobago.

Table 2
Rates of Caribbean emigration to OECD countries among persons aged 15 and over, 2000/01 to 2015/16
(Percentages)

	Persons with high education				All persons			
	2000/01	2005/06	2010/11	2015/16	2000/01	2005/06	2010/11	2015/16
Aruba	…	…	…	40.5	7.5	8.9	…	25.5
Antigua and Barbuda	…	…	…	…	33.2	28.1	…	…
Bahamas (The)	19.5	23.4	…	14.8	12.4	12.3	12.3	11.5
Barbados	91.0	82.7	66.2	49.6	29.5	26.8	27.5	27.9
Belize	45.7	49.5	33.4	29.9	22.7	22.4	20.3	17.4
Bermuda	…	…	…	…	27.1	26.4	…	…
Cayman Islands	…	…	…	…	7.6	7.1	…	…
Cuba	27.8	26.1	20.0	30.4	9.6	10.6	11.4	13.1
Dominica	…	…	…	…	33.7	46.7	…	…
Dominican Republic	10.1	12.6	11.8	17	10.9	11.8	12.4	14.8
Grenada	…	…	..	58.6	41.5	40.6	…	42.0
Guyana	99.3	79.4	93.0	73.0	37.0	40.7	39.9	41.2
Haiti	70.7	75.4	75.1	73.0	8.9	9.3	10.7	10.7
Jamaica	47.1	50.6	48.1	50.8	31.3	32.8	32.7	32.1
Puerto Rico	…	…	…	29.9	30.8	30.2	…	35.2
Saint Lucia	…	…	…	44.5	18.8	17.8	…	33.2
Saint Vincent and Grenadines	…	…	…	55.8	30.9	27.1	…	33.1
Suriname			..	56.5	..	38.2	…	32.1
Trinidad and Tobago	72.4	74.0	68.2	35.5	22.2	23.3	23.2	23.8
Turks and Caicos Islands	…	…	…	…	8.8	7.6	…	…
United States Virgin Islands	…	…	…	66.4	37.1	38.3	…	43.9

Source: Prepared by the authors, on the basis of the Databases on Immigrants in OECD Countries (DIOC), 2000/01, 2005/06, 2010/11 and 2015/16 (OECD, 2024).
Note: Emigration rates are defined as the ratio between the number of emigrants from a specific country living in OECD countries and the total sum of the resident population of this country and emigrants living in OECD countries.

A significant proportion of Caribbean migrants to OECD countries are persons with high levels of education, and analysing migration specifically among highly-educated persons not only helps to explain the trends shown in figure 3, but also provides a better understanding of the impact of migration on human capital in Caribbean countries. Table 2 shows emigration rates[10] for persons with a high level of education versus the rates for all persons. Emigration rates for persons with high education are significantly greater than those for the population as a whole, in almost all Caribbean countries and territories.

[10] It is important to note that, unlike the annual flows shown in figure 4 above, these "emigration rates" are calculated using the total migrant stocks in OECD countries, with the denominator being the sum of the resident population of the country of origin plus the migrant stock. These emigration rates for persons with high level of education are therefore a direct measure of the proportion of a country's highly educated nationals that it has lost due to emigration.

Based on the data in table 2, Puerto Rico is the only country or territory where this is not the case. This is because all Puerto Ricans are United States nationals and are, thus, able to move freely, irrespective of their level of education. The rates also tend to be higher among small countries where the opportunities for higher education are naturally more limited.

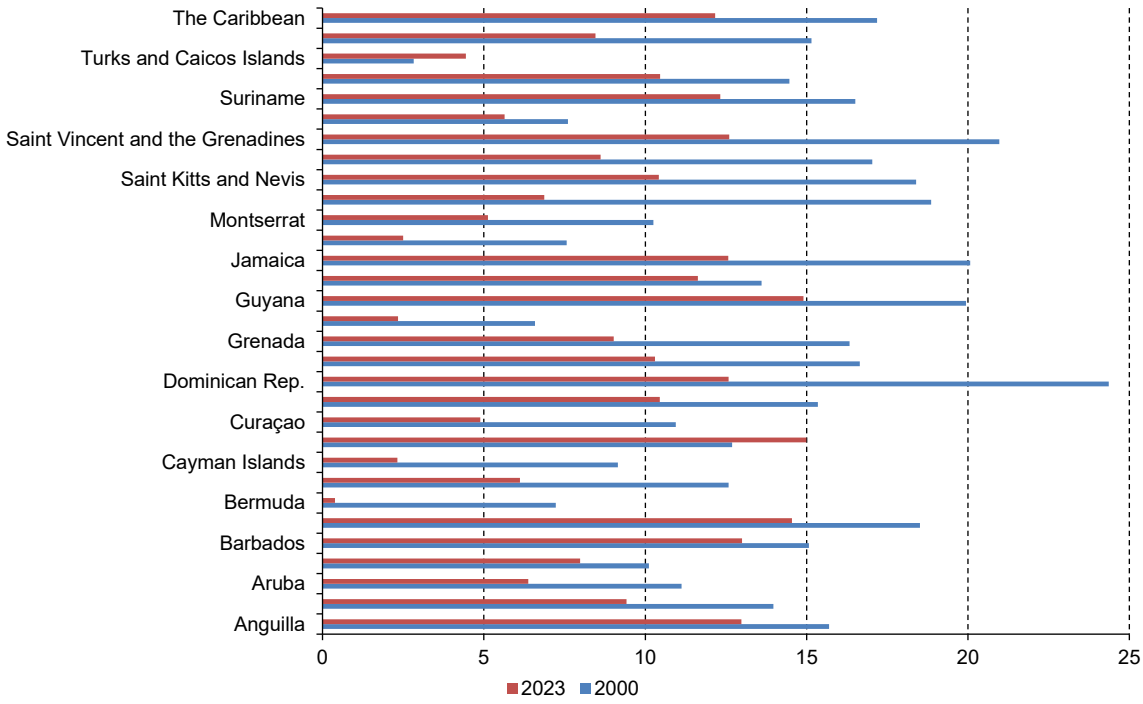
In Cuba, Dominican Republic, Haiti, and Jamiaca the emigration rates among those with high education remained relatively steady, from 2001/01 to 2015/16. This means that although these countries increased participation in higher education, resulting in improved education levels in the domestic workforce to some degree, skilled emigration was sufficiently high that the proportion of their highly educated nationals living overseas remained high (or increased in the case of the Dominican Republic). In The Bahamas, Barbados, Belize, Guyana, and Trinidad and Tobago, on the other hand, there was a fall in the emigration rate among those with high education over this period. These countries also achieved increased participation in higher education and retained enough of those trained in their domestic workforce, leading to a reduction in the overall proportion of their highly educated nationals living overseas.

The WIC (2023) projections were based on projections of net migration disaggregated by level of education, which provides another perspective on the relationship between education and migration. The projections for the current period (2020 to 2025) are shown in table A1.2. The aggregate figures for the Caribbean imply a strong relationship between net emigration and the level of education in the Caribbean. Among the population with lower levels of education (no education, incomplete primary education, primary), Caribbean net migration is relatively close to zero (inflows are approximately equal to outflows). Among persons with higher levels of education, net migration tends to be increasingly negative, meaning that emigrants outnumber immigrants, and this is increasingly true for those with higher levels of education. The majority of Caribbean countries are seeing net emigration among their more highly educated populations. However, there are some exceptions to this, which include Aruba, Belize, Curaçao, and French Guiana, which are seeing net immigration among persons of high eductaion. Among those with low levels of education, although net migration for the Caribbean is close to zero, the majority of Caribbean countries are still seeing positive net migration among this group, which is explained by the flow of migrants from Haiti to other Caribbean countries.

3. Adolescent fertility

Adolescent fertility is another population dynamic which affects human capital since pregnancy and childbirth dramatically reduces adolescent's participation in education. For example, a study on the socio-economic consequences of adolescent pregnancy in Guyana (UNFPA, 2021) showed that adolescent mothers were much less likely than adult mothers to have post-secondary or tertiary education (5% compared to 14%). The proportion of births to adolescent mothers in the Caribbean has been declining steadily, but in 2023, 12% of births were still to mothers aged 19 or under, which indicates that there is still a significant proportion of adolescent girls having their education interrupted or stopped by pregnancy and childbirth (figure 5). Associate member countries generally see a smaller proportion of births to adolescent mothers. One reason for this is that, for many of these countries, migrants who arrived as adults form a significant proportion of the population.

Figure 5
Proportion of births in Caribbean countries where the mother is aged 19 or under
(Percentages)



Source: Prepared by the authors, on the basis of UN-DESA (2024).

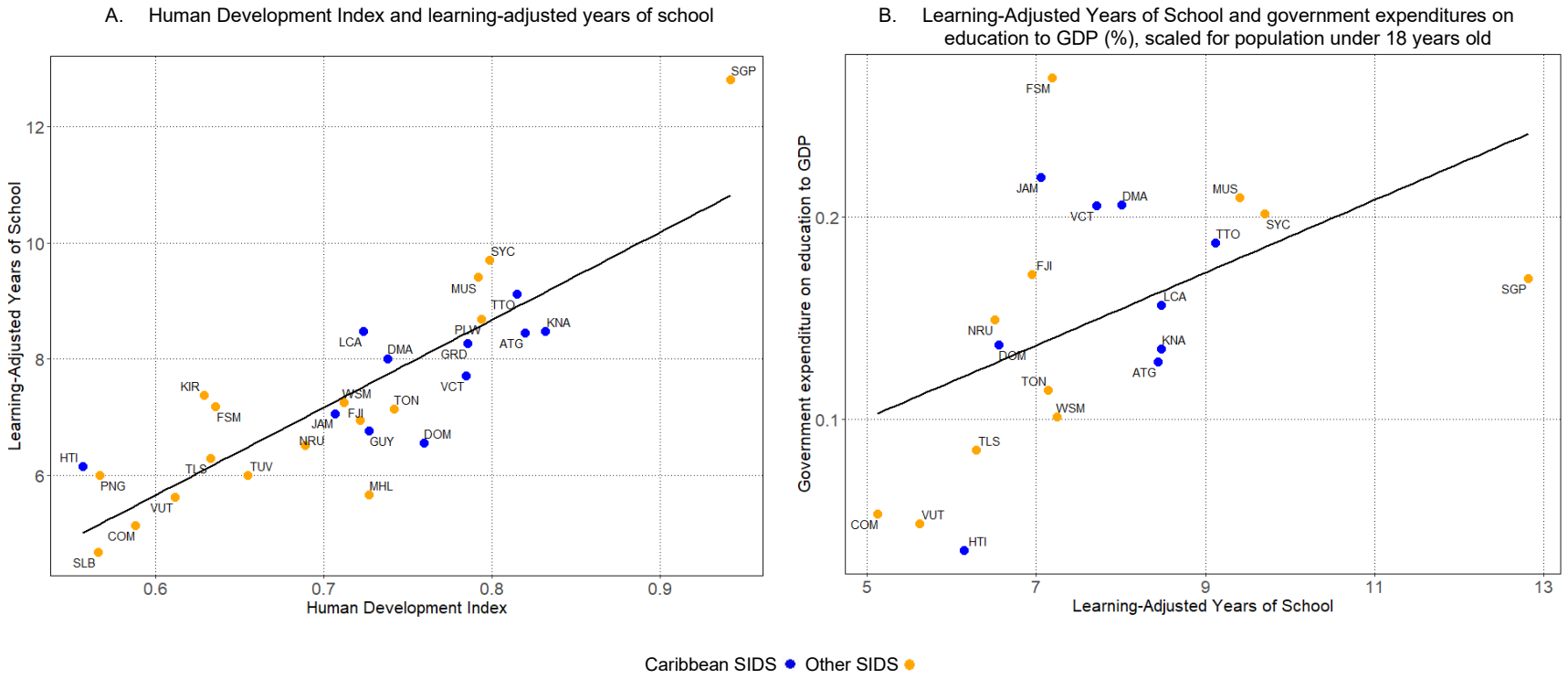
B. Education

Human capital theory places the skills and knowledge imparted by educational institutions in adults, youth and children as a key driver of human capital (Becker, 1993). The different industrial revolutions exemplify how productivity is driven by a labour force that can innovate complex technologies and effectively utilize these technologies to increase economic growth. Hence, education in the Caribbean is vital for economic development, social mobility, and individual empowerment (Wright, 2024). Although education is central to human capital formation, and thus to sustainable economic development, public financing of education in the Caribbean is not always optimal, creating deficiencies in educational outcomes. These deficiencies contribute to mismatches between educational outcomes and labour market needs, which adversely affect economic productivity in the subregion.

1. Educational outcomes, education financing, and development

Educational outcomes are directly related to measures of sustainable development. Not surprisingly, the Human Development Index shows a high correlation with the learning-adjusted years of school (average years of school weighted for the average harmonized test scores) for 25 SIDS, including 11 Caribbean member States for 2020 (figure 6, Panel A). This correlation is strong ($R^2 = 0.85$), positive, and statistically significant (P-value < 0.001), suggesting a clear relationship between education and human development. Yet, students in the subregion face significant challenges that hinder human capital formation and threaten progress on Goal 4 of the Sustainable Development Goals (SDGs), which aims for inclusive and equitable quality education for all.

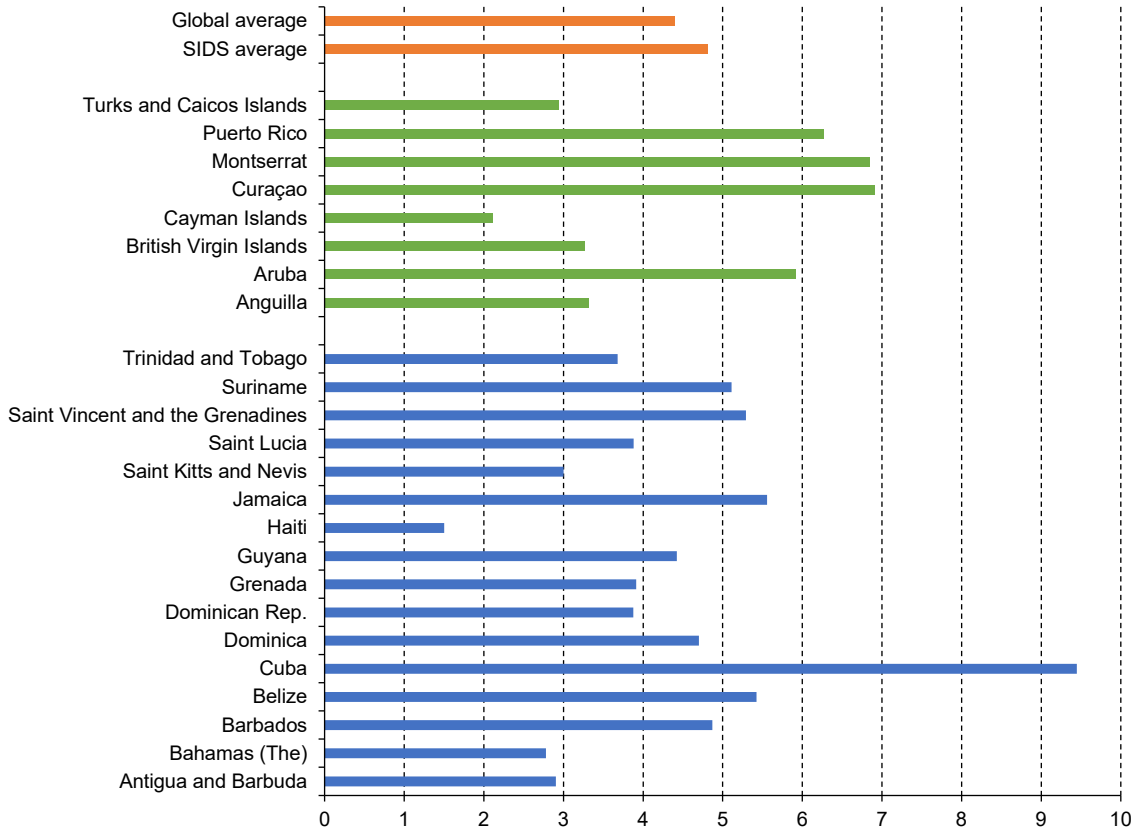
Figure 6
Correlations of selected education variables in SIDS, 2020



Source: Prepared by the authors, on the basis of UNDP (2024), World Bank (2024a), and UNESCO (2024); figures created with R Statistical Software version 4.3.1 and the ggplot2 package (Wickham, 2016).
Note: R^2 of the Pearson correlation trendline in panel 6.A is 0.85 (P-value < 0.001) and in panel 6.B is 0.49 (P-value < 0.05). SIDS depicted are Antigua and Barbuda (ATG), Comoros (COM), Dominica (DMA), Dominican Republic (DOM), Fiji (FJI), Grenada (GRD), Guyana (GUY), Haiti (HTI), Jamaica (JAM), Kiribati (KIR), Marshall Islands (MHL), Mauritius (MUS), Federated States of Micronesia (FSM), Nauru (NRU), Palau (PLW), Papua New Guinea (PNG), Saint Lucia (LCA), Saint Kitts and Nevis (KNA), Saint Vincent and the Grenadines (VCT), Samoa (WSM), Seychelles (SYC), Singapore (SGP), Solomon Islands (SLB), Timor Leste (TLS), Tonga (TON), Trinidad and Tobago (TTO), and Vanuatu (VTU).

