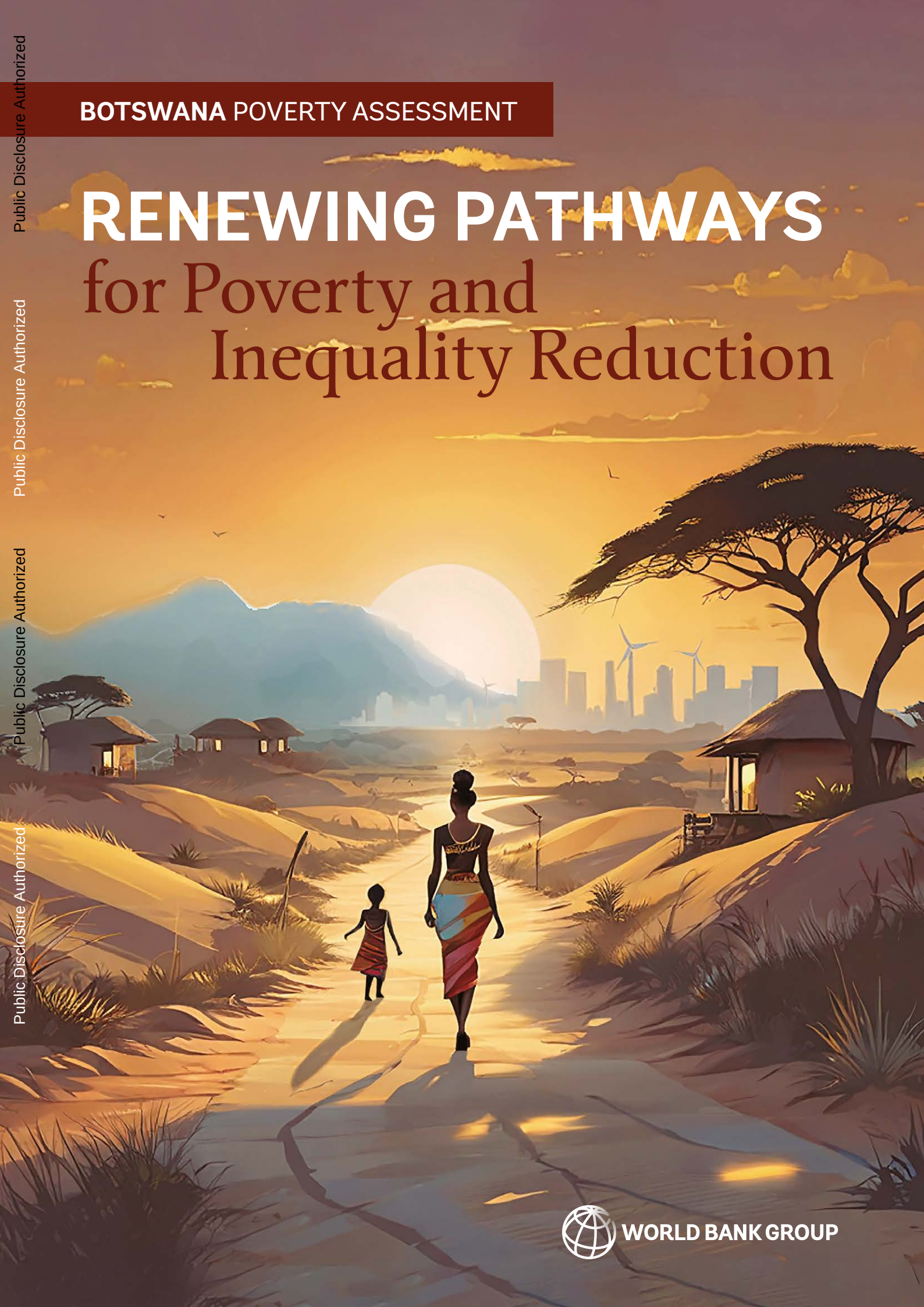
BOTSWANA POVERTY ASSESSMENT

RENEWING PATHWAYS for Poverty and Inequality Reduction



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Acknowledgments

The Botswana Poverty Assessment was coauthored by Carolina Diaz-Bonilla (Team Lead), Santiago Garriga, and Giselle del Carmen. The extended team included Ugo Gentilini and Victoria Monchuk on social protection (Chapter 4); Ifeanyi Nzegwu Edochie and Daylan Salmeron Gomez on geospatial data and village-level census data; and Danielle Aron and Nobuo Yoshida on poverty projections.

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Abbreviations and Acronyms

BCWIS	Botswana Core Welfare Indicators Survey
BMTHS	Botswana Multi-Topic Household Survey
BURS	Botswana United Revenue Service
CEM	Country Economic Memorandum
CEQ	Commitment to Equity
COICOP	Classification of Individual Consumption According to Purpose
EMIS	Educational Management Information SYstems
FIES	Food Insecurity Experience Scale
GDP	gross domestic product
GMD	Global Monitoring Database
GNI	gross national income
GRIDMET	Gridded Surface Meteorological
HCI	Human Capital Index
HIES	Household Income and Expenditure Survey
HREA	High-Resolution Electricity Access
HOI	Human Opportunity Index
ICT	information and communication technology
ICLS	International Conference of Labour Statisticians
IFC	International Finance Corporation
ILO	International Labour Organization
ISSF	Informal Sector Stimulus Fund
LEA	Local Enterprise Authority
MPM	Multidimensional Poverty Measure
MSMEs	micro-, small, and medium enterprises
PDSI	Palmer Drought Severity Index
PPP	purchasing power parity
QMTS	Quarterly Multi-Topic Household Survey
SACU	Southern African Customs Union
SCD	Systematic Country Diagnostic
StatsBots	Statistics Botswana
SWIFT	Survey of Well-being via Instant and Frequent Tracking
TVET	Technical or Vocational Education Training
UMIC	upper middle income country
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund
VIIRS	Visible Infrared Imaging Radiometer Suite
WHO	World Health Organization

All dollar amounts are US dollars unless otherwise indicated.

EXECUTIVE SUMMARY

Botswana's strong growth since independence had significantly improved living standards

Botswana's fast diamond-based growth, significant public investment, and political stability catapulted it into a stable upper-middle-income country and improved living standards. A large, sparsely populated, land-locked country in Southern Africa, Botswana has significant mineral wealth and a relatively small and young population (2.3 million).[1] The discovery of diamond deposits turned it into one of the world's fastest-growing economies into the 1990s, with average annual GDP and GDP per capita growth above 10 and 7 percent, respectively. The growth model relies heavily on diamonds (representing around 90 percent of total goods exports, followed by nature-based luxury tourism) and a large public sector, while close to one-fifth of employment is in agriculture (half subsistence farming) and two-thirds in services. Historically, the government invested diamond revenues well to improve infrastructure and human capital, significantly expanding the road network, access to electricity, water, and sanitation, and primary school enrollment. This significantly improved life expectancy, mortality rates, nutrition, and poverty. The country maintained stability thanks to sustainable macroeconomic and fiscal policies and repeatedly ranked among the top African performers across many governance indicators.

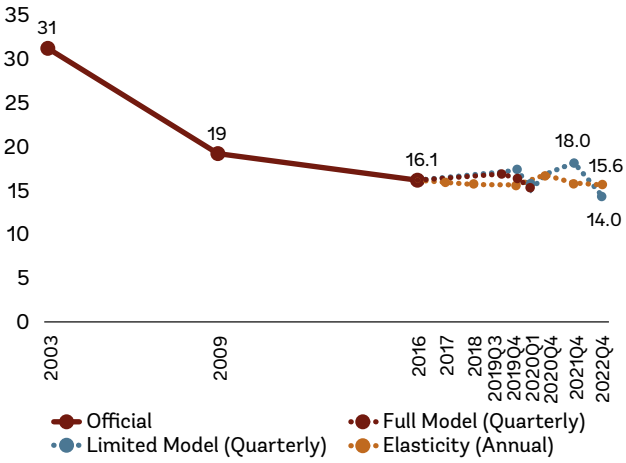
Despite its income status, the country faces multiple data challenges that limit its ability to make informed and effective policy decisions. The challenges include the availability, quality, and use of data, and a weak statistical infrastructure. Botswana does not conduct frequent income and expenditure surveys to track poverty. In the last twenty years, only three such surveys have been conducted: 2002/03, 2009/10, and 2015/16.[2] Efforts were made to create comparable consumption data[3] (see Appendix 8); however, income data is less reliable, creating a challenge in understanding income dynamics. Data on informality is also limited despite its importance and the need for further research. Ministries and line agencies are also not capturing information regularly to inform progress and better outcomes and lack integrated data systems. To fill some data gaps, the country began collecting quarterly multi-topic household surveys in 2019 that capture primarily labor force data and some rotating modules. Using the available data, this Poverty Assessment presents poverty estimates up to 2016, preliminary poverty projections based on imputations into the 2019-2022 quarterly data (see Appendix 9), and recent labor market trends (using a longer comparable series, see Appendix 7). It also uses satellite and geospatial data to understand recent trends in electricity access and rainfall shocks (see Chapter 3) after the negative poverty impact of the 2015 drought and electricity and water crises. Looking ahead, a recently completed Population and Housing Census and the upcoming 2024/25 income and expenditure survey will fill other important data gaps. Yet, evidence-based policymaking requires Botswana to act on its commitment to invest in frequent, timely, and relevant data across its statistical system and strengthen its monitoring and evaluation.

1 See Appendix 2 for Botswana's projected 2022 population pyramid.
2 The surveys are the 2002/03 Household Income and Expenditure Survey (HIES) (June 2002-August 2003; Central Statistics Office 2004), the 2009/10 Botswana Core Welfare Indicators Survey (BCWIS) (April 2009-March 2010; Statistics Botswana 2013), and the 2015/16 Botswana Multi-Topic Household Survey (BMTHS) (November 2015-December 2016; Statistics Botswana 2018). This document refers to these surveys as 2003, 2009, and 2016, corresponding to the year with the most survey-month coverage.
3 Statistics Botswana and the World Bank have updated Botswana's official poverty measurement methodology using international best practice. See Appendix 8 for a technical overview of the updated measures.

Progress in poverty reduction and shared prosperity has slowed, and inequality remains high

Poverty reduction and employment growth slowed in 2016. In contrast to the rapid decrease in the share of the population living below the official poverty line in 2003-09 (from 31 to 19.3 percent), poverty declined more slowly to 16.1 percent between 2009-16 (Figure E.1). In 2016 over 330,000 Batswana were living in poverty. Despite better GDP per capita growth between 2009-16 than 2003-09, the ability of economic growth to lead to poverty reduction declined in 2016 and requires further investigation.[4] Although inequality declined (see below), this was due more to real consumption declines among wealthier households and weaker pro-poor growth than in the past. Unlike in the past, GDP growth (based on low-employment diamond wealth and a large public sector) did not translate to higher average (real) household per capita consumption between 2009-16. Instead, the major regional drought in 2015 affected the 2016 harvest, while electricity and water shortages further limited private sector growth, resulting in lower average household consumption than in 2009, higher unemployment rates, employment declines in rural areas, and increased rural poverty. Both employment and labor force growth slowed between 2009 and 2016, with labor force growth outpacing job creation (2.0 versus 1.8 percent, respectively; see Chapter 1). Job creation in 2009-16 was driven by public sector expansion from local government, parastatals, and the Ipelegeng public works program. The growth model was less able to create sufficient jobs, with larger impacts on the youth.

FIGURE E.1 Poverty reduction has slowed



Source: 2002/03 BHIES, 2009/10 BCWIS, 2015/16 BMTHS (Stats Botswana 2013, 2018; also see Appendix 8); 2017-2022 projections based on Quarterly Multi-Topic Household Surveys and national accounts GDP data. *Note:* For projection methodologies see Appendix 9.

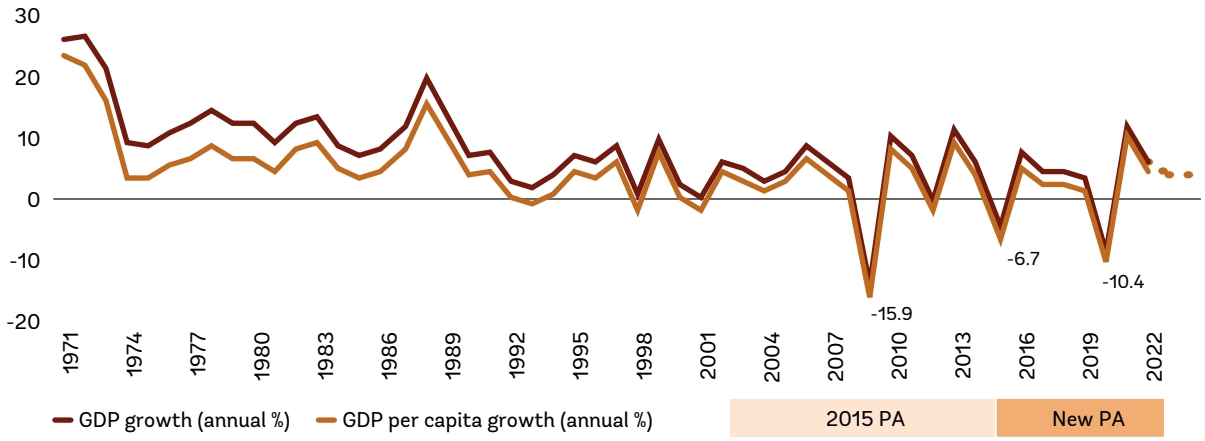
Poverty reduction likely continued to slow in recent years. Poverty projections up to 2022 using different methodologies suggest poverty reduction has slowed even further due to the weaker labor market (Figure E.1, Appendix 9). More generally, private sector participation in non-mineral exports and transformative sectors has been limited, restricting diversification and job creation over the longer period. In addition, since 2015, the country has faced floods in 2017, another drought in 2019, the 2020 COVID-19 shock, and a surge in prices in 2022, in addition to sluggish productivity growth and an economic decline in South Africa, Botswana's main trade partner. Botswana has been increasingly facing less robust and more volatile economic growth (Figure E.2) and higher unemployment due to increased competition from synthetic diamonds, higher local production costs, lack of diversification, and low job creation.

By 2016, Botswana was no longer one of Africa's top performers on the shared prosperity indicator, while poverty remained high given its income level. Consumption per capita among the poorest 40 percent of the population only grew by an annualized 1.2 percent in 2009–16, down from 5 percent in 2003–09, while it declined among the top 60 percent of the population.[5] The latter negative consumption growth increased poverty from 60.4 to 63.5 percent (in 2016) using the global poverty line for upper-middle-income countries ($6.85 per day, 2017 PPP). Households above the official poverty line but below the $6.85 poverty line represent more than

4 The elasticity of GDP per capita to poverty fell from -3.8 in 2003-2009 to -0.6 in 2009-2016, a decline of 84 percent. Alternatively, using GDP data post the 2009 recession, the elasticity fell from -2.1 in 2003-2010 to -0.86 in 2010-2016, a decline of 60 percent.

5 Shared prosperity, which measures the extent to which economic growth is inclusive, is expressed as the annualized growth rate in the average consumption per capita of the poorest 40 percent of the population. Real consumption per capita overall for Botswana declined by an annualized -1.8 percent in 2009-2016.

FIGURE E.2 Economic growth has slowed and become more volatile

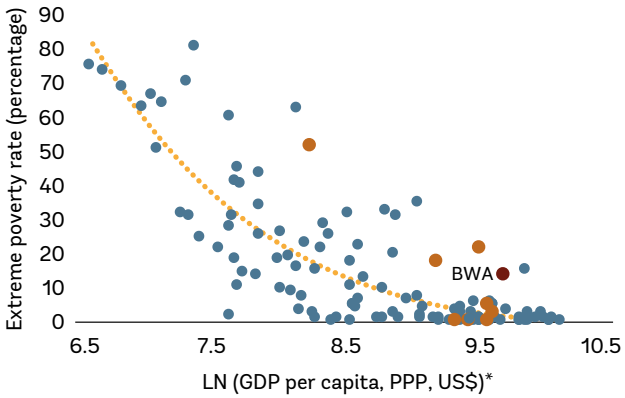


Source: World Development Indicators (database), databank.worldbank.org/source/world-development-indicators, version 7/25/2023

half the population and faced welfare declines, on average, in 2016. In addition, more than 40 percent of employed Batswana in 2016 were considered poor when using the higher global poverty line and require a different set of policies for poverty alleviation than people in extreme poverty. Lastly, despite a decline in poverty under the $2.15 PPP International Poverty Line from 17.7 to 15.4 percent, the (extreme) poverty rate remains four times higher than GDP per capita would predict (Figure E.3).

FIGURE E.3 Poverty is high relative to income

$2.15 poverty and GDP per capita (2017 PPP)



Source: World Development Indicators and pip.worldbank.org

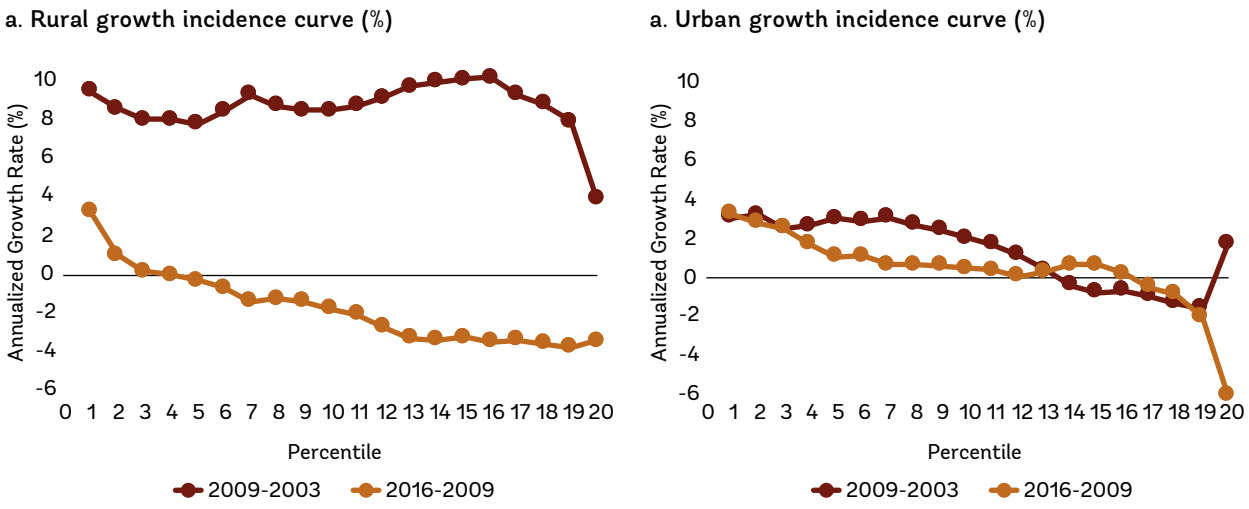
Botswana remains among the world's top 10 most unequal countries, dampening its growth potential. Consumption inequality, measured by the Gini Coefficient, decreased from 60.5 in 2009 to 54.9 percent in 2016 (using official figures). This primarily reflected pro-poor growth in urban areas, especially *cities and towns*, where the Gini declined from 59.9 to 48.7 percent, with Francistown reaching 43.4 percent. Inequality remains high in rural areas, declining less than four percentage points to 53.3 percent in 2016, with *urban villages* at 51.1 percent. However, the decline in rural inequality also reflects consumption declines among wealthier rural households. Moreover, among its structural peers[6], only South Africa and Namibia register worse inequality rates, and Botswana remains exceptionally unequal by international standards. International experience suggests that Botswana would find it hard to reach an inclusive growth path and high-income status without addressing these levels of inequality and poverty.

Poverty is increasingly concentrated in rural areas while improving in urban areas, increasing the urban-rural gap

Between 2009 and 2016, both the rural poverty rate and the share of the poor in rural areas increased, while urban poverty declined, widening the urban-rural gap. In this period, poverty in *cities and towns* and in *urban villages* declined to 3.3 and 13.7 percent, respectively. However, poverty in *rural villages* increased from

6 For Botswana, eight countries were identified as structural peers: Gabon, Georgia, Lebanon, Mongolia, Namibia, the Republic of Congo, South Africa, and Tunisia. See Appendix 1.

FIGURE E.4 Rural households fared worse than urban across the consumption distribution



Source: 2002/03 Household Income and Expenditure Survey (HIES), 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS). The variable in the horizontal axis divides individuals into *ventiles*, from lowest to highest consumption per capita.

24.4 to 26.8 percent, leaving rural poverty rates two and a half times higher than in urban areas. Although the share of all Batswana living in rural areas declined from 43 to 34.9 percent, the share of *poor Batswana* living in rural areas increased from 56.2 to 58.2 percent. While the population of Botswana (per the household survey) increased by 10.6 percent between 2009-16, the working-age population by 9.6 percent, and the under-15 population by 12.7 percent, the corresponding rural populations instead declined by 10.2, 10.4, and 9.9 percent, respectively, suggesting entire families migrated to urban areas. The economic shocks, however, resulted in more substantial rural employment declines (14 percent) than its population. Poverty increased in the remote North-West, Ghanzi, and Kgalagadi districts while declining in and around cities to the south- and northeast (Chapter 2). In terms of consumption per capita growth, rural households across the distribution fared much worse than between 2003-09 and worse than urban households (Figure E.4). The working poor were primarily employed in services (public administration and as household workers) while the share employed in agriculture declined by more than half in 2016. Approximately half of rural public administration workers were low-paying Ipelegeng workers, suggesting the working poor pushed out of agriculture and other private sectors by the 2015 shocks sought income via the Ipelegeng program (or as household domestic workers).

Droughts continue to negatively impact poor rural households. They are the second most common natural disaster to impact Botswana (Chapter 3). In 2016, almost 28 percent of Botswana's rural labor force worked in the agricultural sector, a sector whose productivity is sensitive to changes in climatic conditions, especially due to Botswana's challenges with water scarcity. In 2015 and 2019, Botswana suffered severe droughts, with another, but less severe, drought impacting villages in 2020.[7] Although drought hit most villages in 2015, it produces more damage among poorer villages where subsistence farmers entirely depend on agriculture. The 2019 drought was similar to 2015, suggesting that subsistence farmers may have again faced declines in welfare in 2019. Although there is no household survey with consumption data available to measure poverty in that year directly, the poverty projections undertaken via survey-to-survey imputations suggest an increase in poverty in 2019. However, concerns with droughts go beyond the vulnerability of subsistence farmers; Botswana's tourism depends on water-based wildlife and is considered the most important service sector export.

7 See the strong negative values of the Palmer Drought Severity Index (PDSI) in chapter 3. The PDSI is created by the Gridded Surface Meteorological (GRIDMET) at 4km resolution to show driest (-5) to wettest areas (+5).

Labor income and education remain key for reducing poverty and inequality

Labor income was the main driver of poverty reduction in urban areas between 2009 and 2016, while a decline in the share of employed adults contributed to higher rural poverty. A decomposition of changes in poverty by components of household income shows that 80 percent of the reduction in urban poverty came from improvements in labor income, with non-labor income and a higher share of adults in the household (a lower dependency ratio) also contributing. In rural areas, the decline in the share of employed adults in households outweighed the beneficial impacts of factors such as lower inequality, higher labor and nonlabor incomes, and demographic changes (a lower dependency ratio).

Social protection programs in Botswana have a significant impact. Without Botswana's social protection transfers (from 29 programs across nine ministries), the poverty rate of 16 percent in 2016 would have been almost 24 percent, and the poverty gap would have been 9.5 instead of 4.6 percent. Removing just the thirteen social assistance programs would increase the poverty headcount by nearly a third (to 22.8 percent). The primary school feeding program, which reaches approximately 269,000 children, and the old-age pension, which reaches more than 126,000 people (about 5.5 percent of the population in fiscal year 2020), have the largest impact on poverty but low levels of expenditure (Chapter 4).[8] Social protection can also contribute to human capital outcomes, resilience, and shock response. However, during the 2020 crisis, the government did not supplement existing social grants or introduce new emergency social grant programs but instead oversaw an extensive once-off emergency feeding program. It was also quick to reallocate funds and introduce wage subsidies for formally employed workers (Chapter 4).

Reducing inequality is also key and requires strengthening labor market skills, reducing public-private wage differentials, and improving educational attainment.[9] Labor market factors[10] contributed the most (35.6 percent) to inequality in 2016, followed by demographics (27.9 percent), education (25.9 percent), and location (10.6 percent). In contrast, differences in educational attainment were the most important drivers of overall inequality for other countries in the Southern Africa Customs Union. Among the labor market factors, occupation type (professionals and senior managers, which suggest differences in skills or abilities) explains 29 percent of total inequality relative to only 6 percent for labor force participation. Post-secondary education, with its high earnings, explains 24 percent of total inequality, followed by differences in age (17.4 percent) and location (10.6 percent). Unlike in other SACU countries, location increased in importance as a source of inequality in 2016, explained primarily by a divergence in inequality across regions in Botswana. Among income sources, wage income inequality was the main contributor to inequality in 2016, suggesting declines in inequality may be partially explained by smaller wage gaps.[11] Wage income accounts for 85 percent of inequality (both at the national level and for rural areas), a rate higher than the 72.3 percent average for SACU members. A marginal change in wage income inequality is estimated to change the Gini Coefficient by 5.2 percent at the national level and 8.3 percent in rural areas.