As the population projection analysis in Section A of this chapter shows, the impact of education on human capital accumulation in the Caribbean is profound. Due to the importance of education as a key driver of human capital, public investment in education is essential to equip the workforce with the necessary skills, allowing them to contribute to overall productivity through their labour (Becker, 1993). This relationship is depicted in figure 6, Panel B, which shows the correlation of the average learning-adjusted years of school and government expenditure on education as a proportion of GDP, scaled for the population under 18 years of age in 25 SIDS for 2020. This correlation shows a moderate (R^2 of 0.49), positive, and statistically significant (P-value < 0.05) relationship between these variables. This relationship suggests that adequate public investment in education is essential for human capital accumulation.

Figure 7
Proportion of government expenditure on education to GDP, averages over 2013–2023 period
(Percentages)



Source: Prepared by the authors, on the basis of UNESCO (2024).
Note: Caribbean member States depicted in blue, Associate members in green, and SIDS and global averages in orange.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) recommends that countries spend at least four to six per cent of their gross domestic product (GDP) to achieve the different targets of Sustainable Development Goal 4 (ensuring inclusive, equitable, and quality education for all) by 2030 (UNESCO, 2023). Figure 7 shows the proportion of average government expenditure on education to GDP for 16 member countries and eight associate member countries of CDCC from 2013 to 2023. Half of these countries fall below the UNESCO's recommended public education spending benchmark. Eight of the 16 member countries (Barbados, Belize, Cuba, Dominica,

Guyana, Jamaica, Saint Vincent and the Grenadines, and Suriname) and four of the eight associate member countries (Aruba, Curaçao, Montserrat, and Puerto Rico) have consistently met the UNESCO education financing benchmark. The SIDS and global averages fall within this education financing benchmark for the analysed period, with only ten Caribbean member and associate member countries surpassing the SIDS average (4.8%) for the analysed period. Inadequate public funding for education puts additional financial strain on students and their families, potentially causing adverse effects on human capital accumulation and contributing to further inequalities among students of different socioeconomic status.

The lack of adequate funding for educational institutions in the Caribbean translates into inadequate resources, poor infrastructure, and shortages of qualified teachers, which lead to poor learning outcomes. The shortage of qualified teachers, especially in science, technology, engineering, and mathematics (STEM) subjects, is a major obstacle, caused largely by the migration of Caribbean teachers to developed countries for better opportunities, leaving many schools with untrained or insufficient staff. The COVID-19 pandemic has aggravated this problem, increasing teacher attrition rates and further undermining efforts to build a skilled workforce in the subregion. These deficiencies limit the access of students to modern technology, experiential learning, and critical resources, exacerbating educational inequalities, particularly between urban and rural areas (Wright, 2024).

2. The mismatch of educational outcomes and labour market demands

In a 2016 survey of over 1800 Caribbean business managers, about one-third cited insufficient technical skills and competencies of the local labour force as a substantial or severe obstacle to business productivity (Dohnert et al., 2017). More recent studies on innovation and firm performance in the Caribbean confirmed the results of the earlier survey. Since innovation in the Caribbean is mainly financed by private sector firms, deficiencies in human capital formation in the subregion are the main contributors to low innovation and firm performance in the subregion (Acevedo et al., 2023). Educational indicators of human capital in Caribbean countries, along with the SIDS and global averages for 2020, are presented in table 3. These indicators suggest deficiencies in the human capital formation process that would lead to firm innovation and sustainable economic development.

Table 3
Educational indicators of human capital in the Caribbean, 2020

Country	Expected Years of School	Harmonized Test Scores	Learning-Adjusted Years of School	Human Capital Index
Antigua and Barbuda	13.0	407	8.4	0.60
Dominica	12.4	404	8.0	0.54
Dominican Republic	11.9	345	6.6	0.50
Grenada	13.1	395	8.3	0.57
Guyana	12.2	346	6.8	0.50
Haiti	11.4	338	6.1	0.45
Jamaica	11.4	387	7.1	0.53
Saint Kitts and Nevis	13.0	409	8.5	0.59
Saint Lucia	12.7	418	8.5	0.60
Saint Vincent and the Grenadines	12.3	391	7.7	0.53
Trinidad and Tobago	12.4	458	9.1	0.60
SIDS average	11.6	396	7.4	0.53
Global average	11.3	423	7.8	0.56

Source: Prepared by the authors, on the basis of World Bank (2024a).

Scores of Caribbean countries on the 2020 World Bank's Human Capital Index (HCI), a composite score of educational and health outcomes, are reported in table 3, along with other indicators. Only five out of 11 Caribbean countries (Antigua and Barbuda, Grenada, Saint Kitts and Nevis, Saint Lucia, and Trinidad and Tobago) with available data showed an HCI above the global average (0.56). Of these five countries, Grenada and Saint Lucia came close to meeting UNESCO's education financing benchmarks from 2013 to 2023. The other three countries (Antigua and Barbuda, Saint Kitts and Nevis, and Trinidad and Tobago) did not meet education financing benchmarks (figure 7). However, it is important to note that the HCI includes health outcomes, such as life expectancy and child mortality rates (World Bank, 2024a). These three countries are classified by the World Bank as high-income countries, with relatively positive public health indicators, improving their HCI scores, even if their education financing rates fell below international benchmarks. On the other hand, the Dominican Republic, Guyana, and Haiti exhibited an HCI score below the SIDS average (0.53). The Dominican Republic came close to meeting the education financing benchmark from 2013 to 2023, and Guyana did meet it, but these investments did not translate into higher human capital. However, the impact of public investment in education may have a lag of several years, suggesting that countries coming close to meeting the education financing benchmarks are likely to witness improvements in education indicators in the years to come.

The education indicators component of the HCI (table 3) provides critical information in understanding the deficiencies of education systems in the Caribbean and how they contribute to a trend of mismatch in educational outcomes and labour market demands. All 11 Caribbean countries with available data, including Haiti, achieved average expected years of school at or above the global average (11.3). This country and Jamaica showed expected years of school (11.4 years) just below the SIDS average (11.6 years). However, when the average expected years of schooling is adjusted for learning outcomes (by factoring in the harmonized test scores into the expected years of school), only six of 11 countries showed scores above the global average (7.8 years) (Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia, and Trinidad and Tobago) while all Caribbean countries but Haiti (6.1 years) and Jamaica (7.1 years) had scores above the SIDS average (7.4 years). The harmonized test scores also provide a picture of the deficiencies in human capital formation from the education systems of the Caribbean, as only Trinidad and Tobago (458) recorded a score higher than the global average (423). Six Caribbean countries (Dominican Republic, Grenada, Guyana, Haiti, Jamaica, and Saint Vincent and the Grenadines) had harmonized test scores below the SIDS average (396).

For students completing upper secondary education in English-speaking Caribbean member States, regional standardized examinations, CSEC and CAPE,[11] showed that the passing rate for examinations written during May-June 2020 was 76.2% and 64.4%, respectively (Caribbean Examinations Council, 2020). These passing rates indicate that about a quarter to a third of school leavers completed their secondary education without the required competency. The secondary education system in many Caribbean countries is widely tiered or streamed through standardised examinations after a student completes primary education. This early selection and streaming between and within schools help create large foundational learning gaps that persist through secondary education and depress subregional exam performance, such as CSEC and CAPE, because many students never receive the sustained, mixed-ability instruction or remediation needed to master core skills (Burunciuc, 2025). Since girls outperform boys in educational attainment (Abdulkadri et al., 2022), the tiered system of secondary education in the Caribbean might be worsening gender disparities in education, but this point requires further research.

[11] CSEC (Caribbean Secondary Education Certificate) is usually taken by upper secondary education students, typically aged 16 or 17. CAPE (Caribbean Advanced Proficiency Examination) is the upper secondary certificate fulfilling entry-level requirements for higher education and typically taken by students 17 to 19 years old.

School absenteeism, delayed enrolment, repetition of school years, and dropping out of school will adversely affect human capital formation, thus contributing to mismatches between education outcomes and market demands. Data from the completion and out of school rates (table 4) reveal deficiencies with the education systems in the Caribbean, caused by the factors already discussed.

Based on global trends, the optimal reference point for school completion rates in developing countries is greater than 88% for lower secondary education and greater than 71% for upper secondary education (UNESCO, 2022). However, the SIDS and global averages for completion rates fall below the optimal reference points for secondary education levels. Completion rates in the Caribbean vary substantially (table 4). From ten Caribbean countries with available data, five countries met the optimal reference point for the completion of lower secondary education (Barbados, Cuba, Jamaica, Saint Lucia, and Turks and Caicos) and four countries for upper secondary education (Barbados, Jamaica, Saint Lucia, and Turks and Caicos). Hence, the completion rate for about half of the Caribbean countries covered in this study is sub-optimal. Importantly, Belize, Haiti, and Suriname have completion rates for lower and upper secondary education lower than the SIDS average (51%), pointing to the need for major policy intervention in the education sector of these countries.

Table 4
Upper and lower secondary education completion and out of school rates
(Percentages)

Country	Year of latest data	Completion rate[a]		Out of school rate[b]	
		Upper	Lower	Upper	Lower
Barbados	2012	93.9	98.0	0.6	1.2
Belize	2016	49.2	60.3	32.7	9.2
Cuba	2019	58.6	94.1	21.1	2.2
Dominican Republic	2019	60.7	76.7	16.4	3.4
Guyana	2020	61.3	83.3	17.6	5.1
Haiti	2017	16.8	35.1	14.6	6.3
Jamaica	2011	81.8	96.6	9.0	0.7
Saint Lucia	2012	80.4	91.8	17.3	1.1
Suriname	2018	22.3	49.4	24.2	6.6
Trinidad and Tobago	2011	..	..	9.8	2.4
Turks and Caicos Islands[c]	2020	97.7	98.8	10.6	0.1
SIDS average	2010–2020	51.0	72.3	22.1	7.2
Global average	2010–2020	45.0	64.0	29.3	14.1

Source: Prepared by the authors, on the basis of UNICEF (2024).
[a] Percentage of the cohort of children or young people three to five years older than the intended age for the last grade of each level of education who have completed that level of education (SDG4.1.2).
[b] Percentage of children or young people in the official age range for a given level of education who are not attending each level of education (SDG4.1.4).
[c] Associate member country.

Furthermore, based on current trends, the optimal reference point for out of school rates in developing countries is below 5.1% for lower secondary education level and lower than 11.7% for upper secondary education level (UNESCO, 2022). All 11 Caribbean countries, apart from Belize, met the optimal reference point for out of school rates in lower secondary education. The situation of the subregion is more concerning at the upper secondary education level, where only four countries (Barbados, Jamaica, Trinidad and Tobago, and Turks and Caicos Islands) met the optimal reference point for out of school rates. Belize and Suriname had rates above the SIDS average (22.1%), indicating a particularly dire state of the education systems in these countries, requiring major policy interventions to prevent missed opportunities for human capital formation.

The mismatch of skills that Caribbean graduates and school leavers possess and those demanded by local industries is widening and particularly more pronounced in STEM fields, underscoring the lack of those critical skills that these industries require to stay competitive in the modern global economy (Dohnert, Crespi and Maffioli, 2017). Although this is a global concern, the Caribbean Community (CARICOM) (2005) identified two decades ago that educational institutions were not equipping workforces for the changing nature of employability, such as the decline of low-skilled jobs in favour of higher-skilled ones. The CARICOM Human Resource Development 2030 Strategy (CARICOM, 2017) aims to modernize school curricula by introducing competency-based education and training (CBET), gearing learning and examinations to standardized educational outcomes. Moreover, the CBET approach promotes academic education and technical and vocational training and education (TVET), systematizing a lifelong learning synergy from the school to the workplace (ECLAC, 2018). Policies making TVET accessible and inclusive are crucial to reducing labour mismatches, as they equip future or current members of the workforce with in-demand skills.

Addressing the deficiencies in education and thus human capital accumulation in the Caribbean requires a comprehensive approach, including effective policies for teacher retention, increased investment in education, and efforts to challenge cultural norms discouraging girls and women from technical fields. Collaboration among policymakers, educational institutions, and international partners is crucial to implementing these solutions and improving educational outcomes in the Caribbean (Wright, 2024). However, education policy need not discourage non-STEM subjects, including at the tertiary level. Education produces other positive externalities besides increasing productivity, such as promoting an informed, engaged and creative citizenry due to exposure to liberal arts subjects. These types of social externalities help maintain healthy democracies and open, vibrant societies (Brown, Lauder and Cheung, 2020). Therefore, TVET and other STEM-advancing education policies can be complementary to other education measures and not mutually exclusive to them. However, it is essential that these measures be gender-sensitive, as countries seek to align education policies with the need to increase human capital formation to promote sustainable social and economic development.