Economic growth does not support sufficient job creation

The current growth model does not support intensive and high-productivity job creation, while labor force growth continues to outpace employment growth. The government's aim of poverty elimination and high-income-country status by 2036[12] requires a significant and sustained boost in economic growth and employment and, therefore, substantial reforms. Botswana ranks in the bottom 30 percent of countries

8 For more detail on Botswana's social protection programs, see World Bank (2022c).
9 The results from a decomposition of inequality by spatial, demographic, education, and labor market dimensions, as well as separately by income sources, are used to shed light on the drivers of inequality in Southern Africa (Sulla et al., 2022).
10 Labor market factors include labor force status (whether people work or not), industry of employment, and occupation type.
11 Business income, social protection transfers, and remittances make up the rest of the income sources.
12 Government of Botswana. 2016. Vision 2036: Achieving Prosperity for All.

worldwide in terms of employment ratios (at 131 out of 187 countries).[13] Labor demand bottlenecks limit job creation, and labor supply constraints result in skills mismatches. Recent labor market data for 2016-21 shows that employment continues to grow slower than the labor force (3.3 versus 4.5 percent). As of 2022, services accounted for two-thirds of jobs[14], primarily public administration and wholesale and retail trade. The public sector[15] remains the country's largest employer, with 27 percent of total employment using international estimates (compared to a global average of 17 percent) and 47 percent of formal employment (compared to 38 percent globally).[16]

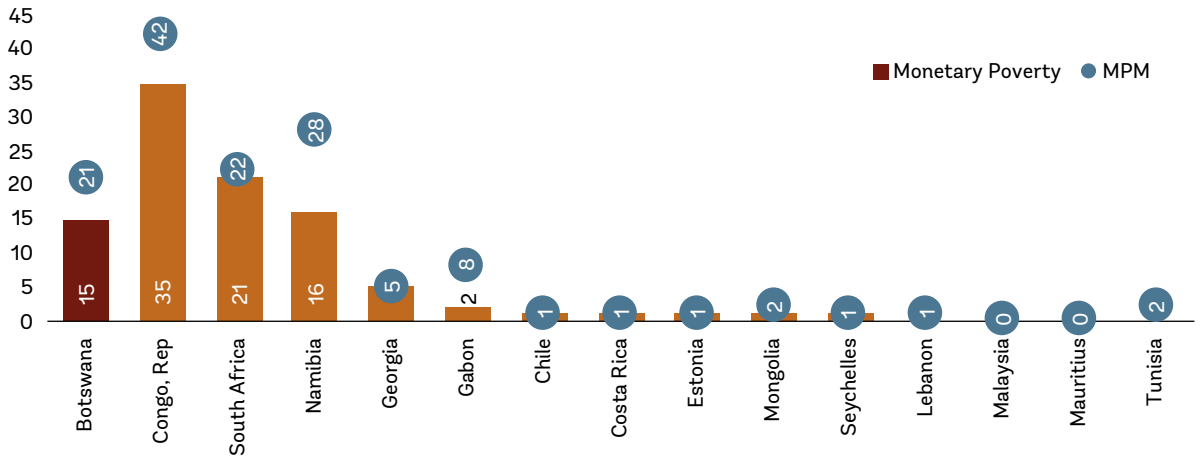
Structural unemployment continues to be high, with increasing levels in recent years, while the labor market continues to reflect substantial barriers to the inclusion of women. National unemployment is higher than in all other upper-middle-income countries except South Africa; it increased from 17.6 percent in 2016 to 22.7 percent by 2022 year-end (using comparable unemployment measures).[17] Significant rural-urban migration has deepened the problem in urban areas. Unemployment is highest in *urban villages*, among women, and among the 15-24 age group.[18] As of 2022, labor force participation rates were higher for men (69 percent) than women (59 percent). Moreover, women in the labor force earn less than men[19], account for over a third of the agricultural workforce, and own more informal agricultural businesses than men, underlining their less secure economic standing. Even though Botswana has the second-highest rate of female entrepreneurship globally, women continue to face significant challenges in the business environment, including a lack of access to finance, assets, skills, education, training, and networks.[20] Moreover, as the primary caregivers in their families, women bear the responsibility of caring for sick relatives, often at the expense of pursuing economic, educational, or training opportunities. For example, women faced more substantial negative employment impacts in 2020.

Multidimensional measures of poverty suggest faster improvements but large gaps remain

The Multidimensional Poverty Measure declined more strongly than poverty, yet further investments, particularly among rural households, are required to reach the country's structural peers. The World Bank's MPM for Botswana dropped nearly 11 percentage points, from 31.8 percent in 2009 to 21.1 percent in 2016. Rural areas experienced more than three times the deprivation rates in access to electricity (64.8 percent) compared to urban areas (19.6 percent). Similarly, nearly two-thirds of rural households did not have access to improved sanitation in contrast to 45 percent of urban households. Cross-country comparisons for Botswana show similar rates of multidimensional poverty relative to Namibia and South Africa but large gaps with other structural as well as aspirational peers (Figure E.5).[21]

13 International Labour Organization. 2023. Employment to population ratio, 15+, total (%). https://ilostat.ilo.org/data/.
14 Services account for 526,000 out of 788,000 total jobs; where total jobs includes subsistence farmers.
15 The term "public sector" includes central and local government (18.2 percent in 2022), parastatals (2.4 percent), and Ipelegeng workers (6.6 percent). It is larger than "public administration" as it also includes public wage workers in education, health, and other sectors. Ipelegeng is a workfare program for adults 18 years or older and is limited to only one-month employment.
16 Worldwide Bureaucracy Indicators dataset (version 3.0). August 2022.
https://www.worldbank.org/en/data/interactive/2019/05/21/worldwide-bureaucracy-indicators-dashboard#2
17 See Box 1.1 and Appendix 7. The official unemployment rate for Botswana in the fourth quarter of 2022 is 25.4 percent, applying the standard of the Nineteenth International Conference of Labour Statisticians (ICLS). This standard introduced a new classification for "forms of work": own-use production work (e.g., subsistence farming) is now a separate indicator and no longer counts towards employment or labor force participation. This change means that labor force statistics are no longer comparable with those of earlier years. To maintain comparability with official unemployment rates from 2002 to 2016, the previous ICLS standards were applied here, giving an unemployment rate of 22.7 percent in 2022.
18 Among Botswana's three strata, unemployment was 26.3 percent in *urban villages*, 21.8 in *rural villages*, and 15.8 percent in *cities and towns*. It was 25 percent for women versus 20.5 percent for men in 2022, and 43.6 percent among the 15-24 age group versus 20.9 and 10.9 percent for the 25-54 and 55-64 age groups, respectively.
19 Botswana's gender pay gap remains statistically significant after controlling for differences in human capital accumulation, age, geographic location, and sector of work. Over the last decade, on average, male earnings have been 39 percent higher than female earnings. On the other hand, *Inequality in Southern Africa* (World Bank, 2022) shows that when occupation is also taken into account, the earnings gap in 2016 is estimated to be around 24 percent.
20 Rudhumbu, du Plessis, and Maphosa (2020); Mastercard (2022); and forthcoming World Bank Gender Assessment (2024).
21 The MPM takes into account different dimensions of poverty and provides a way for policymakers to monitor improvements in this broader concept of welfare.

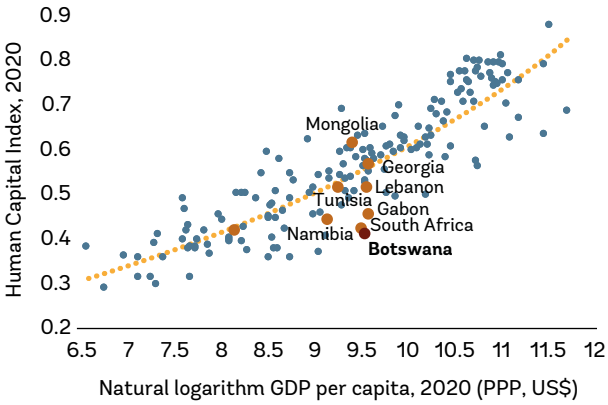
FIGURE E.5 Botswana faces high levels of multidimensional poverty relative to some peers



Source: World Bank Global Monitoring Database (GMD). Multidimensional Poverty Measure, April 2023. https://www.worldbank.org/en/topic/poverty/brief/multidimensional-poverty-measure

Despite advancements in education and health, Botswana's Human Development results are disappointing for a country with its income and characteristics. The Human Capital Index (HCI)[22] slightly increased from 0.37 in 2010 to 0.41 in 2020, placing it just above the average HCI score for Sub-Saharan Africa (0.40) and considerably lower than the average for Upper-Middle-Income Countries (0.56) (Fig E.6). This indicates that a Botswana child is only 41 percent as productive as an adult as he could have been had he received complete education and full health.[23] Moreover, the Human Opportunity Index (HOI) also shows that children in Botswana face stark differences in life prospects depending on their circumstances at birth and during their early years (Chapter 3). Access to basic goods and services is highly relevant to children's development, yet access remains largely unequal between urban and rural areas and far from universal in some cases. Household per capita income, dwelling location, and parental education are the most important factors determining whether a child has access to essential childhood opportunities.

FIGURE E.6 Its Human Capital Index is low relative to its GDP per capita, 2020



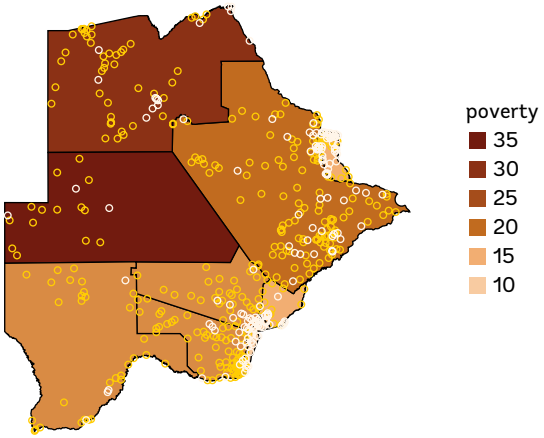
Source: Human Capital Project (2020). *Note:* The Human Capital Index is designed to capture the amount of human capital a child born today could expect to attain by age 18. The HCI is higher on average in rich countries than poor countries and ranges from around 0.3 to around 0.9. The units of the HCI have the same interpretation as the components measured in terms of relative productivity.

Between 2012 and 2019, electrification was gradual and remained unequal across villages, with more robust progress concentrated around Gaborone and Francistown (Figure E.7).[24] The electricity shortage in 2015 seems to have negatively impacted the poorest 40 percent of villages, which had estimated electrification rate declines in that year. Poverty rates among rural households also increased in 2016. In 2019, despite growth in the estimated electrification rate across all village poverty deciles, the gap between the poorest and wealthiest villages in terms of electrification remained large.

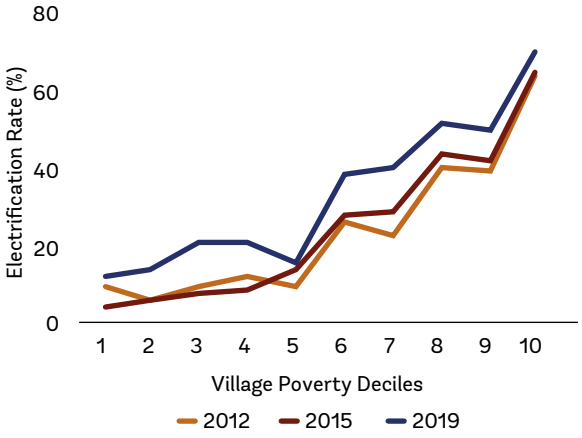
22 The Human Capital Index (HCI) measures the expected productivity as a future worker of a child born today. It is a function of education and health, underscoring their importance for the productivity of people. It ranges between 0 and 1, where 1 indicates the benchmark of complete education and full health.
23 World Bank. World Development Indicators.
24 To estimate electrification rates across Botswana beyond the latest available census (2011), high-res Visible Infrared Imaging Radiometer Suite (VIIRS) satellite data from the High-Resolution Electricity Access (HREA) project was used.

FIGURE E.7 Electrification rates have improved more in the northeast and southeast, while gaps between rich and poor villages remain large

Electrified & Non-Electrified village in 2019



Electrification rate by 2011 Village Poverty Deciles



Source: World Bank calculations using Min and O'Keeffe (2021) dataset for electricity access and 2009/10 BCWIS for poverty by district. *Note:* White circles represent electrified villages; yellow circles represent unelectrified villages.

Renewing pathways for poverty and inequality reduction

Renewed policy efforts will be needed for Botswana to reach its goals of poverty eradication and high-income status. The suggested policy considerations are summarized in four areas. First, accelerating inclusive economic growth based on dynamic private-sector-led job creation is crucial to increasing the income of people in poverty. Second, further investments in quality human capital among the poor are essential to improve welfare and boost workforce productivity. Third, additional investments in infrastructure and shock-responsive systems, especially in rural areas, are required to better connect and protect the most vulnerable population. Fourth, strengthening data is critical for evidence-based policy design that provides better outcomes for all.

Accelerating inclusive economic growth and private-sector-led job creation

For stronger poverty and inequality reduction, Botswana needs to transition towards a more diversified and inclusive growth model that supports private sector job creation and is more resilient to shocks. The country's fiscal vulnerabilities, weak economic diversification, and high inequality, plus the declining ability of economic growth to reduce poverty, require a competitive, export-oriented private sector that maximizes economic inclusion. The Country Economic Memorandum (World Bank, 2024a) proposes three guiding criteria to help select priority sectors more systematically. The sectors should be: 1) labor–intensive and tradable to create productive jobs for more people and foster innovation; 2) globally competitive given Botswana's small and undiversified economy; and 3) strategic, such as Botswana's potential in renewable energy, base minerals, and eco-tourism. Promoting competition and expanding formal and informal employment opportunities will also require reducing the excessive public sector footprint that creates barriers to entry, discourages diversification, and causes significant economic inefficiencies. It will require facilitating external trade in goods and services and implementing adequate foreign investment rules to improve competitiveness and generate good jobs.

As structural transformation takes time, it will be important to boost the productivity of farm and non-farm household enterprises and create jobs for the large unskilled population. Policies that could boost farm productivity for the 10 percent of farm self-employed include investments in agricultural research and extension, irrigation (given the high vulnerability to droughts), and rural infrastructure, and efforts to bring poor farmers into the value chain more effectively. Livestock-related services need to reach the small-scale

sector and poor subsistence farmers so that they can also benefit from Botswana's niche value chains in beef and livestock.[25] For non-farm household enterprises, policies to boost productivity include increasing access to credit (and building skills; see next section). The IFC Country Private Sector Diagnostic estimates the financing gap of small enterprises to be 19 percent of GDP. The limited ability to access available credit limits the ability of the sector to create employment.

Improving human capital particularly for the poorest

Improving the welfare of the poor requires substantial improvements in human capital to increase the productivity of the labor force. The country needs to redouble efforts toward more efficient investments in health and education to enhance the productivity of the current and next generation, particularly the poor.[26] The quality of education services is an important constraint, requiring policies addressing the coordination of service delivery amongst several Ministries, the shortage of classrooms and learning materials, giving teachers adequate training and coaching in the classroom, and fine-tuning education assessment systems to track progress and facilitate corrective action.[27] The allocation of resources across education and training subsectors needs to be more pro-poor since the poor learn less and are more likely to drop out of education and training. As the data shows, Botswana's high degree of childhood inequality of opportunity constrains the upward mobility of the poor.[28] For health challenges among the poor, policies should focus on strengthening the quality of health service delivery, including improving clinical guidelines and protocols, enhancing staff core competencies, and improving the availability of essential medicines.[29]

Strengthening skills training and qualifications and better coordinating and monitoring employment programs are also crucial for boosting the productivity of poor and vulnerable workers. The many existing technical programs and trainings for skills development are fragmented and uncoordinated and lack systematic evaluations of interventions. To better support youth transitions into productive (formal or self-) employment also requires stronger coordination of programs. This coordination requires significant collaboration across ministries and better partnerships with the private sector. In addition, the focus needs to be on skills with a high growth potential, such as digital and green skills. Even in urban areas, a lack of job creation and skills mismatches hamper the ability of disadvantaged households to generate income, and high wage inequality fuels overall inequality.

Investing in infrastructure and shock-responsive systems to connect and protect

Increasing access to quality infrastructure and basic services increases the productive capacity of the most vulnerable population. Large gaps remain in access to electricity and sanitation between rural and urban areas and between poor and non-poor households. Where access is high, such as for water, the quality of services is the important constraint. Promoting the inclusion of the rural population requires making connectivity (electricity, digital) affordable and reliable. To reach its goal of universal access to electricity, Botswana will need to mainstream off-grid solutions to deal with the deep spatial inequalities. Workers need support to develop new skills to reap the benefits of digitization. Investments to improve water service quality and increase access to sanitation are also priorities in rural areas, but also in urban areas as urbanization

25 For a discussion of sustainable livestock value chains, see Syed and others (2022). World Bank (2023) also highlights that Botswana's livestock smallholders, lacking the scale to access large markets, could benefit from collaboration with Namibia on veterinary services, traceability, transboundary animal disease surveillance and control, and research and development.

26 Botswana's Human Capital Index is low relative to its GDP and despite high public expenditure in health and education. Nevertheless, a fiscal policy analysis via the Commitment to Equity (CEQ) methodology showed education and health transfers contributing strongly to inequality reduction in 2009/10 (World Bank, 2022; Lusting and Higgins, 2016).

27 See the Botswana Systematic Country Diagnostic Update (World Bank, 2023)

28 See Human Opportunity Index (chapter 3) while Sulla et al. (2021) shows that inherited circumstances account for 20 percent of Botswana's inequality. In addition, the forthcoming Africa Poverty and Inequality Report highlights intergenerational mobility in education for African countries is well below that of the developing world on average.

29 A forthcoming Public Expenditure Review in Health will dive more deeply into policies to strengthen health outcomes.

continues. Per the Updated Systematic Country Diagnostic (SCD Update): "The interlinked challenges of water scarcity, limited wastewater treatment, the under-provision of sanitation services, and malnutrition continue to undermine people's health, limit the development of their skills, and hinder their productive participation in the labor force" (World Bank, 2023).

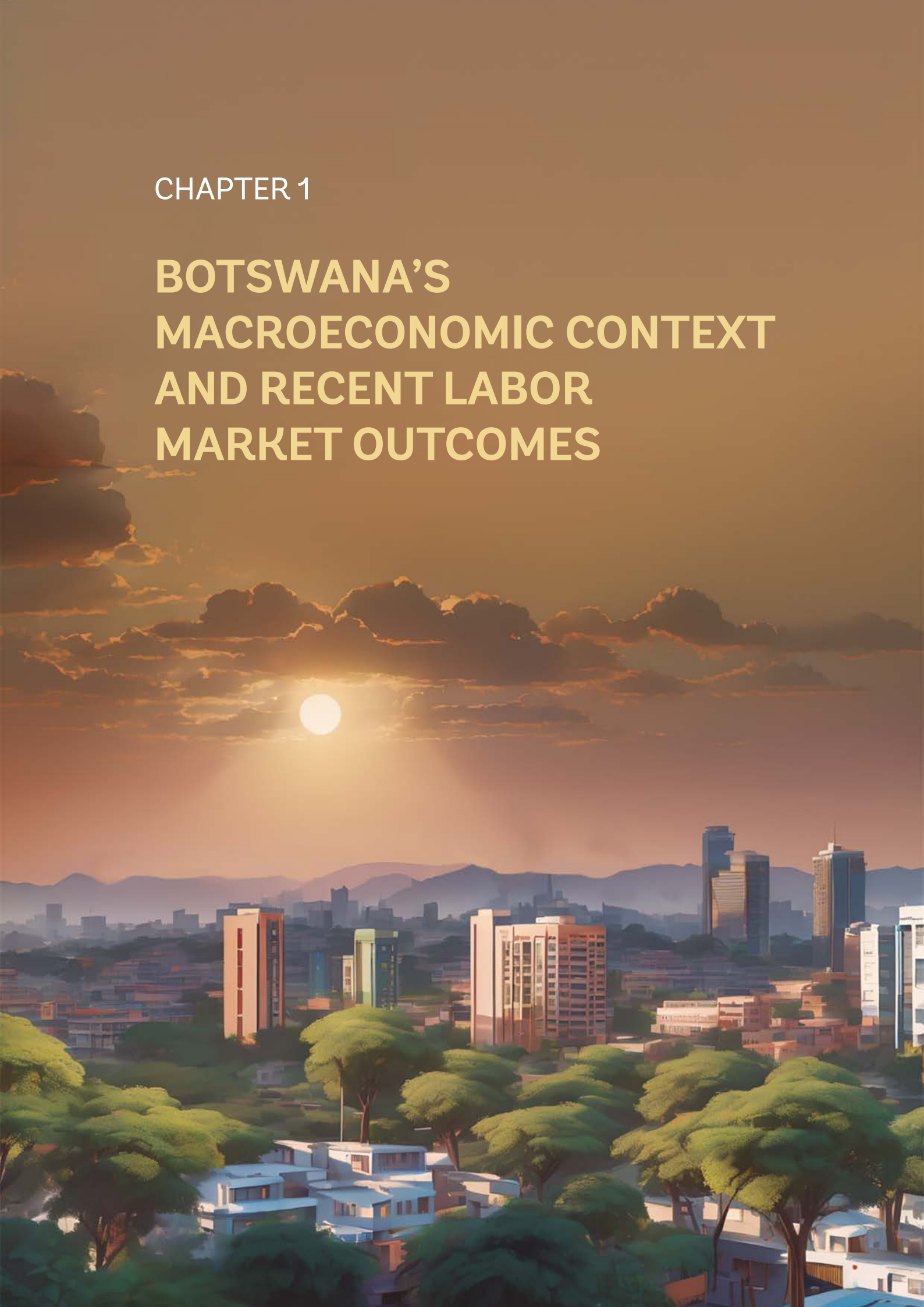
Investments in the capacity of social protection systems to respond to shocks while improving the targeting of safety net programs protect the poorest. Although Botswana responded better on some dimensions to the COVID-19 pandemic than many other African countries, the pandemic exposed significant gaps in its social protection system's shock responsiveness and resilience. Botswana needs to develop productive and shock-responsive social protection systems to mitigate shocks (including droughts and pandemics) and disaster vulnerability. Despite Botswana's social protection programs' significant impact on reducing poverty in 2016, they were insufficient to assist many poor rural households. Uninsured risks, such as from the 2015 drought, can trap families in a cycle of poverty. Mitigating fragility helps build household resilience to avoid families falling back into poverty. The social protection delivery system also needs to identify poor and vulnerable households. Since the pandemic, Botswana has embarked on reforms to strengthen the administration of social assistance, including developing a unified social registry. Still, reforms will need to be broadened and deepened. A fully operational social registry would significantly improve the targeting of human capital investments. In addition, the government also took important steps towards developing and piloting a proxy means test for enhanced determination of eligibility for poverty-focused programs. The government should continue its plan to roll out this tool to target social assistance beneficiaries – starting with the Destitute Persons Programs.

Strengthening data for evidence-based policy design

Improvements in statistical data collection and use, data infrastructure, and monitoring and evaluation systems are important for transparency, accountability, and robust evidence-based policy design. Tracking progress on poverty reduction requires frequently collecting reliable quality data on human capital, livelihoods, and welfare. The last available income and expenditure survey was collected in 2015/16. Fortunately, a new survey is expected to go into the field this year (2024/25), but a commitment to reduce these data gaps is needed. More broadly, investing in data is required to make informed public policy decisions and to track progress (or lack thereof), such as for malnutrition trends. The development and implementation of Botswana's National Development Plans require timely, reliable, high-quality data across sectors, the modernization of the National Statistical System, the integration of data systems, and strengthened monitoring and evaluation systems.