C. Employment

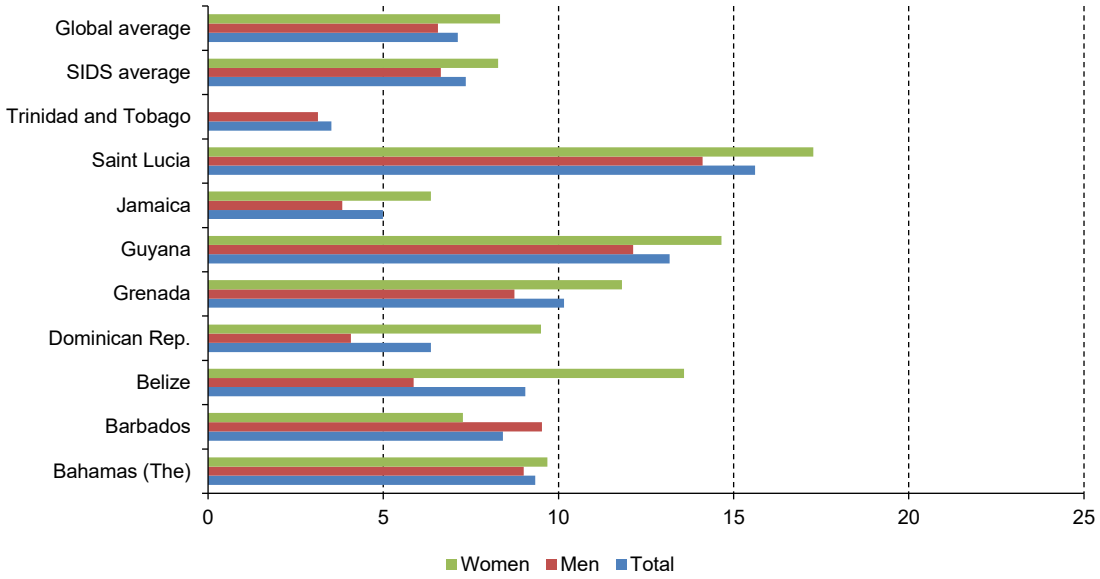
Employment is a fundamental mechanism for human capital accumulation. In addition to providing an environment for experiential learning and professional growth, employment serves as a key driver of economic development, productivity, and long-term prosperity. The skills, knowledge, and experiences that individuals acquire —particularly through employment— are central to economic growth. For Caribbean countries, characterized by small populations and heavy reliance on a few economic sectors such as tourism, which contributes approximately 9.1% of GDP regionally (WTTC, 2024), optimizing employment is not only necessary for individual well-being but also for national economic resilience.

Despite its potential, the Caribbean faces significant challenges in fully leveraging employment as a tool for human capital accumulation. Persistent structural barriers, high unemployment rates, marked gender and youth disparities, and a dependence on low skill sectors hinder the subregion's ability to develop a dynamic and competitive workforce. These obstacles limit opportunities for skill development, wage growth, and career advancement, which in turn restricts workforce upskilling and economic progress. Additionally, the reliance on sectors like tourism and financial services, which are vulnerable to shocks such as disasters or global economic recession, further complicates efforts to build a resilient and sustainable labour market. Given these realities, aligning employment policies with SDG 8, which emphasizes decent work and economic growth, is vital for the Caribbean's human capital development. By focusing on improving labour force participation, addressing skills mismatches, and reducing informality, Caribbean economies can unlock the full potential of their human capital.

1. Challenges of high unemployment in the Caribbean

Unemployment rates in several Caribbean countries have been persistently high, particularly among the youth and women. National unemployment rates in many Caribbean countries were higher than both global (7.1%) and SIDS (7.4%) averages in 2019 (figure 8). The higher unemployment rates underscore deep structural challenges within the subregion's labour markets, such as rigid regulations, limited access to quality education and training, and insufficient job creation in high-skill sectors.[12] These barriers limit opportunities for on-the-job training (OJT) and workforce upskilling, both of which are critical for human capital formation. Without these opportunities, large segments of the population are unable to enhance their skills and productivity, stifling economic growth and reducing overall skill development.

Figure 8
Total population unemployed by gender, 2019
(Percentages)

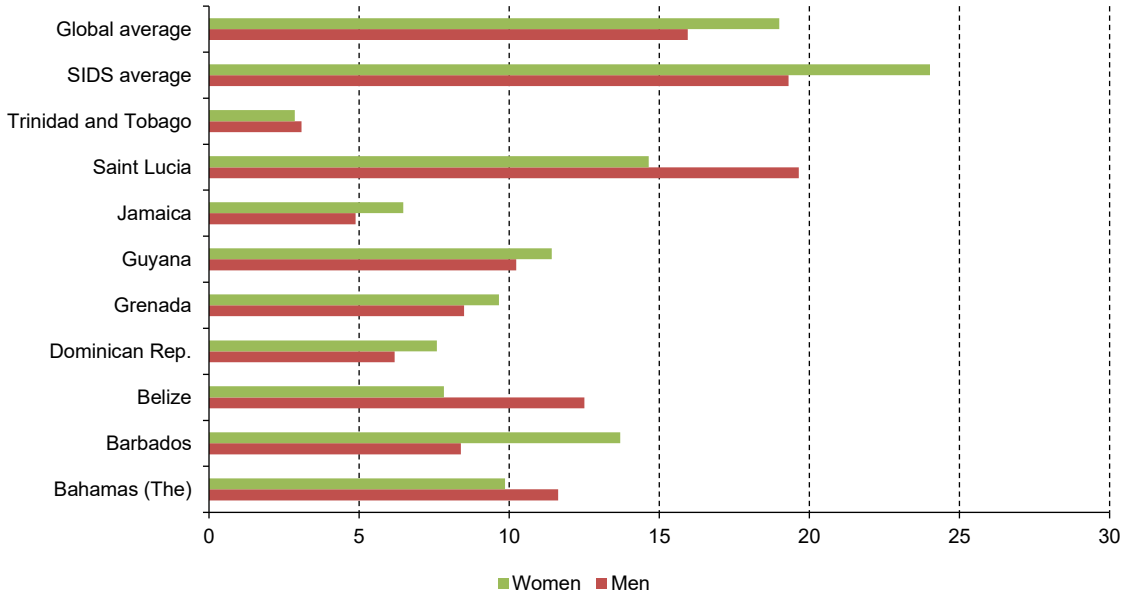


Source: Prepared by the authors, on the basis of ILO (2024a).

Youth unemployment is a peculiar social challenge in the Caribbean (figure 9), with countries such as Saint Lucia, The Bahamas, Barbados, and Belize experiencing particularly high rates compared to global and SIDS averages. This disengagement from the workforce severely limits the potential for young people to gain early work experience, which is essential for developing new skills and contributing to economic growth. The high levels of youth unemployment also hinder knowledge transfer and innovation, further perpetuating long-term underemployment (ILO, 2011; Ma et al., 2021).

[12] High skill sectors —such as Information and Communication Technology (ICT), renewable energy, healthcare, biotechnology, and advanced manufacturing— are areas identified as key for future economic growth and resilience in the Caribbean. These sectors require a highly skilled workforce to drive innovation, enhance productivity, and ensure sustainable development (IADB. 2021).

Figure 9
Youth (15–24 years old) unemployed by gender, 2019
(Percentages)



Source: Prepared by the authors, on the basis of ILO (2024a).

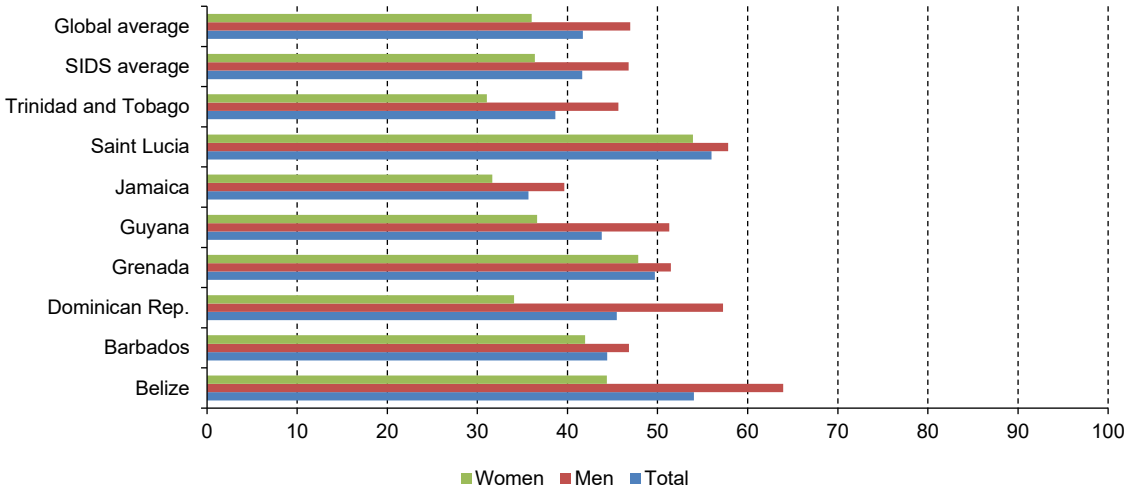
In addition to structural and gender disparities, the mismatch between labour market needs and educational qualifications and functional skills of the labour force exacerbates the unemployment problem, especially for youth and women, limiting opportunities for individuals to find employment that aligns with their qualifications, thus reducing the potential for workforce development and economic growth in the subregion (Thailinger et al., 2023). Women are underrepresented in high-paying sectors, which contributes to a persistent gender wage gap. This underutilization of women's skills, compounded by occupational segregation —the unequal distribution of men and women across different jobs or levels within occupations— and a misalignment between education and labour market demands, significantly hampers economic growth and social mobility in the subregion (Thailinger et al., 2023).

The underutilization of skills in the Caribbean primarily affects women, who find employment in low-paying sectors, such as teaching and carework, rather than in high skill, high-paying STEM fields. This occupational segregation hampers women's ability to fully utilize their skills and contributes to the overall misalignment of skills of the labour force with labour market demands, thus limiting human capital accumulation (ILO, 2020). A section of men in the Caribbean is also affected by an underutilization of skills due to their relatively high educational attainment, as discussed in previous sections of this chapter. As a result, skilled workers may find themselves working in roles below their expertise, leading to career dissatisfaction and feelings of being undervalued. This dissatisfaction can prompt many to seek opportunities abroad where their skills and qualifications are better recognized and rewarded, fuelling brain drain. This brain drain further depletes the subregion's talent pool, worsening its capacity limitation challenge, thus making the attainment of sustainable economic development more difficult.

2. Labour force participation

Labour force participation rates in some Caribbean countries remain below global averages. Persistently high unemployment rates could serve as a disincentive for persons to engage in the labour market. Researchers and policy analysts have pondered if there is a causality effect between unemployment and labour force participation. This concern is of great consequence if high unemployment serves as a signal to youth in their choice of labour force participation.

Figure 10
Youth (15–24 years old) participating in the labour force by gender, 2019
(Percentages)



Source: Prepared by the authors, on the basis of ILO (2024b).

Youth labour force participation is critical to developing a country's workforce potential, as it equips young individuals with the skills, experience, and work habits that are essential for long-term employability and productivity. The data in figure 10 reveals low labour force participation among youth aged 15-24, particularly among young women in Jamaica (31.6%), Trinidad and Tobago (31%), and the Dominican Republic (34.1%) when compared to the global (36.0%) and SIDS (36.4%) averages. This low level of engagement in the labour market significantly curtails the ability of young people to gain early work experience, which is vital for skill acquisition and career development. The prolonged absence of youth from the labour market creates long-term challenges, as it can lead to increased rates of underemployment and unemployment later in life. Without early work experiences, youth are less likely to build the skills that enable them to move into more skilled roles as they age, thereby limiting their overall contributions to economic growth and productivity (IDB, 2018).

Broader structural issues also contribute to low labour force participation rates in the subregion. Rigid labour market regulations, a high share of public sector employment, and limited wage flexibility have been identified as significant barriers to improving labour force participation in the Caribbean (IMF, 2021). These structural impediments restrict the creation of dynamic and flexible job markets that can absorb more workers, particularly women and youth. Without addressing these barriers, the subregion will continue to experience low participation rates, consequently limiting human capital accumulation and reducing overall productivity (Ma et al., 2021).

On-the-job training (OJT) has been shown to play a significant role in increasing labour force participation and human capital accumulation. Workers often experience faster wage growth due to the higher incidence of firm-provided training, which equips them with essential skills and enhances their productivity (Almendarez, 2010). In wealthier countries, a larger proportion of workers receive employer-provided training, which accounts for roughly 43% of the difference in wage growth between richer and poorer countries. This disparity illustrates how critical OJT is in driving income growth and labour market efficiency (Ma et al., 2021). In contrast, in poorer economies, a higher prevalence of self-employment limits access to formal training opportunities, which hinders skill development and wage progression.

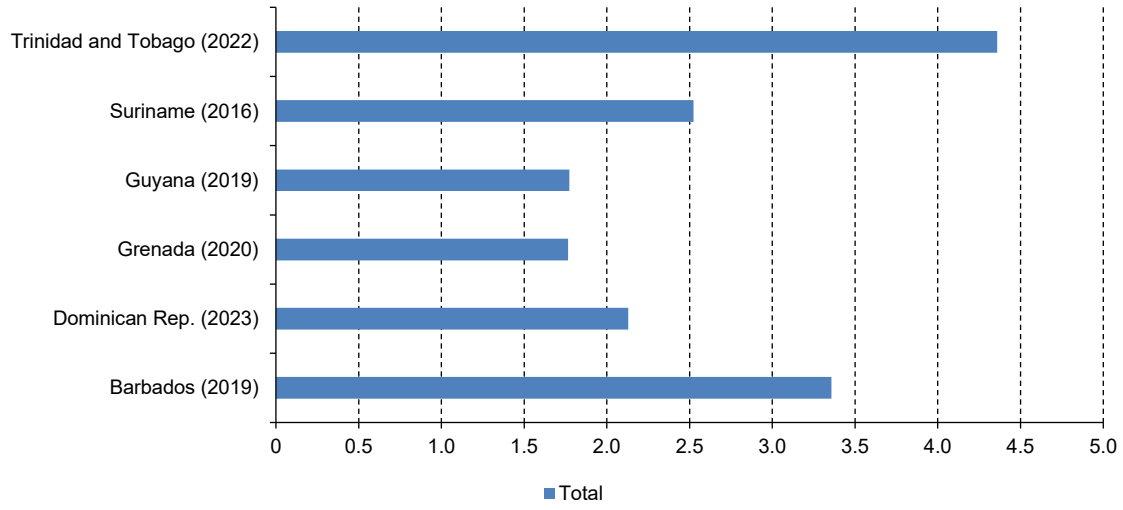
To improve workforce engagement, Caribbean countries must incentivize firm-provided training to equip workers with the skills necessary to compete in the modern economy. In high-skill sectors, such training fosters advanced human capital and economic competitiveness, while expanding access in low-skill and informal sectors increases productivity and provides skill development opportunities for underserved workers (Ma et al., 2021). In the Caribbean, the availability of OJT varies significantly, with countries like the Dominican Republic and Barbados showing higher proportions of firms offering training —55.9% and 53.1% respectively (IDB, 2016). However, in countries like Trinidad and Tobago and Jamaica, firm-provided training remains low, at 31.5% and 26.1%, respectively, contributing to slower wage growth and skill development. Notably, Trinidad and Tobago has implemented a government-managed OJT programme that provides practical experience with private and public sector employers, aimed at workforce development. While this program is valuable for workforce development, there remains a gap in private sector-led training. This gap underscores the need for targeted policies to incentivize firms to provide training across all sectors. These policies can foster advanced human capital in high-skill areas and bridge the skills gap in low-skill and informal sectors, enhancing overall productivity. Expanding access to OJT across the skill spectrum can help Caribbean countries to bridge the skills gap, increase labour force participation rates, and ultimately drive sustainable economic growth (Ma et al., 2021).