CHAPTER 1

BOTSWANA'S MACROECONOMIC CONTEXT AND RECENT LABOR MARKET OUTCOMES



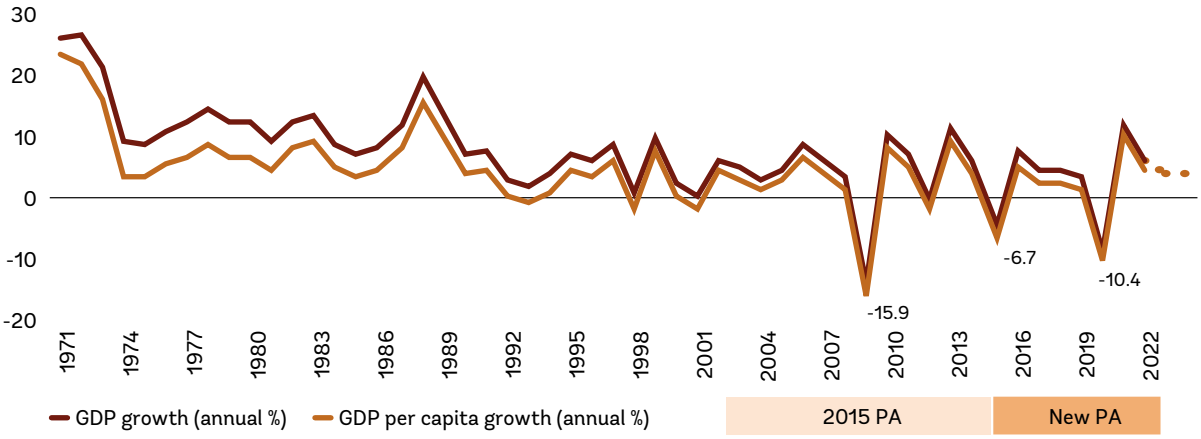
1.1 MACROECONOMIC CONTEXT AND GROWTH SLOWDOWN

Botswana's history of strong growth and low corruption has helped catapult it from among the world's poorest countries to a stable upper-middle income country. Botswana was one of the world's fastest-growing economies from independence (1966) to the late 1990s, with average annual GDP and GDP per capita growth above 10 and 7 percent, respectively. It is a large, sparsely populated, land-locked country in Southern Africa with significant mineral (diamond) wealth and a relatively small population of around 2.3 million people (2022).[30] The fast economic growth was due to the discovery of one of the world's largest diamond deposits, turning Botswana into one of the largest diamond exporters. The country also maintained stability thanks to sustainable macroeconomic and fiscal policies and repeatedly ranked among the top African performers across many governance indicators.

Strong economic growth and significant fiscal revenues are reliant on diamonds. Agriculture remains a low-productivity sector largely dominated by subsistence farming. Some manufacturing and construction activities are growing, but they primarily serve the domestic market and account for around 15 percent of GDP. Services are growing the most, but public administration has the largest share. Overall, the mining sector remains the most important for growth, with diamonds representing around 90 percent of total goods exports[31] and accounting for over a third of overall revenues. However, the extractive industry employs few people; thus, its growth does not directly reach many households. The significant revenue inflows led the authorities to establish the Pula Fund in 1994 to preserve part of the income for future generations. The government has invested diamond revenues to improve infrastructure, health, and education. Since independence, significant expansions have occurred in the road network, in access to electricity, water, and sanitation, and in primary school enrollment, with substantial improvements in life expectancy, mortality rates, and nutrition.[32]

Economic growth has slowed since 2010 and become more volatile. During 2002-2009, the period of poverty reduction covered by the 2015 Poverty Assessment, GDP and GDP per capita grew at an annual average rate of 2.7 and 0.7 percent, respectively. This represented strong GDP and GDP per capita growth of 5 and 3 percent, respectively, before the 2009 Global Financial Crisis. Although not as high as in earlier decades, this strong

FIGURE 1.1 Economic growth has slowed and become more volatile

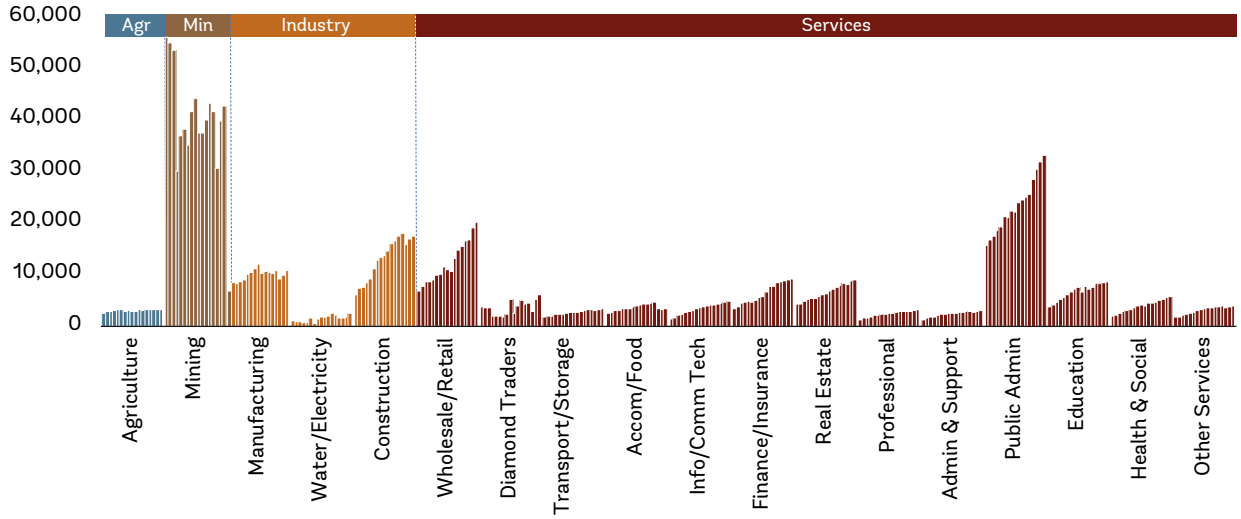


Source: World Development Indicators (database), databank.worldbank.org/source/world-development-indicators, version 7/25/2023

30 The preliminary results of the 2022 Population and Housing Census shows an estimated population of 2,346,179.
31 Followed by nature-based luxury tourism, which attracted more than 330,000 international visitors in 2019 (21.3 percent of the total).
32 For example, the road network grew from under 10 kilometers at independence to 32,564 kilometers in 2021; coverage rates in water and electricity reached 92 percent and 72 percent in 2020, respectively, from about 68 percent and under 10 percent in the 1980s; and universal enrollment in primary education was achieved around 1997.

FIGURE 1.2 Wholesale and retail trade has seen strong growth but remains far behind mining and public administration value added

Value Added by Type of Economic Activity 2006-2022 (constant 2016 prices, P million)



Source: World Bank calculations using Statistics Botswana (2023b).

growth still raised overall incomes and delivered good economic and welfare outcomes. Since then, the country has faced recessions in 2012, 2015[33], and 2020 (COVID-19 shock), highlighting that the reliance on minerals and the public sector makes the economy vulnerable to external shocks. GDP and GDP per capita between 2009-15 grew at an annual average of 2.1 and 0.1 percent, respectively, and between 2015-21 at a still-low annual average of 2.4 and 0.4 percent, respectively (Figure 1.1). GDP growth rebounded strongly after each recession in the last 15 years, yet overall average growth has remained relatively low and more volatile.

The 2015 recession was caused by both external and domestic factors and highlighted the weakness of the diamond sector-led development model. A decline in the global demand for diamonds began in late 2014, linked to the slowdown in China, that, like the 2008/09 global financial crisis, led to a decline in the real prices of rough diamond exports and lower production. Mining as a share of value added declined sharply from 39 to 26 percent during 2009, and despite a rapid GDP recovery in 2010, the share has remained lower than pre-2009. The 2015 crisis led to a further decline in the share of mining GDP. Other mineral exports also collapsed owing to reduced international prices and the closure of the largest copper-nickel mine in 2016. Although wholesale/retail, construction, and manufacturing were all negatively impacted in 2015, manufacturing (which has the fifth highest value added) has not fully recovered to 2014 levels (Figure 1.2).

The challenges of 2015 were exacerbated by a major regional drought plus electricity and water shortage crises that limited private sector growth. The electricity crisis stemmed from problems commissioning a major power plant (Morupule B) plus service provision inefficiencies, resulting in Botswana having to import 39 percent of its electricity needs. Furthermore, the termination of a long-term power purchase agreement with a major supplier forced the country to import electricity at higher rates and without a secure supply. This contributed to shortfalls, significant fiscal transfers to the energy company, and escalating tariffs. The water supply was affected by a regional drought and aggravated by significant evaporation levels. Additionally, Botswana's scattered population and the spatial disconnect between water sources and population centers contributed to increased water distribution costs.

33 The last available income and expenditure household survey for this report's poverty analysis was collected in 2015/16.

The COVID-19 pandemic and global lockdowns resulted in the 2020 recession, but Botswana's pace of growth had already slowed due to increased competition from synthetic diamonds, higher local production costs, and low job creation. Weakening global demand for diamonds and another drought in 2019 had already led to a growth slowdown from 4.2 percent in 2018 to 3.0 percent in 2019, even before the pandemic hit. The global restrictions on economic activity from the 2020 COVID-19 pandemic further weakened the external demand for diamonds, while travel restrictions affected the tourism sector. These impacts, plus the domestic lockdown, led to a strong economic contraction of -8.7 percent in 2020 (-10.4 percent for GDP per capita).

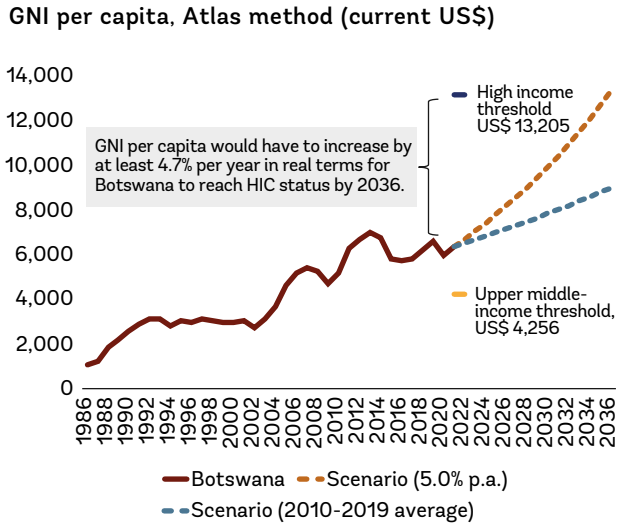
The shocks that hit the economy between 2015 and 2020 highlighted the weak economic diversification. The service industry grew as mining declined during the 2015 and 2020 shocks, mainly due to the proliferation of small, low-productivity firms primarily serving the small domestic market. Consequently, the shift towards services has not led to significant economic growth or employment opportunities. Instead, most emerging economic activity has been in non-tradable goods and services, with limited growth in tradable industries beyond mining. Sectors such as wholesale and retail trade, hospitality, and food service have been more dynamic, but part of their growth is closely tied to downstream diamond industries[34] as well as nature-based tourism. While there has been some diversification, there has been little improvement in productivity and a persistent long-standing role of the public sector[35] (Figure 1.2).

Despite the country's efforts to invest in infrastructure, health, and education, private sector participation in nonmineral exports and transformative sectors has been limited, restricting economic growth, diversification, and job creation. The non-mining private sector has yet to attain the level of expertise, training, and efficiency that characterizes the diamond industry. Even though Botswana has adopted multiple policy instruments to encourage private sector investment (including prudent macroeconomic management and efforts to create a well-functioning market environment), the large participation of the government in the economy has stifled private sector investment, leading to minimal economic contributions from non-mining sectors and entrenched inefficiencies in the economy. In addition, efforts to lure foreign direct investment are hindered by high production costs, a scarcity of skilled labor, contradictory policies (for example, between openness versus protectionism), and the country's landlocked position.

The government's aim of high-income-country status by 2036 requires a significant and sustained boost in economic growth, but Botswana still performs better than most of its structural peers. Botswana is considered an upper middle-income country based on its Gross National Income per capita of $6,940.[36] Assuming the threshold for high-income country status remains the same, Botswana's GNI per capita would have to grow 4.7 percent per year over the next 14 years for the country to reach high-income status by 2036 (Figure 1.3).[37] In comparison, before the COVID-19 pandemic, Botswana's GNI per capita grew at 3.1 percent on average between 2011 and 2019, or at 2.3 percent for the entire 2011-21 decade. GDP growth in recent years has also been slow for many countries considered Botswana's structural peers (Figure 1.4; Appendix 1). Botswana's strong growth throughout the 1990s and early 2000s resulted in one of the highest incomes among its structural peers. Over the past decade, Botswana has surpassed the GDP per capita levels of South Africa, a regional peer and Botswana's main economic partner. However, its GDP per capita of $7,000 is below the average for upper middle-income countries ($10,055 constant US$ 2015) in 2021.