3. Skills mismatch

The mismatch between available skills and labour market demands is particularly pronounced in the Caribbean's STEM sectors and also extends to emerging industries. The low proportion of employment in STEM occupations, as shown in figure 11, highlights the limited integration of STEM fields into the subregion's labour markets. Trinidad and Tobago leads with approximately 4.4% of the population engaged in STEM roles as of 2022, but this proportion still falls short of global benchmarks. In other countries like Barbados, Suriname, Guyana, and Grenada, the proportion of STEM employment remains below 3.5% based on the most recent available data, signalling a critical gap in aligning the workforce with the needs of an increasingly technology-driven global economy. This skills mismatch hampers the subregion's ability to drive innovation and enhance productivity through human capital (IDB, 2018).

Emerging industries like financial technology, digital services, tourism technology, and green energy face shortages of qualified workers, limiting job creation and economic growth (Covela Foundation, 2021). To address this skills gap, it is important to expand beyond STEM to include the arts, forming STEAM (Science, Technology, Engineering, Arts, and Mathematics). This approach equips the workforce with a broader set of future-ready skills. In the case of Jamaica, the Cultural and Creative Industries (CCIs) contribute significantly to the economy, generating 5.2% of GDP, supporting approximately 3% of total employment, and driving exports in music, film, and culinary arts (Nordicity, 2021). Further, strategies such as enhanced vocational and technical training and apprenticeship programs can help equip students with practical skills that align with high-demand industries. Public-private partnerships, involving collaborations between educational institutions and businesses, can also ensure curricula meet industry needs while providing students with hands-on work experience. By blending technical expertise with creative skills, STEAM education fosters critical thinking, problem-solving, and innovation, which are qualities essential for success in an increasingly interconnected and digital global economy (British Council and JBDC, 2022).

Figure 11
Employment in STEM occupations in the Caribbean
(Percentages of population)



Source: Prepared by the authors, on the basis of ILO (2024e) and UN-DESA (2024).
Note: Latest year of available data in parentheses.

Moreover, the Caribbean's small and fragmented labour markets, mostly characterised by a limited pool of skilled workers available to meet the needs of knowledge-intensive industries, hamper the subregion's ability to sustain long-term growth and innovation. Firms are often forced to either hire underqualified workers or recruit from abroad, creating barriers to local human capital development. To address these challenges, the Inter-American Development Bank recommends strengthening labour market policies, particularly those that promote workforce training and upskilling, in line with the demands of more advanced sectors (IDB, 2018).

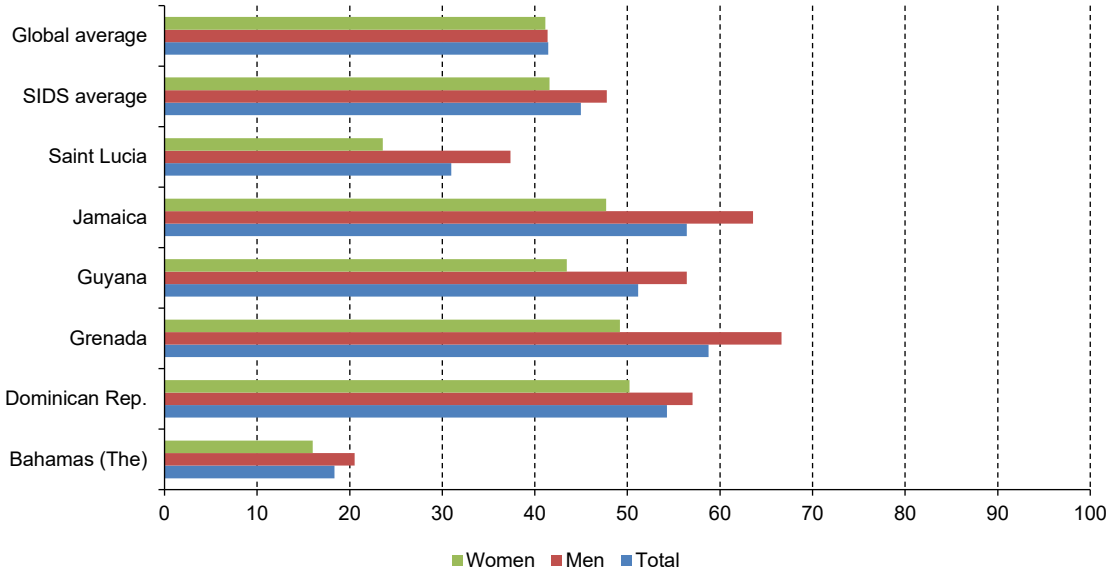
Although on-the-job training programs provide a means to realign the future workforce towards STEAM fields in the short-term, addressing the sectoral shift in the short-term, many STEM and technology firms do not invest sufficiently in firm-provided training, limiting the potential for employees to acquire the skills necessary to adapt to these shifting labour market demands (Ma et al., 2021). Meanwhile, expanding access to OJT, especially in high skill and emerging sectors, is essential to bridging the skills gap and ensuring that workers are prepared for the demands of a knowledge-driven economy. Moreover, lifelong learning initiatives and targeted public-private partnerships can enhance workforce readiness by offering continuous opportunities for upskilling and reskilling. These approaches allow workers to adapt to shifting market demands, ensuring their skills remain relevant in high-skill and emerging sectors.

In addition to OJT, the subregion urgently needs real-time labour market information systems (LMIS) to better align workforce capabilities with industry demands, particularly in the context of sectoral shifts. LMIS can help identify emerging trends and skill gaps, enabling policymakers and educators to tailor training programs and curricula to prepare workers for the jobs of the future. By addressing these gaps in both training and data, the Caribbean can make significant strides in reducing the skills mismatch and enhancing human capital accumulation in key sectors (IDB, 2018). This comprehensive approach ensures the workforce is better equipped to drive innovation and sustainable development across the region.

4. Informality

Informality is widespread in the Caribbean, limiting access to formal training, social protections, and career development opportunities, which ultimately reduces productivity. Figure 12 shows that informal work is prevalent in many Caribbean countries, with Guyana (51.2%), Dominican Republic (54.3%), Jamaica (56.4%), and Grenada (58.8%) having the highest rates of informality. As stated earlier, the prevalence of informal employment limits opportunities for skill enhancement and long-term career progression, creating significant barriers to economic mobility (Thailinger et al., 2023).

Figure 12
Informal employment by gender, 2019
(Percentages of total employment)



Source: Prepared by the authors, on the basis of ILO (2024c).

The informal sector contributes significantly to the GDP in many Caribbean countries, ranging from 20% to 45% (IDB, 2017). The high prevalence of informal work means that a large proportion of the working population is excluded from formal training, career advancement opportunities, and social protections, which are important pillars for building human capital. Workers in the informal sector typically operate in unregulated environments, leading to lower productivity and inefficiencies in comparison to the formal economy. The lack of structured training and career development in the informal sector contributes to productivity gap and stagnation of human capital development (IMF, 2014). Informality also exposes workers to precarious working conditions and exploitation. It could also result in economic disparities between workers in the informal and formal sectors. Formal sector workers tend to enjoy better wages, stronger protections, and greater opportunities for career advancement. On the other hand, informal workers are typically confined to low-paying jobs with fewer or no social protection benefits. This imbalance has future implications for the well-being of informal sector workers, especially at older ages if they are without retirement benefits. Their eventual reliance on publicly-funded old age

social security benefits will further put pressure on governments' social spending and divert resources away from investment in growth-promoting sectors.

5. The working poor

The issue of the working poor[13] in the Caribbean presents a significant challenge to employment's role as a driver of human capital accumulation. While employment is typically viewed as a pathway out of poverty, a substantial proportion of employed persons in the subregion remain trapped in low-quality, low-paying jobs that do not facilitate upward mobility. According to a 2006 ILO study on the working poor in the Caribbean, the prevalence of working poor varied widely across the subregion. Guyana recorded one of the highest proportions at 29%, and Saint Kitts and Nevis at 12%, one of the lowest. The study also emphasized significant gender and sectoral disparities, where men tend to dominate the workforce in low-paying sectors like agriculture, which offer less job security.

The sectors in which the working poor are concentrated also exacerbate the challenges related to human capital development. The ILO study noted that many of the working poor were employed in agriculture, community and social services, construction, and wholesale/retail sales —sectors that traditionally offer fewer opportunities for skill development and upward mobility. In Jamaica, for instance, 39% of the working poor were employed in agriculture, while in Trinidad and Tobago, 31% worked in community and social services (ILO, 2006).

Table 5
Employed persons in the Caribbean living below US$2.15 per day, Purchasing Power parity, by gender, 2015 to 2019
(Percentages)

Country	Men					Women				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bahamas (The)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belize	15.0	15.3	15.5	15.4	15.0	12.2	12.3	12.6	12.8	12.7
Barbados	1.8	2.2	2.1	2.1	2.0	2.0	2.3	2.3	2.3	2.3
Dominican Republic	2.2	1.7	0.8	0.7	0.7	1.4	1.1	0.5	0.4	0.4
Guyana	4.1	3.6	3.5	3.4	3.0	4.0	3.6	3.5	3.5	3.4
Haiti	24.8	23.4	22.2	21.7	22.8	24.3	23.0	21.9	21.5	22.8
Jamaica	0.6	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.5	0.5
Puerto Rico[a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Suriname	15.1	15.4	15.4	15.4	16.2	15.0	15.3	15.3	15.3	16.1
Trinidad and Tobago	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1

Source: Prepared by the authors, on the basis of ILO (2024d).
[a] Associate member country.

Furthermore, table 5 illustrates the proportion of employed persons across the Caribbean living below US$2.15 per day by gender. In countries like Haiti, where in 2019 approximately 23% of the population lived on less than US$2.15 per day, the severe economic distress faced by the working poor highlights the inadequacies of low-paying jobs. Belize (15.0% of men and 12.7% of women) and Suriname (16.2% of men and 16.1% of women) also reported high proportions of employed persons living below US$2.15 per day by gender in 2019. This extreme poverty not only limits individuals' ability to invest in their education, health, and other vital areas for personal development but also slows the broader economic progress of the subregion (ILO, 2006). The persistence of extreme poverty among the employed suggests that many jobs are not providing a livable wage, thus do not provide adequate financial security or skill development opportunities, further perpetuating cycles of poverty and underemployment. Improving wages and social protections is critical for increasing economic

[13] The working poor as defined by the ILO are individuals engaged in either paid or self-employment who belong to households with an adult equivalent per capita household expenditure (or income) that falls below a specified poverty line such as US$2.15 per day.

mobility among the working poor. Low wages and limited benefits trap workers in cycles of poverty, preventing them from saving or investing in their own skills development.

III. Labour productivity in the Caribbean

Labour productivity, measured as GDP output (constant 2017 international US$ at purchasing power parity (PPP)) of average hours worked by a person in a year, is a measure of sustainable economic growth. The SDG framework recognizes the need for economic development to achieve adequate well-being among countries (SDG 8), along with the importance of reducing the environmental impact of economic development to curb the adverse effects of climate change (SDG 13). Higher labour productivity promotes green economic growth by increasing the efficiency of resource allocation (Yu et al, 2024). In recognising the importance of labour productivity for sustainable development, SDG indicator 8.2.1 calls for the accounting of labour productivity growth. With human capital constituting a major factor that substantially impacts labour productivity growth (Amin et al., 2019), the relationship between human capital and labour productivity is, thus, key to understanding how human capital can be effectively channelled to promote sustainable development in the Caribbean.

A. The relationship between human capital and labour productivity

Human capital accumulation is key to increasing labour productivity, thus contributing to sustainable economic development. The experience of developed countries during the 20th century, for example, the largest economies of the European Union, shows that human capital, measured as higher educational and skills attainment, is a key determinant of labour productivity, as it allows workers to increase their productivity by producing more with the same amount of other productive resources, when they allocate these resources more effectively. Moreover, increased human capital allows for technological diffusion, as educated workers can adapt and make use of new technological innovations more quickly than less educated workers. Similarly, investments in high-quality educational institutions and the production of highly educated workers allow for endogenous technological innovation, promoting labour productivity (Cörvers, 1996).

Developed countries also gain highly educated workers exogenously through migration. Migration pathways to developed countries are primarily available for individuals with tertiary education, as exemplified by the Australian, British, and Canadian point-based migration systems, granting visas and residence permits to young and highly educated workers. Germany is the latest developed country to

introduce a similar point-based immigration system to attract highly qualified workers. These migration pathways allow developed countries to increase their stock of highly qualified workers, mainly at the expense of the human capital of developing countries, as is the case in the Caribbean (see discussion in Chapter II.A).

Population dynamics also play an important role in conditioning the relationship between human capital and labour productivity in developed and emerging economies. In China, a demographic dividend coupled with increased investments in education was a determining factor for the country's substantial increases in labour productivity since the 1980s. Developed countries also enjoyed demographic dividends in the second half of the 20th century, allowing for investments in human capital to translate into increasing labour productivity. Furthermore, the case of China shows that as population ageing accelerates, and population growth stagnates, increasing education investments in tertiary education and in the quality of research institutions are necessary for human capital to diffuse and create technological innovation that can sustain labour productivity growth (Li et al., 2017). However, Caribbean countries are rarely comparable to large emerging economies, such as China. Unlike Caribbean countries, these emerging economies possess large domestic markets, creating great internal demand that is conducive to labour productivity growth (Amin et al., 2019). Yet, the Caribbean is experiencing a demographic transition towards ageing societies. In this context, it is more critical to boost human capital accumulation and retention as one of the few policy tools available to countries of the subregion to promote labour productivity and thus sustainable economic development.

Insufficient human capital accumulation can perpetuate the middle-income development trap. It also makes it difficult for these countries to transition to a high-income status. Firm-level evidence suggests that labour productivity in upper-middle-income countries is about 57% lower than in high-income countries (Amin et al., 2019). At the national level in Latin America and the Caribbean, average labour productivity is about a quarter of the average labour productivity for the United States and Europe. Moreover, labour productivity in the region has stagnated since the 1980s at below 20 US$ per hour worked (ECLAC, 2024a). The skills of workers, their availability, and the possibility of matching them with employers are essential for labour to drive productivity. Meanwhile, the Caribbean underperforms in terms of labour productivity compared to other SIDS.