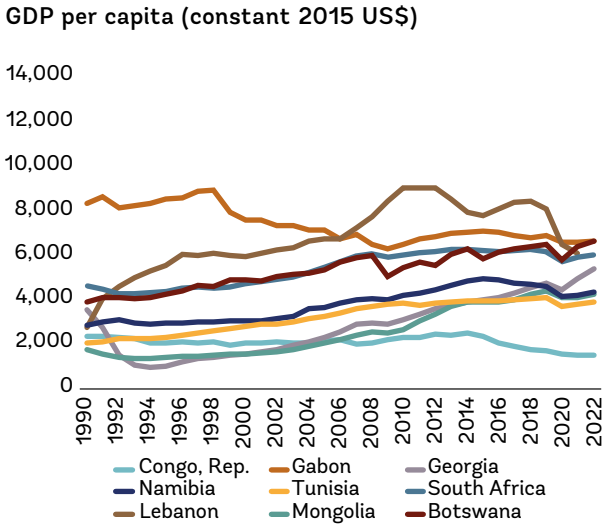
34 The relocation of the Diamond Trading Company International from the United Kingdom to Botswana in 2012 had a considerable impact on the wholesale sub-sector.
35 The public sector includes central and local government, parastatals, and the Ipelegeng workfare program, therefore it is larger than just the size of the "public administration" economic activity.
36 For fiscal year 2023, upper middle-income economies are defined as those with a GNI per capita between $4,256 and $13,205, calculated using the World Bank Atlas method; high-income economies are those with a GNI per capita of $13,205 or more.
37 The GNI would have to grow at a yearly 6.1 percent over 14 years for Botswana to reach HIC status by 2036. The new 2022 Population Census shows the population growing at an annualized 1.4 percent (rather than 1.9 percent in the previous census).

FIGURE 1.3 Reaching high-income status requires a significant, sustained boost in economic growth



Source: World Bank calculations using World Development Indicators.

FIGURE 1.4 GDP per capita is higher than among structural peers but below the UMIC average



Source: World Development Indicators, version 7/25/2023.

Botswana faces a fast-changing local and global context characterized by growing challenges and risks, but also fresh opportunities. The country faces increasing international uncertainty, continued volatile commodity prices, high inflation and interest rates, revamping global value chains, geopolitical transformation, and protracted conflicts. South Africa has faced slow growth for the last 15 years, negatively impacting Botswana's economy, while droughts and floods continue to be a challenge. However, the Updated Botswana Systematic Country Diagnostic (World Bank 2023) highlights how several global trends, while adding to the challenges, offer novel opportunities. For example, the SCD Update highlights that Botswana could build on its potential comparative advantages in the areas of renewable energy, exports of battery minerals, livestock value chains, and ecotourism.

1.2 RECENT LABOR MARKET TRENDS

Since 2009, job creation has not matched the growing labor force. Between 2003-2009, a period of strong poverty reduction, employment growth outpaced labor force growth by 1.2 percentage points (Table 1.1). Even though both employment and labor force growth slowed between 2009 and 2016, job creation was not at par with the growing labor force (1.8 percent vs. 2.0 percent, respectively). Recent labor market data for 2016-21 shows that employment continues to grow at a slower rate than the labor force (3.3 versus 4.5 percent). Figure 1.5 shows that the labor force participation rate (for the population 15 years or more) has been generally increasing since 2009, whereas the employment rate passed 50 percent in 2016 but has declined a percentage point to 49.2 percent in 2021 and 2022.

The country's current growth model does not support intensive, high-productivity job creation. Botswana ranks in the bottom 30 percent of countries worldwide in terms of employment ratios (at 131 out of 187 countries).[38] Labor demand bottlenecks limit job creation, and labor supply constraints result in skills mismatches. A context of low competition, high input costs, an uncertain regulatory environment, and skills mismatches poses structural constraints to private sector job creation. The economy heavily depends on

38 International Labour Organization. "ILO Modelled Estimates and Projections database (ILOEST)" ILOSTAT. Accessed October 10, 2023. https://ilostat.ilo.org/data/. Employment to population ratio, 15+, total (%).

TABLE 1.1 Labor force growth is outpacing employment growth
Annualized growth in employment and the labor force (%)

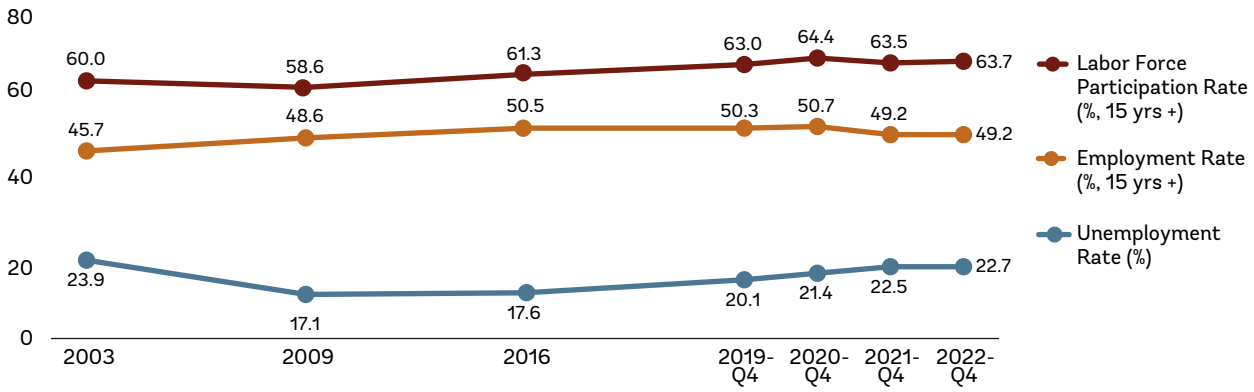
	Labor Force	Employed
2002-2009	2.7	3.9
2009-2016	2.0	1.8
2016-2021	4.5	3.3

Source: World Bank calculations using 2002/03 BHIES, 2009/10 BCWIS, 2015/16 BMTHS, and 2021-Q4 QMTS (18th ICLS standard).

diamonds and the public sector, with much of the private sector playing a peripheral role. Job creation up to 2016 was driven by public sector expansion. Although private sector job creation has grown stronger in more recent years, these tend to be jobs in low-productivity, non-tradable services. The public sector remains the country's largest employer, with 27 percent of total employment using international estimates (compared to a global average of 17 percent) and 47 percent of formal employment (compared to 38 percent globally).[39]

Botswana continues to experience high structural unemployment, with increasing levels in recent years. National unemployment is higher than in all other upper-middle-income countries, except for South Africa; it increased from 17.6 percent in 2015 to 22.7 percent by 2022 year-end (using comparable unemployment measures, see Box 1.1 and Appendix 7). Even though unemployment was traditionally a rural phenomenon, significant rural-urban migration has shifted part of the problem into urban areas. Unemployment is highest in *urban villages*, among women (25 percent versus 20.5 percent for males in 2022), and among the 15-24 age group (43.6 percent versus 20.9 and 10.9 percent for the 25-54 and 55-64 age groups, respectively). Between 2009 and 2016, *urban villages* saw an increase in employment and a drop in unemployment. On the other hand, households in *rural villages* experienced declining labor force participation and employment rates and increasing unemployment in 2016 amid a drought and electricity crisis. The most recent six-year period shows a decline in the employment rate for both *urban* and *rural villages* and a surge in unemployment, reaching 26.3 and 21.8 percent, respectively, in 2022 (Figure 1.6). *Cities and towns* also experienced an increase in the unemployment rate, from 13.3 in 2016 to 15.8 in 2022, as more people entered the labor force while employment rates remained flat. After controlling for differences in education, age, and gender, the probability of being employed is higher in *cities and towns* relative to *urban and rural villages*. In 2022, workers in *urban villages* were 25 percent less likely to be employed than workers in *cities and towns*, higher than the 23 percent estimated in 2016 (Appendix 2). Workers in *rural villages* were 10 percent less likely to be employed than workers in *cities and towns*, holding all else constant.

FIGURE 1.5 Labor Market Trends, 2002-2021Q4 (%)



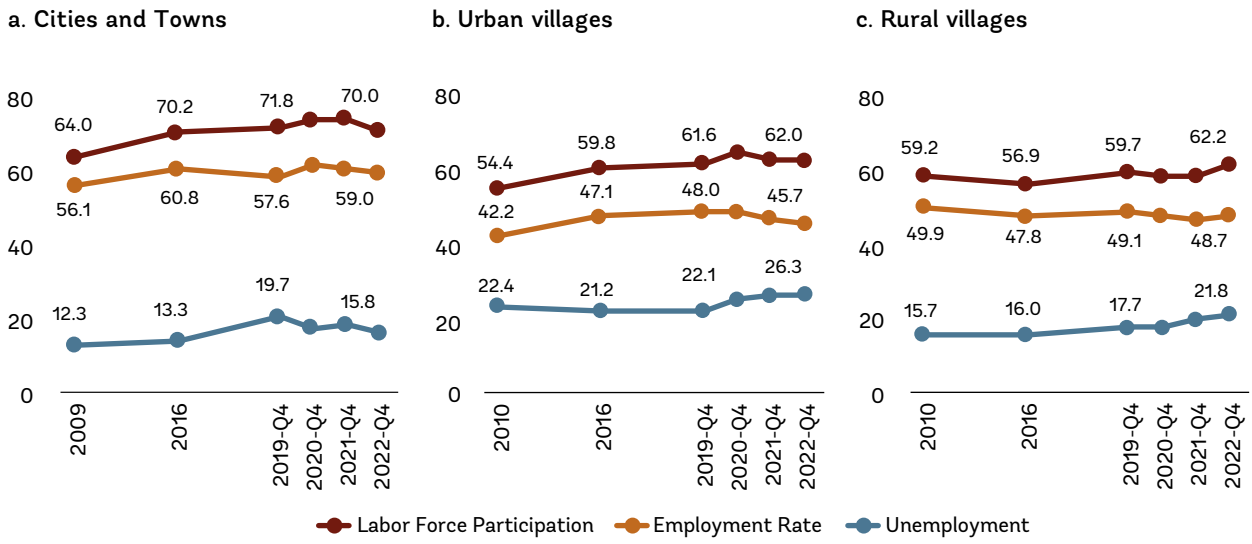
Source: World Bank calculations using the 2002/03 BHIES, 2009/10 BCWIS, 2015/16 BMTHS, and QMTS (various years).

39 Worldwide Bureaucracy Indicators dataset (version 3.0). August 2022. https://www.worldbank.org/en/data/interactive/2019/05/21/worldwide-bureaucracy-indicators-dashboard#2

The labor market continues to reflect substantial barriers to the inclusion of women in Botswana. As of 2022, labor force participation rates were higher for men (69 percent) compared to women (59 percent), while unemployment was 4.5 percentage points higher among women (as mentioned earlier). After controlling for differences in education, age, and geographic location, men were 32 percent more likely to be employed than women in 2022 (Appendix 2). Moreover, women in the labor force earn less than men, account for over a third of the agricultural workforce, and own more informal agricultural businesses than men, underlining their less secure economic standing. Men are 40 percent more likely to be wage workers, while women are 58 percent more likely to be unpaid family workers. In rural areas, nearly 1 out of 3 men are wage employees relative to only 16 percent of women. While men control the high-value agriculture livestock sector, women in the sector own more chickens. Despite having more arable land, women are unable to exploit it due to limited access to the required inputs to develop the land. Even though Botswana has the second-highest rate of female entrepreneurship globally, women continue to face significant challenges in the business environment, including a lack of access to finance, assets, skills, education, training, and networks.[40] Moreover, as the primary caregivers in their families, women bear the responsibility of caring for sick relatives, often at the expense of pursuing economic, educational, or training opportunities.

The COVID-19 pandemic had a worse employment impact in urban villages and among women and youth. Botswana's employment survey for workers employed before the pandemic estimates that over 67 thousand people lost jobs or businesses and 58 percent of these losses were female jobs. Moreover, job/business loss was more prevalent among the 25-29 age group and in *urban villages* (53 percent relative to 30 percent in *rural villages*). By the end of 2020, only 4 percent of workers who lost a job were able to find work; of these, 70 percent were male. Approximately 19 thousand people found jobs during the COVID-19 outbreak, of which nearly 77 percent were women and 72 percent were in education or public administration. Nonetheless, more than a third of employees were hired in the temporary workfare Ipelegeng program that offers low-paying jobs. The program is run by local governments and is meant as an intervention to temporarily combat poverty and unemployment.

FIGURE 1.6 Labor Market Trends, 2010-2022Q4 (%)



Source: World Bank calculations, using 2009/10 BCWIS and 2015/16 BMTHS (Statistics Botswana 2013, 2018), and QMTS (Statistics Botswana 2019a, 2019b; 2020a, 2020b; 2021; 2022). *Note:* QMTS employment figures are adjusted to include subsistence farmers (18th ICLS standard).