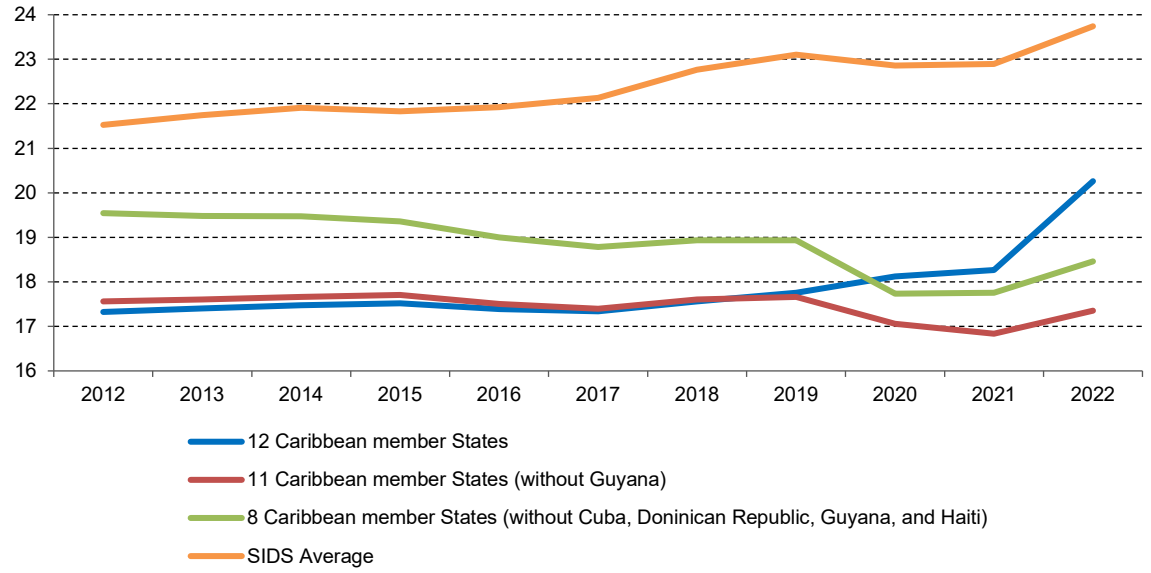
B. Labour productivity trends in the Caribbean, 2012 to 2022

Labour productivity (GDP/hour worked) from 2012 to 2022 in 12 Caribbean member States was about US$4 lower than the SIDS average (figure 13).[14] Labour productivity exhibited a stagnant trend between US$17 and US$18 from 2012 to 2019, after which it showed a steep upward trend, reaching US$20.26 in 2022. However, excluding Guyana from the analysis showed a stagnant average labour productivity for the remaining 11 Caribbean member States, showing that this indicator stagnated throughout the analysed period at around US$17. Guyana constitutes an outlier due to the discovery of oil and the significant increasing in revenues accruing to the country since the late 2010s. As a result, the meteoric rise of its GDP in the recent past propelled an increase in the indicator of output per hour worked for the country.

Labour productivity for eight Caribbean member States shows a downward trend from 2012 to 2022 (figure 13). This trendline excludes four Caribbean member States listed in table 6; three member States with substantially larger populations relative to the other Caribbean countries (Cuba, Dominican Republic, and Haiti) and Guyana, an outlier country. Average output per hour worked in these eight English- and Dutch-speaking Caribbean member States progressively fell from US$19.5 in 2012 to US$18.9 in 2019 (figure 13). The COVID-19 pandemic adversely affected labour productivity, as expected, and output per hour worked further dropped to US$17.7 in 2020 and 2021, before recovering to US$18.5 in 2022. Notably, average output per hour worked in 2022 was one dollar less than one decade prior.

[14] See table 6 for the list of the 12 member States included in this trendline. Two AMCs (Puerto Rico and United States Virgin Islands) were included in the table but not in the trendlines in figure 13, as these countries are not representative of other AMCs or of the Caribbean member States. However, they were the only AMCs with available data on output per hour worked.

Figure 13
Average labour productivity in the Caribbean: output per hour worked, 2012 to 2022
(GDP constant 2017 international US$ at PPP)



Source: Prepared by the authors, on the basis of estimates modelled by ILO (2023).

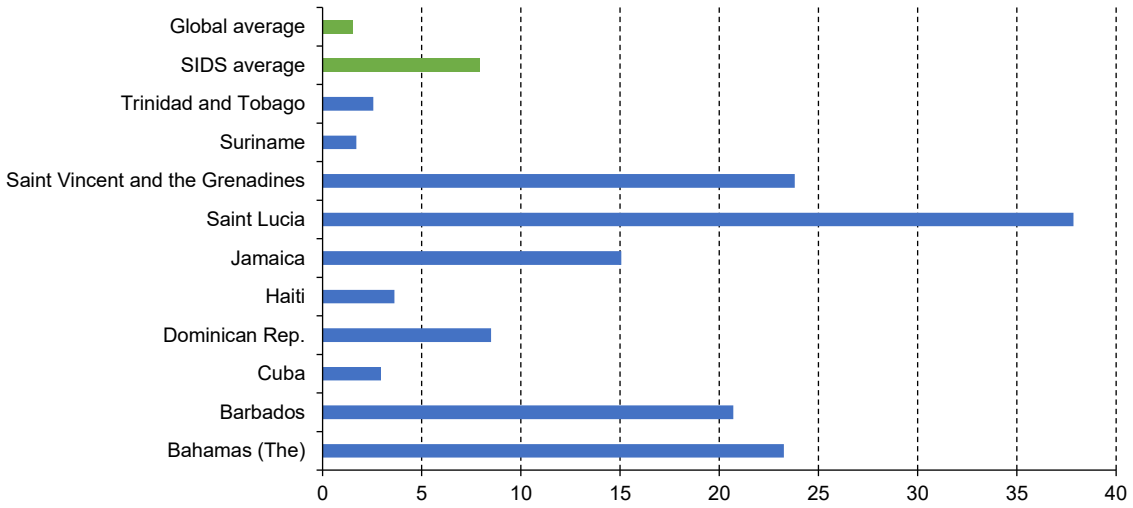
Table 6
Average labour productivity of Caribbean countries: output per hour worked, 2012 to 2022
(GDP constant 2017 international $ at PPP)

Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bahamas (The)	34.8	34.1	33.4	32.9	32.6	32.0	32.0	31.8	27.3	29.5	32.2
Barbados	15.9	15.4	16.1	16.1	15.9	16.4	16.5	16.9	15.4	15.2	16.1
Belize	11.1	11.2	11.1	11.0	10.6	10.2	10.2	10.6	9.9	10.5	11.2
Cuba	17.0	17.4	17.4	18.0	18.0	18.1	18.4	18.5	18.6	17.5	17.5
Dominican Republic	15.9	16.5	17.0	17.9	18.5	19.0	19.7	20.5	23.3	22.0	22.2
Guyana	14.7	15.2	15.4	15.5	16.2	16.7	17.0	18.8	29.8	34.0	52.3
Haiti	3.9	4.0	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.7	3.5
Jamaica	10.4	10.4	10.2	9.6	9.7	9.4	9.4	9.1	8.8	8.7	9.0
Saint Lucia	16.2	16.1	16.0	15.5	15.7	15.8	16.0	15.4	13.6	14.2	15.0
Saint Vincent and the Grenadines	13.9	14.3	14.5	14.7	15.3	15.5	15.9	16.1	16.8	16.4	16.7
Puerto Rico[a]	59.7	60.0	59.9	58.5	58.0	56.7	53.1	53.5	53.0	52.1	50.8
Suriname	24.4	24.2	23.7	23.9	23.3	23.3	23.9	23.9	21.9	20.2	20.1
Trinidad and Tobago	29.5	30.2	30.8	31.2	29.0	27.7	27.6	27.9	28.2	27.5	27.4
United States Virgin Islands[a]	66.2	67.7	68.6	65.4	66.9	67.0	78.4	83.8	84.4	86.7	88.5
SIDS Average	21.5	21.7	21.9	21.8	21.9	22.1	22.8	23.1	22.9	22.9	23.7
Global average	23.4	23.7	23.8	24.0	24.1	24.5	24.8	25.0	25.5	25.7	25.8

Source: Prepared by the authors, on the basis of estimates modelled by ILO (2023).
Note: Labour productivity level was computed by dividing total GDP at constant 2015 US$ by the total weekly hours worked annually of employed persons.
[a] Associate member country.

Of these eight Caribbean member States represented in figure 13 (excluding Cuba, Dominican Republic, Guyana, and Haiti), Saint Vincent and the Grenadines was the only member State to have exhibited increased labour productivity. Output per hour worked increased in this country from US$13.9 in 2012 to US$16.7 in 2022 (table 6). A main factor contributing to the increase in labour productivity in Saint Vincent and the Grenadines is the significant injection of foreign direct investment (FDI) into this Caribbean member State's economy, which averaged 13.7% of GDP from 2012 to 2022. Contrastingly, Average FDI inflows into Caribbean member States with a population of under one million was 6.5% of GDP during the same period (World Bank, 2024f). Belize and Barbados exhibited stagnant labour productivity as the above indicator increased by US$0.1 and US$0.2, respectively, from 2012 to 2022. The other five member States (The Bahamas, Jamaica, Saint Lucia, Suriname, and Trinidad and Tobago) showed declining labour productivity during the analysed period. The two AMCs with available data (Puerto Rico and the United States Virgin Islands) showed increased labour productivity from 2012 to 2022. However, as data is only available for these two AMCs, it is not possible to analyse the average trend representative of the associate members.

Figure 14
International tourism receipts to GDP (current US$), averages over 2012 to 2020
(Percentages)

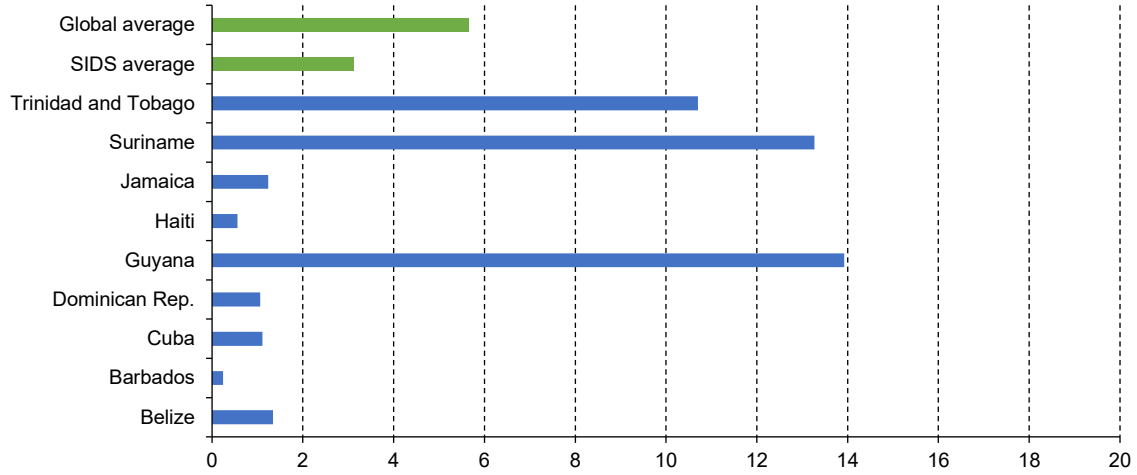


Source: Prepared by the authors, on the basis of World Bank (2024e).

The industrial structure of Caribbean countries provides an important context for explaining the vulnerability of labour productivity growth to external shocks in countries of the subregion. A well-known characteristic of the Caribbean industrial structure is the reliance of many countries on international tourism receipts. Figure 14 provides the averages of international tourism receipts to GDP in ten of the 12 Caribbean countries from 2012 to 2020. The data helps explain the vulnerability of labour productivity growth to external shocks in five of the 12 Caribbean member States. The Bahamas, Barbados, Jamaica, Saint Lucia, and Saint Vincent and the Grenadines are highly reliant on international tourism. For these countries, this international revenue source as a proportion of GDP was about ten times or more the global average (1.5%) and at least about twice the SIDS average (7.9%) from 2012 to 2020. Notably, except Saint Vincent and the Grenadines, these countries experienced a decline in labour productivity from 2019 to 2020 (table 6). The Dominican Republic also showed reliance on international tourism receipts, but its average from 2012 to 2020 (8.5%) was similar to that of the SIDS average.

Besides international tourism, exports of commodities, such as oil and natural gas, constitute a substantial portion of the industrial structure of several Caribbean countries. Figure 15 depicts averages from 2012 to 2021 of the proportion of economic rents from natural resource exports in nine of the 12 Caribbean member States with labour productivity data. Average natural resource rents as a proportion of GDP in Guyana (13.9%), Suriname (13.2%), and Trinidad and Tobago (10.7%), primarily from hydrocarbon exports, are well above the global (5.6%) and SIDS (3.1%) averages. Hence, these Caribbean countries are dependent on the hydrocarbon industry. During this period, commodity prices fell to record low levels due to the COVID-19 pandemic, making countries dependent on natural resource exports vulnerable to productivity slumps. Labour productivity from 2019 to 2020 declined in Suriname and remained stagnant in Trinidad and Tobago. Guyana was an exception as this country experienced an increase in output per worker from 18.8 dollars in 2019 to 29.8 dollars in 2020 (table 6). The reason for this dramatic increase in labour productivity was the significant hydrocarbon windfalls that Guyana accrued in the late 2010s. In 2021, natural resource rents accounted for 33.7% of Guyana's GDP (World Bank, 2024b).

Figure 15
Economic rents from natural resource exports to GDP, averages over 2012 to 2021
(Percentages)



Source: Prepared by the authors, on the basis of World Bank (2024b).
Note: The table shows data for countries with more than 0.1% of natural resource rents proportional to GDP. Latest year of available data in parentheses.

C. The impact of human capital on labour productivity in the Caribbean

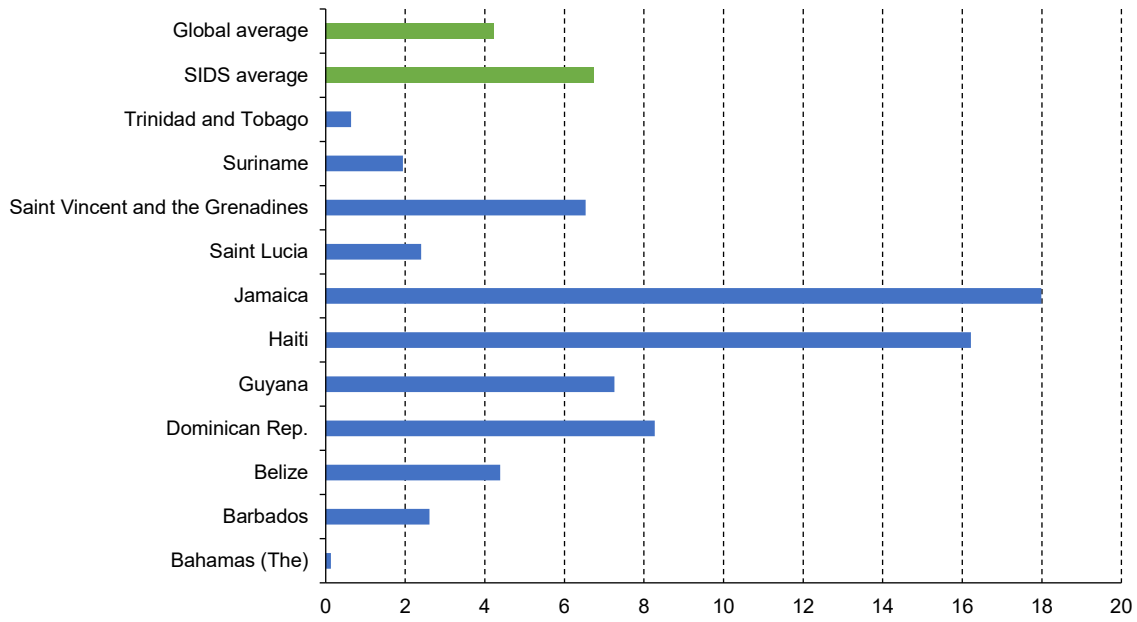
Human capital is a critical determinant of labour productivity and the challenge of skills mismatch in the labour force and the demands of local industries adversely impacts labour productivity in the Caribbean (Dohnert, Crespi, and Maffioli, 2017). Deficiencies in education across the subregion reduce the productivity of human capital, but not for lack of sufficient schooling. As discussed in Chapter II.A, years of expected school in the Caribbean are higher than the global average. However, when adjusted for harmonized test scores and other factors, the Human Capital Index (HCI) in five of 11 countries with available data falls below the global average (table 3).