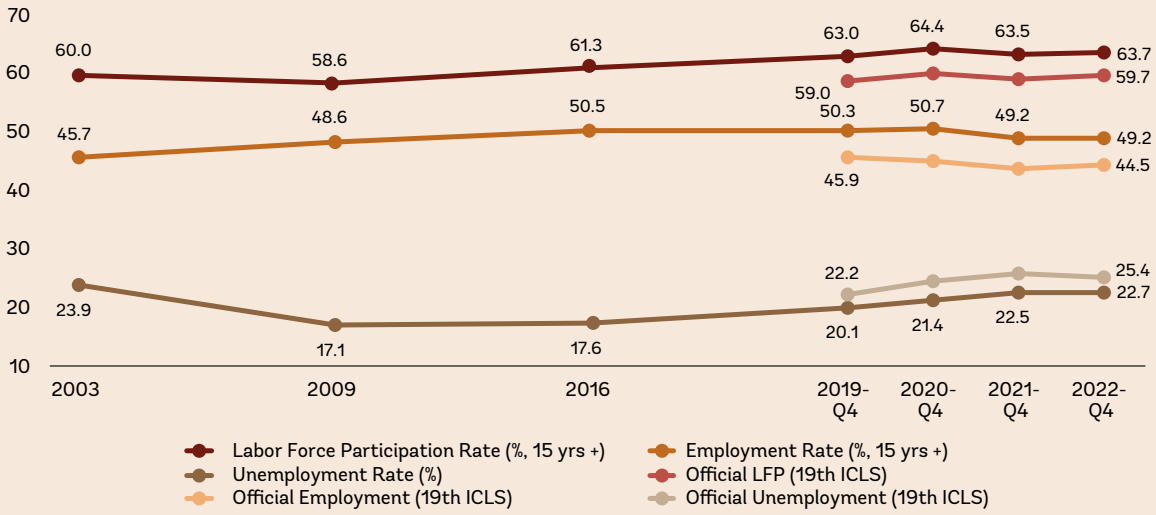
40 Rudhumbu, du Plessis, and Maphosa (2020); Mastercard (2022); and forthcoming World Bank Gender Assessment (2024).

BOX 1.1 Comparable labor market statistics

Botswana's employment and unemployment statistics and their trend over time vary depending on which international standard is applied. Since the launch of the first Quarterly Multi-Topic Survey (QMTS) in quarter 3 of 2019, Statistics Botswana has been applying the new international definition of employment in its official labor market statistics, causing a break with previous official statistics. The comparison of employment and unemployment statistics over time requires the application of the same definition across the entire time period.

The labor market statistics published by Statistics Botswana in 2002/03, 2009/10, and 2015/16, applied the standard of the Eighteenth International Conference of Labour Statisticians (ICLS), while the statistics published in the QMTS surveys in 2019, 2020, 2021, and 2022 all applied the Nineteenth ICLS standard. The new standard introduced a new classification for "forms of work": own-use production work (e.g., subsistence farming) is now a separate indicator and no longer counts towards employment or labor force participation. In other words, subsistence farmers that do not sell the majority of their production are no longer considered employed. The current statistics are not inaccurate per se, they are in line with new international definitions from ILO, but they are not comparable to the earlier data. To maintain comparability with official unemployment rates from 2002 to 2016, the previous 18th ICLS standards were applied throughout the poverty assessment. A concrete result of this is that the current official unemployment rate for Botswana in 2022-Q4 (considering the labor force as 15 years or above) is 25.4 percent, based on implementing the 19th ICLS standards, while it is 22.7 percent using the 18th ICLS standards (see Figure B1.1). The comparable data shows that the labor force participation rate has been increasing since 2009, while the employment rate is relatively stagnant. Moreover, unemployment has been continuously increasing since 2010, including between 2021 and 2022.

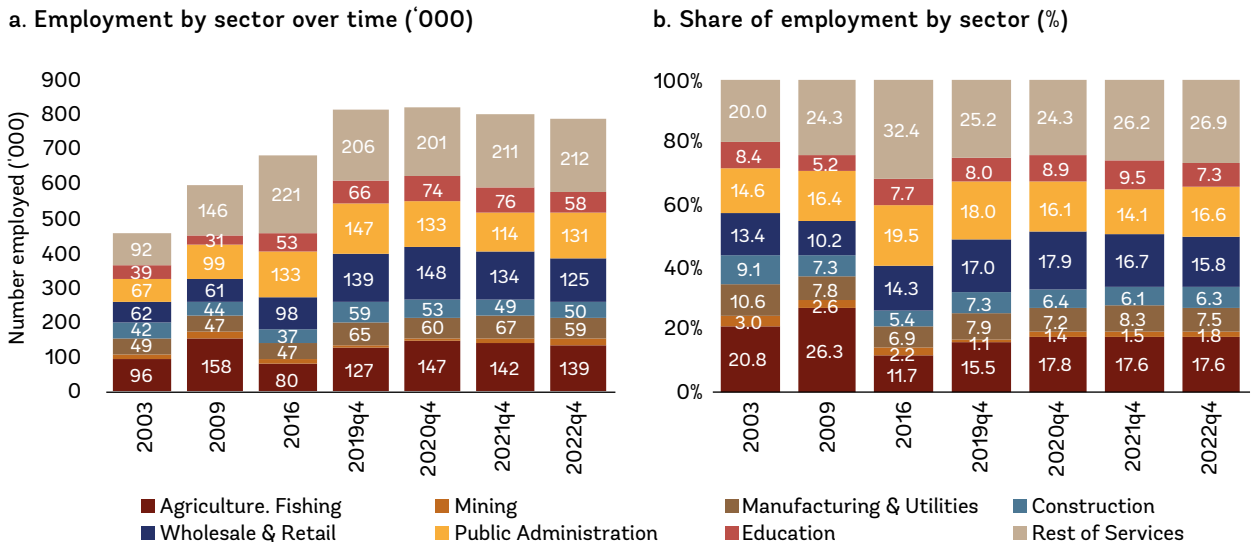
FIGURE B1.1 Comparable labor force statistics show increasing labor force participation and unemployment rates, while employment rates stagnate



See Appendix 7 for more information.

Employment in 2022 remains concentrated in services, primarily public administration and wholesale and retail trade, while agricultural employment has increased since 2016. Employment growth between 2009 and 2016 was almost entirely due to service sector growth, primarily public sector expansion. More recently, between 2016 and 2022, 56 percent of employment growth came from the agricultural sector, 25 percent from industry, and 20 percent from the services sector, while employment declines in mining contributed a negative 1 percent. As of 2022, services accounted for two-thirds of jobs (526,000 out of 788,000 total jobs, where total jobs include subsistence farmers). The 2015 drought may have forced nearly 80 thousand workers out of agriculture and into services between 2009 and 2016 (Figure 1.7a). Some sought income via the workfare Ipelegeng program in rural areas while others sought income as domestic personnel in private households, both low productivity employment in the service sector. Since then, the share of workers employed in agriculture increased from 11.7 percent in 2016 to 17.6 percent in 2022 (Figure 1.7b). This was driven primarily by increases in non-subsistence farming, possibly linked to policies restricting food imports, and resulted in the share of subsistence farmers in agricultural employment declining from 85 percent to 51 percent between 2016 and 2022 (Figure 1.8). Nonetheless, agriculture's labor productivity (proxied by value added per worker) remains low. As of 2022, not including mining, agricultural labor productivity was 12 times lower than in industry and nine times lower than in the service sector. The mining sector has the highest levels of labor productivity because it generates substantial value but employs a relatively small workforce (Figure 1.9).

FIGURE 1.7 Lack of transition out of agriculture while employment in services has grown

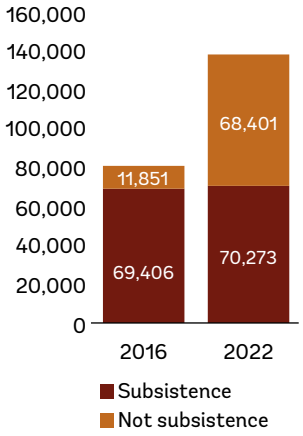


Source: World Bank calculations, using 2009 BCWIS and 2016 BMTHS (Statistics Botswana 2013, 2018), and QMTS (Statistics Botswana 2019a, 2019b; 2020a, 2020b; 2021; 2022). *Note:* QMTS employment figures are adjusted to include subsistence farmers (Eighteenth ICLS standard).

Evidence also suggests a recent movement from farm self-employment and public wage work into private wage work. Among employed people in 2022, 16.4 percent were classified as nonfarm self-employed, 9.8 percent as farm self-employed, 46.8 percent as private wage workers (including domestic personnel), 18.2 percent as wage workers in central or local government, 2.4 percent as parastatal workers, and 6.6 percent as Ipelegeng public workers (Figure 1.10).[41] Public wage workers include those who work in the public administration and defense sector, as well as government workers in other sectors, such as education, health, etc., while also including parastatal and Ipelegeng workers. Between 2009 and 2016, most of the increase in employment came

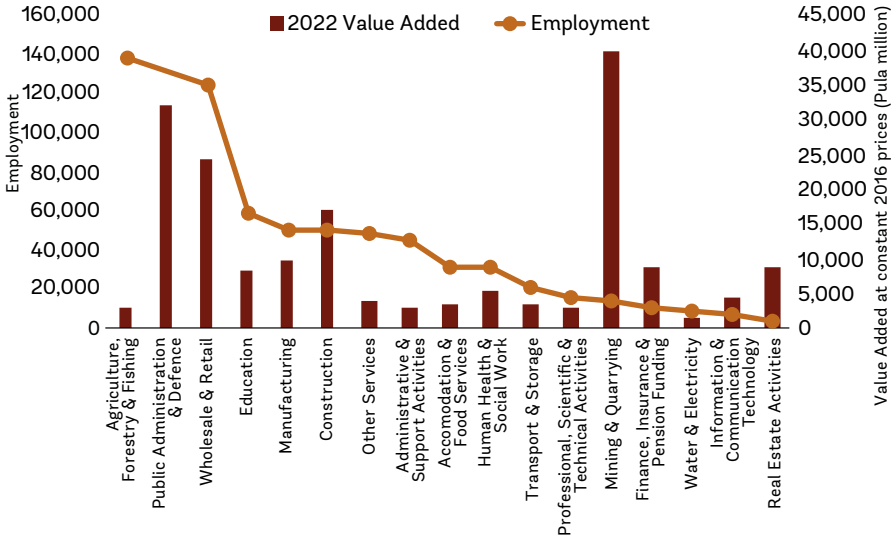
41 Private wage work includes nongovernmental organizations (0.6 percent). Ipelegeng is a workfare program for adults 18 years or older and is limited to only one-month employment. The public sector includes central and local government, parastatals, and Ipelegeng workers.

FIGURE 1.8 Employment in Agriculture, Forestry and Fishing (2016-2022)



Source: World Bank calculation using 2016 BMTHS and 2022 QMTS.

FIGURE 1.9 Employment and Value Added (2022)



Source: World Bank calculations using 2022 QMTS and national accounts (Statistics Botswana, 2023b).

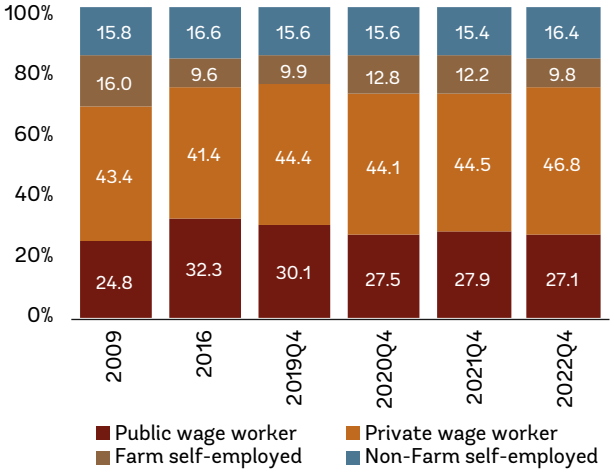
from growth in the public sector (Figure 1.11). This was due to employment growth from local government, parastatals, and Ipelegeng. On the other hand, between 2016 and 2022, most of the employment growth was private sector growth. The public sector declined marginally in this later period, among central and local government and parastatal employment, while Ipelegeng increased. Farm self-employment declined while nonfarm self-employment grew.

Although public sector employment decreased between 2016 and 2022, the number of people in the Ipelegeng workfare program increased, and the wage gap between the public and private sectors has grown. As part of public sector reforms, in 2021, the authorities announced they would eliminate half of the public sector open positions and review the size of the civil service. More than 18 thousand workers left central and local government or parastatals between 2016 and 2022. However, the Ipelegeng workfare program increased by more than 7000 people. As a result, employment in Ipelegeng has become a larger share of overall public sector employment, rising 4.5 percentage points from 19.7 in 2016 to 24.2 in 2022. As of 2022, public sector wages were 1.7 times higher than in the private sector, although declining from a 2.1 rate in 2021 (Figure 1.12 and Figure 1.13). At 2.6, the gap between public and private wages is particularly high in rural areas and growing over time, despite low-paid Ipelegeng workers constituting half of rural public jobs.