The population of the Caribbean is becoming increasingly more educated, as the proportion of the population completing secondary and tertiary education is expected to increase throughout the 21st century (figure 2). More than half of Caribbean nationals will possess secondary or tertiary education by

2035. Simultaneously, the population of the Caribbean is ageing. The working-age population of the subregion will stagnate starting in the 2030s and shrink after 2050. In fact, based on current demographic dynamics, 2026 is the median year when the working-age population of Caribbean countries will stop growing and start shrinking (Leon and Abdulkadri, 2024). A demographic transition towards an ageing and shrinking population, even if educated at the secondary and tertiary levels, places limits on the human capital pool of Caribbean countries that domestic enterprises, whether public or private, can employ. Hence, the demographic transition poses the risk of locking the subregion in stagnant labour productivity, since a stagnating and ageing or decreasing human capital pool limits the amount and quality of total working hours available in an economy to generate outputs.

Furthermore, emigration of skilled workers in the context of the demographic transition can further lock in stagnant to decreasing labour productivity (figures 3 and 4). The Caribbean is a net emigrant subregion and one where women tend to emigrate more than men. The emigration of more Caribbean women than men to Global North countries promotes their empowerment since they benefit from less patriarchal labour norms, better remuneration for their skills, and greater autonomy (Leon and Abdulkadri, 2024). However, women's empowerment due to South-North migration is not universal, as many women from developing countries experience pressures to remit earnings to their countries of origin, reducing their savings margins (Platonova and Rosa Gény, 2017).

Figure 16
Remittances received to GDP (current US$) of Caribbean countries, averages over 2012 to 2022
(Percentages)



Source: Prepared by the authors, on the basis of World Bank (2024e).

The relationship between remittances, human capital, and labour productivity is ambiguous. Remittance inflows provide critical income for low-income households to spend on necessities, such as the education of children, positively impacting human capital formation by increasing school enrolment and completion (Nájera and Cuecuecha Mendoza, 2020). However, high rates of remittance receipts in the Caribbean could be linked to stagnant or declining labour productivity in some member States (figure 16). The Dominican Republic (8.3%), Guyana (7.3%), Haiti (16.2%), and Jamaica (18%) received a

higher average share of remittances as a proportion of GDP from 2012 to 2022 than the global (4.2%) and SIDS (6.7%) averages over the same period. Average remittance receipt to GDP in Belize equalled 4.4% of its GDP, approximating the global average. The average proportion of remittances to GDP in Saint Vincent and the Grenadines was 6.5% from 2012 to 2022, close to the SIDS average. The literature argues for an adverse relationship between high levels of remittance inflows and employment in high-productivity sectors in low- and middle-income countries (Chami et al., 2018). Informal employment rates (figure 12), a proxy of low-productivity employment, in the Dominican Republic, Guyana, and Jamaica in 2019 were above the global (41%) and SIDS (45%) averages (employment information for Belize and Haiti was not available).

Hence, the evidence from the subregion suggests a negative correlation between remittances and employment in high-productivity sectors. The reason for this is likely that remittances are themselves proxy variables of workers migrating from a relatively lower to a higher productivity market, allowing these workers to increase their earning margins and acquire higher income from which they can remit to their countries of origin. Therefore, remittances correlate with brain drain, as high-skilled workers have more access to pathways of South-North mobility than low-skilled ones (Usman et al., 2022). The emigration of high-skilled workers is likely to leave high-productivity positions in the small Caribbean economies vacant. Although remittances increase the purchasing power of receiving households, and the marginal increase of this purchasing power is greater in low-income receiving households, these inflows do not offset the productivity losses of skilled labour emigrating from their countries of origin.

Furthermore, relatively high remittance inflows as a proportion of GDP corresponded with stagnant or decreasing labour productivity in Belize, Haiti, and Jamaica, but not in the Dominican Republic, Guyana, and Saint Vincent and the Grenadines (table 6 and figure 16). The size of the domestic market and the strength of a country's institutions are as important as human capital to promote labour productivity (Amin et al., 2019). The Dominican Republic, being a large Caribbean country with a more diversified economy, derives income from tourism, remittances, and, to a lesser extent, natural resource exports without being overly dependent on these industries (figures 14 and 16). As discussed in Chapter III.B, Guyana is an outlier due to its oil-driven economic boom, and high FDI plays a major explanatory role in the economic performance of Saint Vincent and the Grenadines. Hence, remittances have a weak or absent correspondence to labour productivity in these countries.

IV. Cross-cutting issues of human capital and labour productivity in the Caribbean

A. Gender

As discussed in the previous chapters, gender considerations are critical factors in driving human capital development and promoting economic and social progress in the Caribbean. While several SDGs highlight the importance of gender equality in fostering equitable opportunities for women and men to achieve their full potential, SDG 5, "Achieve gender equality and empower all women and girls," lays specific emphasis on gender equality as essential for optimizing human capital. Since half of the world's population is composed of women and girls, they cannot fully contribute to economic, social, or political progress without equal access to education, employment, and decision-making opportunities.

From an educational perspective, gender disparities in Caribbean educational outcomes significantly impact the development of human capital, as reflected by gender differences in the Human Capital Index (HCI) and its education indicators (table 7). In 11 Caribbean countries, girls generally had a higher HCI score than boys. This suggests that girls perform at least equally, if not better, than boys in human capital development across these countries. Similarly, girls outperformed boys in the education-related indicators of the HCI across most countries, with a few exceptions. Boys in Saint Kitts and Nevis had higher average expected years of schooling and learning-adjusted years of school than girls. In Haiti, while girls scored slightly higher across all indicators, these differences were minimal, and the overall human capital and education indicators for both sexes remained relatively low. For Trinidad and Tobago, although gender-disaggregated data were limited, harmonized test scores showed that girls and women scored higher (471) than boys and men (445). Compared to the SIDS and global averages, the gender gap in the Caribbean's HCI score was slightly larger, with a difference of 0.05 in favour of girls across ten Caribbean countries, compared to a 0.04 difference globally and in SIDS.

Table 7
Human capital and education for Caribbean Countries , boys and girls, 2020

Country	Expected Years of School		Harmonized Test Scores		Learning-Adjusted Years of School		Human Capital Index	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Antigua and Barbuda	12.7	13.3	397	417	8.0	8.9	0.6	0.6
Dominica	12.2	12.6	393	416	7.7	8.4	0.5	0.6
Dominican Rep.	11.7	12.1	338	353	6.3	6.8	0.5	0.5
Grenada	12.9	13.3	380	409	7.9	8.7	0.5	0.6
Guyana	12.1	12.3	338	356	6.5	7.0	0.5	0.5
Haiti	11.3	11.4	333	342	6.0	6.3	0.4	0.5
Jamaica	11.2	11.6	372	404	6.7	7.5	0.5	0.6
Saint Kitts and Nevis	13.3	12.6	404	415	8.6	8.4	0.6	0.6
Saint Lucia	12.5	12.9	409	426	8.2	8.8	0.6	0.6
Saint Vincent and the Grenadines	11.8	12.9	386	397	7.3	8.2	0.5	0.6
Trinidad and Tobago	..	..	445	471	..	..	..	..
SIDS average	11.4	11.7	381	401	6.9	7.5	0.5	0.5
Global average	11.3	11.4	420	430	7.8	8.1	0.6	0.6

Source: Prepared by the authors, on the basis of World Bank (2024a).

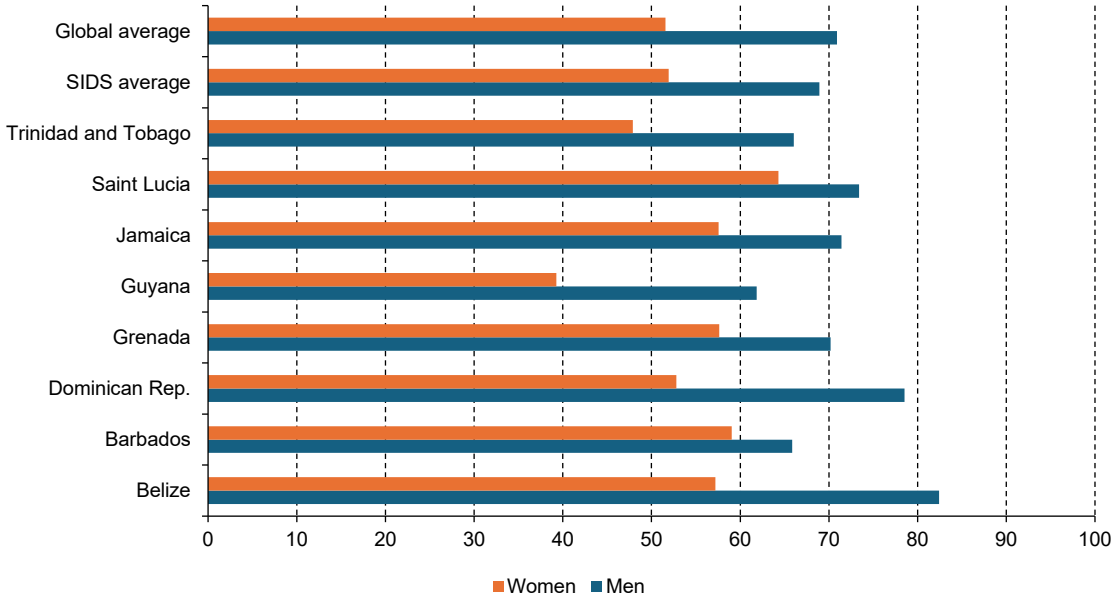
Based on the HCI data for the Caribbean, girls generally achieve higher educational attainment than boys and would ordinarily be expected to have a greater potential to accumulate the human capital needed to contribute to a productive economy. However, this potential is not fully reflected in the employment situation of women, which exacerbates the mismatch between labour market demands and available skills, while also reducing labour productivity across the subregion. Even though women in the workforce, with higher average educational attainment than men, are better positioned to succeed in these fields from an academic standpoint, evidence from six Caribbean countries suggests lower employment rates for women than men in STEM fields, which tend to provide high-productivity employment (figure 11). Furthermore, cultural norms also pose significant barriers to human capital accumulation for a productive economy. Gender stereotypes and societal expectations can limit girls' and women's career aspirations, as they face barriers in STEM subjects and are discouraged from such seemingly "masculine" fields (Wright, 2024). Addressing cultural norms that limit human capital accumulation, especially those that restrict girls and women's access to STEM fields, therefore requires policy interventions focused on education, workforce inclusivity, and community engagement.

Schools should better integrate gender-sensitive components into their curriculum that would challenge the cultural gender stereotypes and promote diverse career aspirations starting from early childhood education. This includes revising textbooks to highlight female role models in STEM and creating hands-on programmes that encourage girls' interest in traditionally male-dominated fields. Guidance counselling programmes in schools can also help shift these cultural norms, fostering a mindset where career choices are based on passion and skill rather than gender. Engaging families and communities in discussions on the importance of women in STEM can reshape societal and career expectations, further breaking down these gender stereotypes.

Another gender dimension in educational outcomes that affects human capital in the Caribbean is that of adolescent pregnancy, as it reduces young mothers' access to education and limits their future economic opportunities. Although the rate of adolescent pregnancies has declined in recent years, the data indicate that a substantial portion of young girls face educational interruptions due to childbirth (see figure 4). Reintegrating adolescent mothers into the school system, while also ensuring access to healthcare services, family planning, and mental health support enable women and girls to participate more fully in education, the labour market and other areas of life.

While the Montevideo Consensus includes a priority action to "introduce or strengthen policies and programmes to prevent pregnant adolescents and young mothers from dropping out of school", changing attitudes in educational institutions remains crucial to provide young mothers with the support that they need to remain in mainstream schools (Jones, 2024), for them to realise their full potential and further strengthen human capital across the subregion. A good example of this in the subregion is Jamaica. In 2013, Jamaica introduced a National Policy for the Reintegration of School-Age Mothers into the Formal School System (MoEJ, 2013). However, implementation has faced challenges, including a lack of adequate support for young mothers trying to balance school and parenting, as well as negative attitudes from some school administrators. Guyana's Ministry of Education also introduced a similar policy in 2018, having noted that pregnant adolescents and adolescent mothers were generally either expelled or forced to drop out of school (MoEG, 2018). Although more adolescent mothers have been engaged in some form of education or training since the implementation of the policy, they remain far from fully reintegrated in the formal school system. There is also a longstanding programme of social support for adolescent mothers run by the Women's Centre of Jamaica Foundation's Programme for Adolescent Mothers (PAM), which has been particularly effective in providing academic support, life skills, counselling, and reintegration services, with 43.1% of teen mothers rejoining formal schools in 2021. The model has also been adopted in Grenada and Saint Kitts and Nevis (Jones, 2024).

Figure 17
Population participating in the labour force in the Caribbean by gender, 2019
(Percentages of working-age population)



Source: Prepared by the authors, on the basis of ILO (2024b).

Ensuring equal access to decent work for both women and men is essential for optimizing human capital. Gender disparities in employment opportunities, wages, and working conditions affect economic growth and social well-being and hinder the subregion's overall productivity and economic potential. Figure 17 highlights persistent gender disparities in labour force participation, with relatively more men participating in the workforce than women, particularly in countries such as Belize, the Dominican Republic, Trinidad and Tobago, and Guyana. This gender imbalance further constrains workforce development, especially given that women are underrepresented in high-skilled sectors like STEM (Thailinger et al., 2023). This under-representation not only limits women's earning potential but also reduces the overall innovation capacity of the workforce. As such, increasing female participation in these sectors could enhance productivity.

Despite often achieving higher educational levels, women in the Caribbean still face substantial barriers to accessing formal, higher-paying employment. They are usually over-represented in informal, low-paying, or unregulated sectors such as domestic work, agriculture, and retail. In Barbados and Saint Kitts and Nevis, women are more likely to be among the working poor, reflecting broader regional patterns of gender inequality in employment. Such imbalances perpetuate income inequality and limit opportunities for skills development and economic progression (ILO, 2006).

Reducing gender disparities in labour force participation and employment in the Caribbean requires targeted employment policies, such as job creation programmes, the expansion of vocational training (Morris, 2016), and gender-focused interventions to optimally integrate women into the workforce. Aligning educational programmes with labour market needs, promoting gender equality in hiring practices, and implementing targeted skills development programmes for women are essential steps to ensure full participation in the workforce and to enhance overall economic growth (Thailinger et al., 2023).

Gender disparities in education and employment contribute to stagnant or declining labour productivity in many Caribbean countries. Although women generally have higher educational attainment than men, they experience higher unemployment rates and lower labour market participation rates. Gender gaps in employment and labour market participation are estimated at about two and 20% globally and in SIDS, respectively, and similar trends are observed in most Caribbean countries (figures 8 and 17), though the overall labour force participation indicators are somewhat better than the global and SIDS averages. Notwithstanding, these gender inequalities still hinder productivity, as evidence suggests that reducing employment inequalities can foster economic growth, though economic growth alone has a limited effect on reducing these inequalities (Kabeer, 2012). Furthermore, while sectors in STEM fields tend to provide high-productivity jobs, as previously mentioned, women are less represented in these sectors despite higher educational attainment, consequently limiting women's contributions to overall labour productivity in the subregion.

B. Non-communicable diseases

Numerous studies suggest that the prevalence of non-communicable diseases (NCDs) poses a significant threat not only to public health but also to economic growth and human capital formation. The impact of NCDs on both the working and aged populations leads to profound effects on labour productivity, savings and investments, and a decline in human capital value (Bloom, 2018).

In the Caribbean, labour productivity is less than optimal as it is already strained by an ageing population and a future workforce burdened by a high prevalence of NCDs and their risk factors (ECLAC, 2020). The demographic ageing process in the subregion is intensifying, with more countries experiencing a decline in the working-age population and an increase in the number of older persons. This demographic shift, coupled with the prevalence of childhood obesity and the early onset of NCDs have the potential to

undermine human well-being and future productivity, and will most likely significantly increase if not effectively addressed through prevention and control measures (Jones, 2024).

NCDs, such as hypertension and diabetes, remain significant health challenges in the Caribbean, ranking among the leading causes of death for adults under the age of 70 (Alleyne, 2018). Despite the adoption of the Declaration of Port of Spain by CARICOM Heads of Government in 2007 to reduce the incidence of NCDs and the risks associated with them, the issue persists in the subregion. In a subsequent High-Level Meeting on NCDs at the UN General Assembly in 2011, CARICOM Heads of Government highlighted the potential impairment of adult working populations caused by NCDs, viewing it as a threat to both health and development. This situation was further exacerbated during the COVID-19 pandemic, which led to increased mortality among patients with underlying health conditions (Walker and Clauzel, 2023).

Although life expectancy in the Caribbean has improved in recent decades, it has not increased as rapidly as in Latin America or globally. In 2019, life expectancy in the Caribbean had risen to 74 years, slightly lower than the 75 years observed in Latin America, and it is projected to remain 1–2 years behind Latin America in the coming years. One of the primary reasons for these limited gains in life expectancy in the Caribbean is the significant disease burden from NCDs, which accounted for 83.5% of deaths and 75% of disability-adjusted life years (DALYs) in the subregion in 2019 (Jones, 2024). The leading causes of mortality among the Caribbean population are cardiovascular diseases, cancer, and diabetes, and the burden of these NCDs continues to increase over time (Razzaghi et al., 2019).

Table 8
Non-communicable diseases indicators in the Caribbean

Country	Men NCD deaths (per 100,000)	Women NCD deaths (per 100,000)	Obesity in men (%)	Obesity in women (%)	Obesity in boys (%)	Obesity in girls (%)
Antigua and Barbuda	18	18	12	26	11	12
Bahamas (The)	24	17	24	38	18	17
Barbados	17	15	15	31	12	12
Belize	19	14	17	32	13	12
Cuba	20	13	19	30	12	10
Dominica			20	36	15	16
Dominican Republic	22	16	21	34	16	14
Grenada	26	20	13	29	11	11
Guyana	32	26	13	27	10	10
Haiti	30	33	18	27	14	8
Jamaica	16	17	15	33	13	13
Saint Kitts and Nevis			15	30	13	12
Saint Lucia	21	15	12	27	8	9
Saint Vincent and the Grenadines	23	18	17	31	13	12
Suriname	28	18	19	34	16	12
Trinidad and Tobago	20	14	11	26	11	11
Global average	23	16	16	23	9	10

Source: Prepared by the authors, on the basis of WHO (2024).
Note: The death rate for NCDs includes men and women aged 30 to 70 years old, and the year of data is 2019. For the obesity rates, men and women are defined as people ages 18 and over, while boys and girls are those aged 5 to 19 years old. The year of data for the percentage of the population classified as obese in all categories is 2016.

In most Caribbean countries, the NCD death rates are generally higher for men than for women (table 8). While the global average NCD death rate for men is 23 per 100,000 and for women is 16 per 100,000, several Caribbean countries surpass these averages, indicating a significant health challenge. Haiti has the highest disparity, with 30 deaths per 100,000 for men and 33 per 100,000 for women, both figures well above global averages. Guyana (32 per 100,000 for men and 26 per 100,000 for women), Grenada (26 per 100,00 for men and 20 per 100,000 for women) and Suriname (28 per 100,000 for men and 18 per 100,000 for women) also report higher NCD death rates above global averages.

NCDs frequently cause functional limitations and disabilities, significantly affecting the quality of life for those impacted and their families. These conditions place a strain on healthcare systems as they require ongoing management and care. In addition to the strain caused by NCD-related disabilities, high NCD death rates indicate a significant loss of life during the most productive years (ages 30-70). This loss can reduce human capital by limiting the availability of skilled labour and decreasing overall productivity. In countries where male mortality rates are notably higher, this can also contribute to a gender imbalance in the workforce.

The risk factors associated with NCDs, such as alcohol consumption, tobacco use, physical inactivity, and obesity, are widespread across the subregion and are increasing in some countries. Obesity, in particular, shows a worrisome trend, with rates among women generally higher than those among men in most Caribbean countries. The global average obesity rate is 23% for women and 16% for men. However, in the Bahamas, the obesity rate for women is significantly higher at 38%, the highest among Caribbean countries, followed by Dominica at 36% and Suriname at 34%. Obesity rates in men are relatively lower, with the Bahamas again having the highest at 24%, followed by the Dominican Republic at 21%. High obesity rates, particularly among women, can have long-term effects on the health of the workforce, leading to increased healthcare costs and reduced productivity due to illness.

Another concern is the high rate of childhood obesity, which Caribbean Heads of Government have recognized to be "the greatest threat to the health of future generations", with the rate of overweight and obesity reported to be more than 30% among primary and secondary school populations in the Member States of the Caribbean Community (CARICOM).[15] Most Caribbean countries reported childhood obesity rates over the global average, with The Bahamas having the highest rates with 18% of boys and 17% of girls affected, followed by Dominica, where 15% of boys and 16% of girls are affected (table 13). The high rates of childhood obesity indicate a future population that may face similar health challenges, which could further strain future health systems, reduce human capital and labour productivity, and hinder sustainable development (Abdulkadri et al., 2021).

The data offers insights into the prevalence of NCDs and obesity in various Caribbean countries, which can have profound implications for the overall development of the subregion. Increased healthcare costs due to high NCD death rates and obesity levels can strain public health systems and reduce the funds available for education, infrastructure, and other productivity-enhancing investments. Due to population ageing and the continued prevalence of NCDs in the subregion, it is estimated that Caribbean countries will need to increase healthcare spending from an average of 4.0% to 5.7% of GDP between 2020 and 2045 (Nam and Jones, 2018).

Countries with high NCD rates and obesity levels may experience slower economic growth due to the combined effects of reduced availability of skilled human capital, increased absenteeism due to illness, and lower productivity levels. The World Health Organization in its global analysis from 2011 to 2030, estimated that NCDs could result in over $21 trillion in lost economic output, underscoring the significant impact on workforce productivity (World Health Organization, 2013). Affected employees

[15] Communique of the regular meeting of the Conference of Heads of Government of CARICOM, 4-6 2017, Grand Anse, Grenada. Available at https://today.caricom.org/2017/07/07/communique-thirty-eighth-caricom-heads-of-government-meeting/. Accessed on 26 August 2024.

often take time off to manage health complications, disrupting operations and forcing companies to hire additional staff or implement temporary staffing measures, which significantly increases organizational costs. Chronic illnesses can also reduce affected employees' work capacity, as they can experience reduced energy levels and concentration, and are also at greater risk for workplace accidents in certain industries. These productivity losses directly impact businesses as they struggle to meet deadlines, maintain quality standards, and achieve performance targets.

The rise in NCD prevalence has led to increased healthcare utilization, which in turn raises health insurance costs for employers. Businesses therefore bear the brunt of higher costs associated with health insurance as a result of more frequent medical claims from their employees due to the complications associated with NCDs (Bloom et al., 2011).

The fact that most NCDs are preventable underscores the importance of investing in their prevention and control. This investment is crucial to avoid the significant economic burden caused by excess morbidity and premature death, which are expected to rise with an ageing population and increasing rates of overweight or obesity among youth. These concerns have long been recognized and are reflected in global frameworks, regional declarations, and national policies aimed at addressing NCDs and their risk factors. The 2030 Agenda and the Sustainable Development Goals (SDGs), which serve as the global platform for sustainable development, emphasize the need to combat NCDs and further highlights that a healthy environment is a critical precondition for human beings to fully realize their potential, and that starts with individual health and well-being.

Therefore, a robust health system is crucial for ensuring healthy children, healthy adults, and the development and preservation of human capital. Addressing these issues requires targeted health interventions that consider specific gender disparities to improve overall productivity and promote a culture of health. Businesses and governments must adopt proactive strategies that promote a healthier workforce. Implementing workplace wellness programmes that encourage healthy eating, physical activity, and regular health screenings can help prevent the onset or progression of NCDs. Furthermore, flexible work arrangements, such as remote work or adaptable schedules, can enable employees to better manage their health without compromising productivity. Additionally, comprehensive health insurance plans that emphasize preventive care can reduce long-term costs and improve health outcomes. Investing in ergonomics and workplace safety is equally crucial, as it minimizes risks, provides support for employees with chronic conditions, and enhances overall performance. By integrating these measures, businesses can foster healthier work environments, preserve productivity, and contribute to sustainable economic development.

C. Social protection

Social protection systems comprise those policies and programmes which provide protection for all people against poverty, vulnerability and social exclusion throughout the life cycle. They comprise contributory and non-contributory programmes which provide cash and in-kind benefits to protect against loss of income and costs associated with, inter alia, old age, ill-health, disability, childbearing, childcare and unemployment. These programmes ensure that households can satisfy their basic needs, which are essential for health and well-being, and are protected from poverty, deprivation and destitution. This facilitates participation in education, training and employment on a more equitable basis and contributes to the accumulation of human capital by ensuring that the skills and talents of the whole population have the opportunity to flourish.

Social protection systems provide security in the face of negative shocks, and so, in addition to building human capital, they also serve to protect it. By ensuring access to health care without impoverishment or hardship, social health protection improves population health and labour force

participation. Unemployment insurance provides a safety net which facilitates the effective redeployment of human capital. In a similar way, shock-responsive social protection provides those who have lost their income due to disasters and emergencies with the support that they need until they are able to sustain themselves again.

Research findings across many countries have confirmed that cash transfers have a positive impact on education and health. Cash transfers have been shown to have a positive effect on school attendance and the utilisation of health services. Fewer studies have shown links between cash transfers and outcomes, such as test scores or anthropometric measures (child height and weight), presumably because of the wider range of variables that also influence these outcomes. Research findings also indicate that cash transfers tend to have either a neutral or positive impact on labour market participation, with few studies suggesting that, as is commonly supposed, cash transfers generate work disincentives. (Hagen-Zanker et al., 2016).

Some social protection programmes are specifically designed to encourage and promote participation in education. There are programmes which reduce the burden of education-related costs through the provision of either cash, vouchers or in-kind benefits. There are also cash transfer programmes which are conditioned on beneficiary households making investments in human capital, with the intention that this will increase their earning capacity and reduce their long-term vulnerability. Social protection programmes of this kind can actively promote education, training and skills development and, when efficiently implemented, can contribute to the building of human capital.

Many Caribbean countries have implemented social assistance programmes designed to reduce the burden of education-related costs on households, thereby promoting participation in education. There are programmes providing free or subsidized school uniforms, transport, school meals, textbooks, laptops, and exam entrance. In most cases, these schemes are targeted at low-income households. For example, in the Bahamas, the Ministry of Social Services and Urban Development's Uniform and Footwear Assistance Programme provides vouchers to households with insufficient income to provide uniforms and footwear to their children, including those affected by disasters. Trinidad and Tobago's Ministry of Education uses a means-test to allocate school supplies, book grants and laptop computers to financially disadvantaged students in government and government-assisted primary and secondary schools. In Jamaica, the Programme of Advancement Through Health and Education (PATH) provides cash grants to vulnerable households to support the participation of children and young adults in all levels of schooling.

There are a smaller number of programmes which provide more comprehensive coverage. In Antigua and Barbuda, the National School Uniform Grant Programme provides all school-aged children with at least one uniform, while in Guyana, the "Because We Care" uniform grant covers all students in both public and private schools. Since introducing its One Laptop Per Child program (OLPC) in 2011, the Government of Saint Vincent and the Grenadines has provided many of its students with laptops or tablets.

Almost all countries have a school feeding programme of some kind, which is intended to promote child health, development, and educational performance. The Food and Agriculture Organization of the United Nations and the University of the West Indies carried out a comprehensive review of school feeding programmes in the Caribbean Community (FAO and UWI, 2021). The organizational structure of each programme was analysed, including whether meals were prepared on-site in school kitchens or prepared off-site in centralized facilities for delivery to schools, and a cost-benefit analysis was carried out for each programme.

The report argued that school feeding programmes improve educational and health outcomes, which lead to increased productivity. It made recommendations concerning the nutritional quality of school meals; levels of salt, sugar and saturated fat; and promoted the consumption of water as a

substitute for sugar-sweetened beverages. In addition, the report recommended traditional meals prepared using indigenous foods, especially seasonal fruits and vegetables, sourced from local producers. It argued for the expansion of school feeding programmes through subsidised pricing of meals.

Another category of social protection programmes which also seek to build human capital are Conditional Cash Transfer (CCT) Programmes. CCT Programmes were first implemented in Brazil and Mexico in the 1990s and were subsequently implemented in many countries across the Latin America and Caribbean region. The cash transfers in these programmes are made conditional upon beneficiary households making investments in human capital, for example, in education, training, child health and nutrition. The intention is that these investments in human capital will, in time, enable households to lift themselves out of poverty, to the extent that they will no longer need cash transfers and are deemed to have 'graduated' from the CCT programme. Most countries in Latin America have some form of CCT, although they are less common in the English, Dutch and French-speaking Caribbean. There are CCT programmes in Belize, the Dominican Republic, Grenada, Haiti and Jamaica.

Jamaica's PATH programme requires that school-age children (6 years and over) in beneficiary households maintain an attendance rate of not less than 85%, while children under six years are required to comply with the schedule of preventive health visits established by the Ministry of Health. Belize's Building Opportunities for Our Social Transformation (BOOST) programme also requires children to maintain at least 85% school attendance, with a similar requirement forming part of Grenada's Support for Education, Empowerment and Development (SEED) programme.

With the adoption of CCT programmes, there was a debate about their effectiveness compared to unconditional cash transfers (UCTs), which have also been shown to have a positive impact on education and health outcomes (Budlender, 2014). A comprehensive review of evidence on the effectiveness of cash transfers (Bastagli et al., 2016) suggested that, while there may be a role for including an element of conditionality in certain contexts, encouraging (rather than forcing) beneficiaries of cash transfers to take certain actions could also contribute to progress towards intended outcomes. Therefore, the financial and other costs associated with having conditions —including administration, enforcement, and the extent to which deserving families would be excluded— need to be compared with the costs of alternative approaches, such as improving the supply and accessibility of quality services or improving public education about the benefits of positive behaviour (Budlender, 2014). In practice, this has been recognized in the implementation of many CCTs that encourage rather than enforce compliance.

Social protection contributes to the building and development of human capital through ensuring that all people have an equal opportunity to participate in education, training and employment. It does this both through ensuring that all people can meet their most basic needs and through programmes which, in a more specific way, facilitate, encourage and ensure participation in education or skills development. Caribbean governments are seeking to move towards universal social protection. Following the COVID-19 pandemic, more countries are considering the need to introduce unemployment insurance, which is now in place in Anguilla, Aruba, Bahamas, Barbados, French Guiana, Guadeloupe, Martinique and Turks and Caicos Islands. However, in many countries, a significant proportion of the workforce continues to depend on informal sector activity, and, for those outside the scope of formal social security, non-contributory social assistance does not provide adequate protection either in respect of the coverage of this population or the level of benefits. Priority should be given to the establishment of a social protection floor, the level of which is progressively raised in accordance with national circumstances. The achievement of universal social protection will make an important contribution to building and protecting human capital in the Caribbean.

D. Information and Communication Technologies

The digital economy has great potential to usher in opportunities for economic growth by increasing productivity in the public and private sectors, fostering entrepreneurship, and increasing access to regional and global markets (IFC, 2023). As the COVID-19 experiences have taught us, digitization is key to business continuity in times of shocks and crises, as digital solutions enabled economic agents to maintain productivity during the pandemic (ECLAC, 2022). Three-quarters of more than 600 executives of predominantly high-earning Caribbean businesses reported that switching to, or increasing the use of, digital solutions, helped them to either maintain or increase productivity during the pandemic.[16] However, despite the progress made in digitization during and post-COVID, digital development in the Caribbean is short of its potential (IFC, 2023). A 2021 study by the Inter-American Development Bank estimated that reducing digitization deficits can increase GDP by up to 10% in many Caribbean countries, and such a benefit could be earned by countries by investing about 2% of their GDP in information and communication technology (ICT) (IDB 2021). Increasing the economic benefits of further digitization will require that the subregion invests in its ICT human capital (ECLAC, 2022).

As a start, the acceleration of digital inclusion in the Caribbean is crucial to human capital formation. While internet use has improved significantly in the Caribbean, access to fixed broadband remains low and uneven across countries, with only Saint Kitts and Nevis recording fixed broadband subscription of more than 50% of its population in 2020. A major part of learning losses recorded during COVID-19 was associated with a lack of or inadequate access to internet connection, which further contributes to widening inequalities among students of different socioeconomic status.

Therefore, investments in ICT infrastructure and human capital offer the Caribbean an opening to the global market and will contribute to increasing productivity, especially in the services sector (Samuel, 2022). The opportunity for high-skill remote work from the Caribbean, as offered by Barbados during COVID-19, for example, offers Caribbean countries a viable avenue to boost their economies by attracting modern-day digital nomad workers to the Caribbean, creating opportunities for skills transfer to Caribbean nationals, while also expanding career and business opportunities for Caribbean citizens in the global north without the need to emigrate.

[16] Based on results of the Caribbean Digital Readiness Survey of 2021. Available at: https://www.pwc.com/cb/en/issues/assets/digital-readiness-survey-2021.pdf.

V. Conclusion

Human capital has an undeniable critical role in the sustainable development of nations, and quality education is the foundation of human capital formation. However, the knowledge, skills and innovation that education, employment, research and development, and entrepreneurship contribute to human capital will not be productive in the absence of an enabling policy environment. Considering the small size of Caribbean economies as SIDS and their heavy reliance on the global market, the sustainable economic development of the subregion hinges on equipping its citizens with the knowledge and skills needed to thrive in a competitive global market and creating an environment that promotes the accumulation of human capital. Unfortunately, the Caribbean faces significant human capital challenges that include high youth unemployment and a pervasive mismatch of skills demanded in the world of work and those possessed by job seekers. This situation results in low economic returns to private and public investment in education as graduates and school leavers remain largely unemployed or underemployed, making many young people unable to contribute optimally to economic growth.

The challenges of human capital in the Caribbean have impacted labour productivity in the subregion, which has stagnated or declined between 2012 and 2022 in nine of 12 Caribbean member States analysed in this study. Most Caribbean countries have small domestic markets and are dependent on certain industries, particularly tourism and commodity exports, presenting structural limitations for increasing their labour productivity. Compounding this is the prevalence of skill mismatch in the labour market, particularly among the youth. Gender also plays a central role in this mismatch. Although girls generally outperform boys in school, women participate less in the labour market and experience higher unemployment than men in most Caribbean countries. Moreover, women have a higher likelihood of emigrating, fuelling brain drain in the subregion.

The human capital stock of Caribbean countries faces a decline due to the demographic transition towards an ageing population, which raises the need to incorporate policies that leverage this transition. Caribbean countries will have to incorporate policies leveraging immigration to rejuvenate ageing labour forces and engage their diaspora to transform brain drain into brain circulation (ECLAC, 2024b). Furthermore, countries receiving substantial amounts of remittances, and particularly those dependent on international tourism, should implement policies integrating these financial inflows in ways that prevent reductions in employment demand in high-productivity sectors (Chami et al., 2018). Channelling the human capital of the Caribbean toward increasing its labour productivity will be key to meeting the 2030 Agenda and the SDGs, particularly target 8.2 on achieving higher levels of economic productivity.

In this study, we have shown that education remains a key determinant of human capital in the Caribbean and government expenditure on education contributes positively to learning, which in turn impacts economic development outcomes, such as labour productivity. However, there is leakage in public investment in education as nationals with higher education continue to emigrate at a higher rate than those without this qualification. One push factor for the loss of this human capital is the high unemployment rate, especially among the youth. Meanwhile, employers of labour complain about not finding workers with the skills they require in running their businesses. This skills mismatch constitutes a major factor for low and declining labour productivity in the Caribbean.

To effectively strengthen employment's role in human capital accumulation, Caribbean countries must adopt a multifaceted approach that includes expanding access to On-the-Job-Training programmes, particularly in high-skill and knowledge-intensive sectors. By incentivizing firms to provide more OJT opportunities, workers can develop skills that are aligned with industry needs, ultimately fostering productivity, wage growth, career advancement, and economic resilience. This strategy will enable the subregion to better compete in a rapidly changing global economy, where skill development is key to long-term economic sustainability.

Addressing the deficiencies in education, and thus human capital accumulation, in the Caribbean requires a comprehensive approach. The subregion requires effective policies for teacher retention, increased investment in education and efforts to challenge cultural norms discouraging girls and women from technical fields. Evaluation and adaptation of school curricula, in consultation with stakeholders (students and employers), is generally absent in the Caribbean, and this is critical in reducing mismatches between educational outcomes and labour market needs.

Equally important is the alignment of education with labour market demands. Caribbean educational institutions must work closely with industries to better tailor curricula to the skills required in emerging industries in STEAM, digital services, and green energy sectors. This alignment will reduce the ongoing skills mismatch, ensuring that workers are equipped for the jobs of the future, thereby improving employment outcomes and reducing underemployment. Enhanced Labour Market Information Systems (LMIS) are also essential, providing real-time data on workforce trends, skill shortages, and sectoral needs. These systems will improve job matching and placement, ultimately boosting labour market efficiency.

Governments must consider implementing a comprehensive migration policy that acknowledges the mobility of labour, the ageing of the population and the need to rejuvenate the workforce to induce labour productivity and the viability of social protection systems. Policymakers can counter brain drain and its detrimental effect on labour productivity by leveraging diasporas and thus promote brain circulation through policies fostering transnational entrepreneurial networks. These networks serve as avenues for return migration, remote work, and attracting foreign investment, all of which help enhance labour productivity. Another policy option available to Caribbean governments is creating incentives to attract and avenues to infuse young, high-skilled non-nationals in the population to address to ageing and declining Caribbean labour force (ECLAC, 2024b).

Human capital formation will not advance in the Caribbean if gender and youth disparities in the workforce are not addressed. Enabling women and youth to optimally participate and contribute to the economies of the Caribbean is crucial to maximizing the subregion's labour potential. Expanding access to childcare, promoting gender equality in hiring, and providing vocational training for young workers will encourage broader workforce participation, particularly among women and youth, who remain underrepresented in high-skill sectors. Such measures will help unlock the potential of these underrepresented groups, boosting overall economic productivity and innovation across the region.

Addressing the issue of the working poor in the Caribbean requires targeted policy interventions to improve job quality, raise wages, and ensure better access to social protections. Education should be aligned with labour market demands, improving access to quality jobs for all, and with a gender-sensitive focus on sectoral development in agriculture and retail, where the working poor are concentrated.

Survey mechanisms to constantly monitor labour market demands are needed to update and adapt education policies and school curricula at the upper secondary and tertiary levels as a way of decreasing the skills mismatch in the labour market. Conducting regular traditional surveys can be prohibitly expensive, therefore leveraging big data sources can be a cost-effective mechanism of monitoring labour market developments along with stakeholder engagement.

Limited data on cultural and creative industries employment in the Caribbean makes it challenging to fully understand the sector's impact. Addressing this data gap could provide valuable insights into the arts' contribution to human capital formation and help Caribbean economies unlock the full potential of STEAM-focused employment strategies.

Furthermore, economic losses from unrealised potential will continue to mount in the Caribbean if the prevalence of non-communicable diseases is not controlled. Already accounting for a sizeable portion of the economic burden of disease, indirect cost of productivity loss from premature death, disability, and absenteism from NCDs will continue to grow given the current prevalence of childhood obesity.

Caribbean governments must develop policies aimed at reducing the size of the informal sector and promoting formalization. These policies could involve regulatory and tax reforms to reduce the burdens that incentivize informality, alongside expanding access to credit and training opportunities for informal workers. Additionally, targeted vocational training programs for workers in the informal sector can help bridge the gap between informal and formal employment, facilitating skill development and career progression. By implementing these measures, Caribbean countries can enhance labour market outcomes, reduce the size of the informal economy, and foster human capital accumulation, all of which are essential for promoting sustainable and inclusive economic growth (IMF, 2021a). Therefore, formalizing the informal economy through regulatory reforms and improving social protections for the working poor are essential steps in driving economic mobility. Ensuring that informal workers have access to training programs and social safety nets, such as healthcare and unemployment benefits, will improve job quality and provide opportunities for upward mobility.

On a final note, policies directing or encouraging investment in industrial diversification away from tourism and natural resource exports are vital to create demand for productive jobs in multiple sectors, which encourages the rentention of human capital. By addressing these challenges, Caribbean countries can create a more inclusive and competitive labour market, fostering sustainable human capital accumulation and driving long-term economic growth.

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Annex A1

Table A1.1
School enrollment, tertiary (gross)
(Percentages)

	1980	1990	2000	2010	2015	2016	2017	2018	2019	2020	2021	2022
							Male					
Member States												
Antigua and Barbuda	...	...	...	8.9	...	...	...	...	...	...	...	...
Barbados	...	14.5	22.8	43.3	...	...	...	...	...	...	...	...
Belize	...	...	...	16.6	17.7	18.4	18.7	18.5	18.5	18.8	17.5	16.9
Cuba	17.6	17.1	20.8	71.2	30.4	28.9	30.4	32.4	33.3	32.7	36.0	...
Dominican Republic	...	...	...	...	36.6	39.2	43.0	...	...	41.3	38.2	...
Grenada	4.2	...	...	...	85.4	81.5	85.2	85.6	...	...	...	...
Guyana	3.2	6.6	...	6.3	...	...	...	...	...	...	...	...
Jamaica	...	...	9.4	15.6	19.4	...	...	...	...	...	...	...
Suriname	...	9.0	...	...	...	...	...	...	...	...	5.9	...
Trinidad and Tobago	5.2	...	4.5	...	...	...	...	...	...	...	...	...
Associate members												
Aruba	...	...	22.3	30.7	10.8	12.6	...	...	...	...	...	...
Bermuda	12.8	...	...	24.7	19.7	...	17.0	19.0	...	...	...	...
British Virgin Islands	...	...	27.6	...	31.4	33.5	...	12.6	18.2	22.9	23.5	23.0
Puerto Rico	...	...	...	73.3	82.6	84.4	...	86.0	...	...	...	...
Turks and Caicos Islands	...	...	...	0.2	...	...	...	6.2	7.2	...	...	9.5
							Female					
Member States												
Antigua and Barbuda	...	...	...	24.0	...	...	...	...	...	...	...	...
Barbados	...	22.1	60.6	93.0	...	...	...	...	...	...	...	...
Belize	...	...	...	26.2	28.9	30.3	30.9	30.9	31.8	32.8	29.7	30.8
Cuba	15.6	24.5	25.4	118.6	42.4	40.3	51.1	51.4	55.4	59.9	67.0	...
Dominican Republic	...	...	...	...	67.0	70.0	77.0	...	...	76.3	79.3	...
Grenada	6.4	...	...	...	100.6	105.4	106.0	108.7	...	...	...	...
Guyana	2.3	4.8	...	15.2	...	...	...	...	...	...	...	...
Jamaica	...	...	18.0	35.4	33.7	...	...	...	...	...	...	...
Suriname	...	10.2	...	...	...	...	...	...	...	...	11.7	...
Trinidad and Tobago	3.4	...	6.7	...	...	...	...	...	...	...	...	...
Associate members												
Aruba	...	...	34.7	44.2	24.0	24.5	...	...	...	...	...	...
Bermuda	11.7	...	...	49.4	44.1	...	27.8	26.6	...	...	...	...
British Virgin Islands	...	...	74.3	...	54.3	50.9	...	21.5	33.7	41.6	41.4	39.2
Puerto Rico	...	...	...	108.0	114.0	114.8	...	117.9	...	...	...	...
Turks and Caicos Islands	...	...	...	0.4	...	...	...	15.8	15.7	...	...	23.5

Source: Prepared by the authors, on the basis of World Bank (20249).
Note: The gross enrolment ratio is the enrolment in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education.

Table A1.2
Projected net migration rates for persons aged 15 and by level of education, 2020 to 2025
(Net migration from 2020 to 2025 expressed as a percentage of the population in 2020)

	No Education/ Incomplete Primary	Primary	Lower Secondary	Upper Secondary	Post Secondary
Antigua and Barbuda	12.8	-0.8	2.9	-0.4	1.4
Aruba	4.3	0.5	-0.4	6.8	1.5
Bahamas (The)	6.2	3.2	3.4	-0.1	0.5
Barbados	3.5	-0.6	0.5	-0.9	-1.0
Belize	1.4	0.1	0.6	0.8	1.9
Cuba	0.4	-0.1	-0.3	-0.5	-1.0
Curaçao	29.8	3.0	-1.0	2.4	4.8
Dominican Republic	-0.1	0.2	-0.7	-0.7	-2.6
French Guiana	1.6	0.0	0.6	1.3	3.7
Grenada	3.9	-1.3	0.0	-2.0	-3.9
Guadeloupe	2.0	-0.7	-0.6	-2.1	-4.0
Guyana	0.7	-1.8	-3.4	-5.3	-4.7
Haiti	-0.5	-0.3	-0.9	-1.0	5.0
Jamaica	2.4	-0.4	-1.7	-0.2	-2.8
Martinique	1.4	-0.5	-0.6	-1.6	-3.6
Puerto Rico	4.0	2.0	0.1	-2.7	-7.3
Saint Lucia	4.2	-0.4	0.0	-1.0	-1.4
Saint Vincent and the Grenadines	3.2	-2.9	-2.6	-4.4	-5.2
Suriname	2.8	-0.6	-1.6	-0.2	2.6
Trinidad and Tobago	1.3	0.0	-0.7	-0.7	-2.3
United States Virgin Islands	5.1	-1.5	1.4	-1.9	-4.4
The Caribbean	0.0	-0.1	-0.8	-1.0	-2.5

Source: Prepared by the authors, on the basis of WIC (2023).

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