Disparities in earnings arise from differences in demographics, educational attainment, and employment industry. Higher levels of schooling and living in urban areas (*urban villages* and *cities and towns*) are associated with increases in earnings (monthly real wages; Appendix 3). Relative to primary education or less, in 2022, secondary and tertiary schooling show 56 and 181 percent higher earnings, respectively. After controlling for differences in education, age, and employment sector, rural earnings were 40 percent lower than in *cities and towns*. Botswana's gender pay gap remains statistically significant after controlling for differences in human capital accumulation, age, geographic location, and sector of work. Over the last decade, on average, male earnings have been 39 percent higher than female earnings (although the earnings gap drops to 24 percent when occupation is also considered).[42] Sector of employment is another strong predictor of earnings. Except for

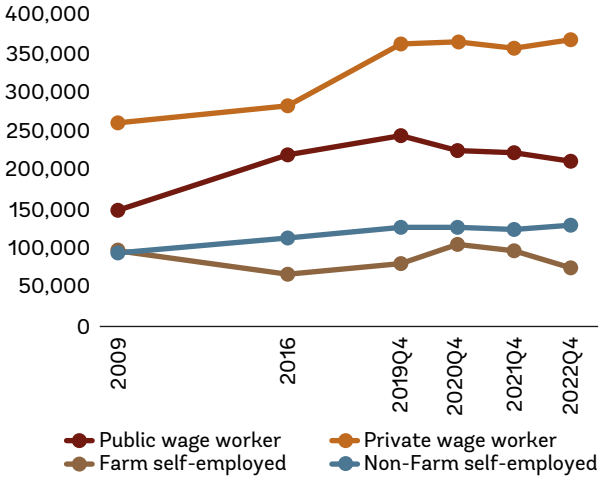
42 When occupation is also considered, this earnings gap is estimated to be around 24 percent in 2016. See *Inequality in Southern Africa*, World Bank 2022.

FIGURE 1.10 Share of workers by type of employment, 2009-2022 (%)



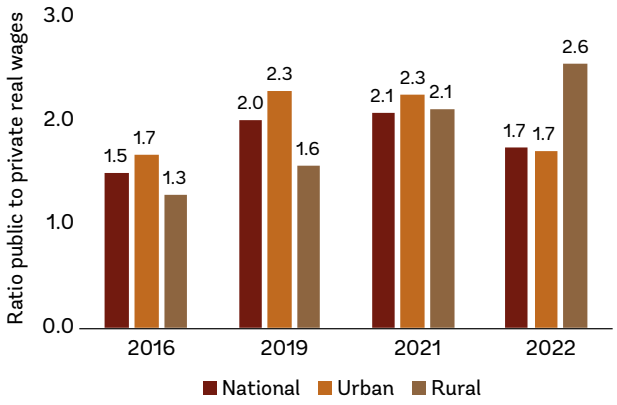
Source: World Bank calculations using BCWIS, BMTHS, and 2019-2022 QMTS.

FIGURE 1.11 Employment by type of worker, 2009-2022



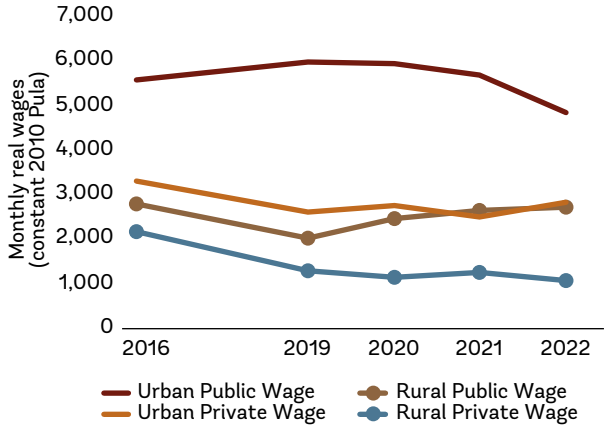
Source: World Bank calculations using BCWIS, BMTHS, and 2019-2022 QMTS.

FIGURE 1.12 Public-private wage gap, 2016-2022 (ratio)



Source: World Bank calculations using BMTHS and 2019-2022 QMTS.

FIGURE 1.13 Average monthly real wages by sector and area, 2016-2022 (constant 2010 Pula)

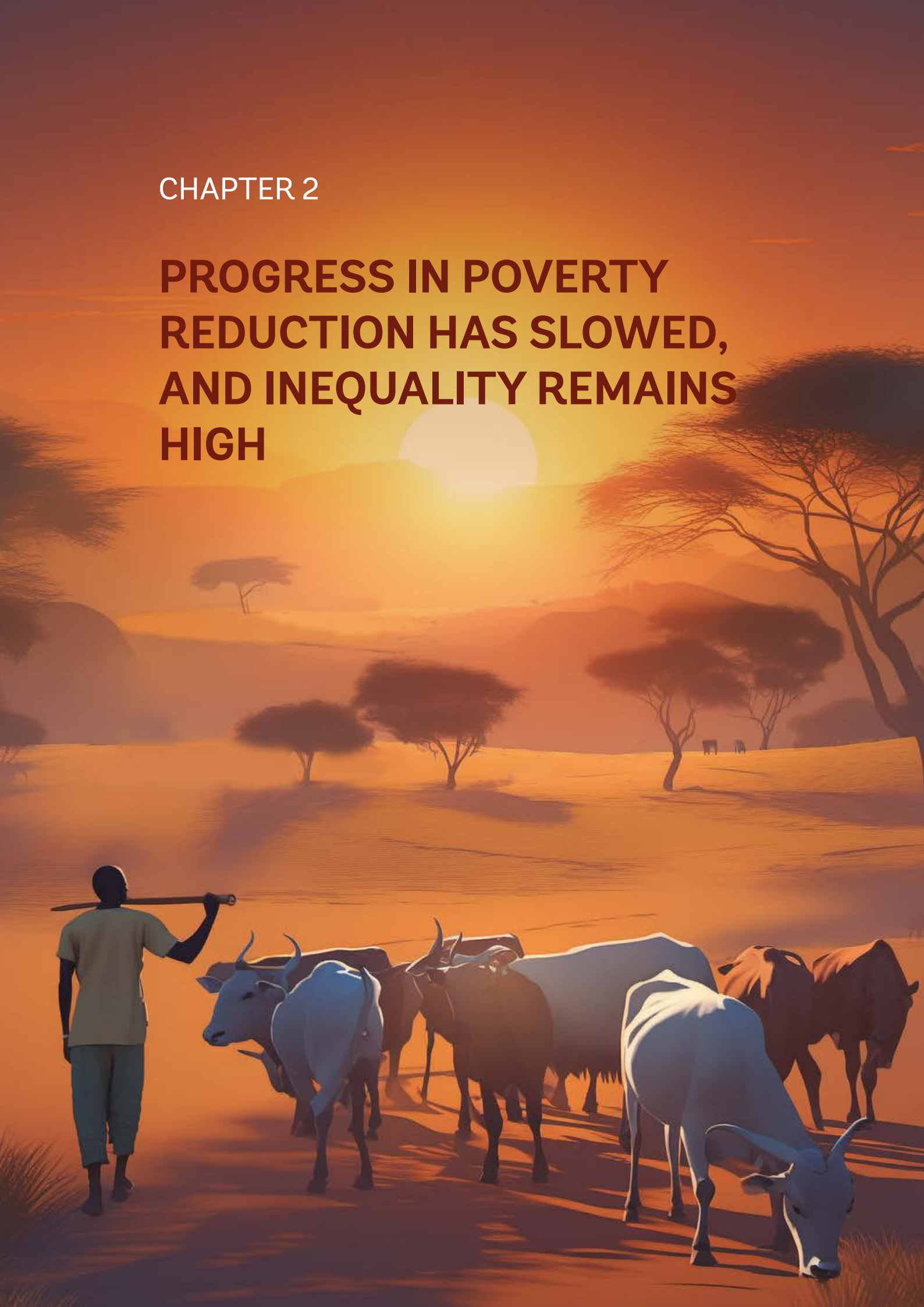


Source: World Bank calculations using BMTHS and 2019-2022 QMTS.

public administration, in 2016, earnings in all sectors were statistically significantly higher than in agriculture, with mining and education showing the highest returns, at 95 percent and 57 percent, respectively. While mining and education continue to show statistically significant returns, these dropped nearly 17 percentage points for both sectors between 2016 and 2021. Higher earnings from public administration work are not statistically significant, suggesting that other factors, like education, may contribute more to the income disparities between public administration and agriculture. Additionally, workers in the Ipelegeng program are classified as public administration workers, resulting in a mix of workers and wage rates in the sector.

CHAPTER 2

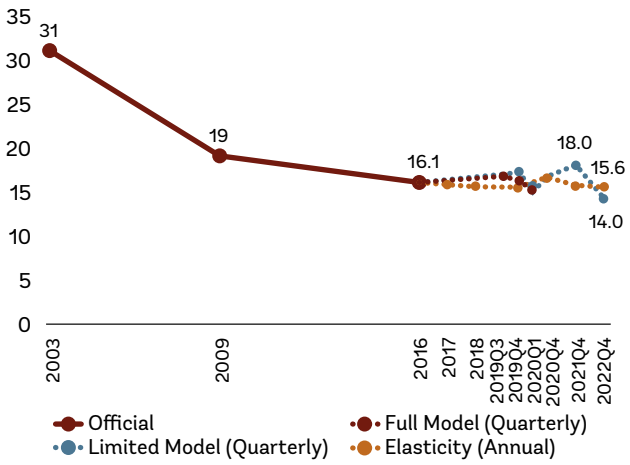
PROGRESS IN POVERTY REDUCTION HAS SLOWED, AND INEQUALITY REMAINS HIGH



2.1 TRENDS IN POVERTY, INEQUALITY, AND SHARED PROSPERITY

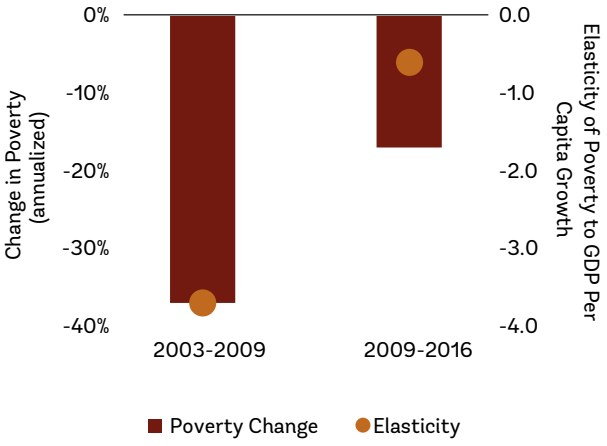
Poverty reduction slowed in 2016 and likely continued to slow in recent years. The share of the population living below the official poverty line declined strongly from 30.6 to 19.3 percent between 2002/03 and 2009/10 while declining more slowly to 16.1 percent in 2015/16 (hereafter referred to as 2003, 2009, and 2016; Figure 2.1).[43, 44] This deceleration since the last Poverty Assessment aligns with the economic slowdown since 2010 and the more volatile economic conditions. In 2016, after the recession of 2015 and during a drought, over 330,000 Batswana were living in poverty. Despite better GDP per capita growth between 2009-16 than 2003-09, the ability of economic growth to lead to poverty reduction declined by 84 percent in the last available survey (as the elasticity of GDP per capita to poverty fell from -3.8 in 2003-09 to -0.6 in 2009-16), requiring further investigation (Figure 2.2).[45] Unlike in the past, GDP growth (based on diamond wealth and a large public sector) did not translate to higher average household per capita consumption between 2009-16. Instead, the drought affected the 2016 harvest, while the electricity and water shortages further limited private sector growth, resulting in lower average household consumption than in 2009. Moreover, the country has since faced floods in 2017, another drought in 2019, the 2020 COVID-19 shock, and a surge in prices in 2022, in addition to sluggish productivity growth and an economic decline in South Africa, Botswana's main trade partner. Poverty projections up to 2022 using different methodologies suggest poverty reduction has slowed even further as the labor market has weakened (see Box 2.1; Appendix 9).

FIGURE 2.1 Poverty reduction has slowed



Source: 2002/03 BHIES, 2009/10 BCWIS, 2015/16 BMTHS (Stats Botswana 2013, 2018; also see Appendix 8); 2017-2022 projections based on Quarterly Multi-Topic Household Surveys and national accounts GDP data. *Note:* Projection methodologies include "limited" and "full" quarterly models using survey-to-survey imputations (SWIFT models) and annualized elasticity projections. See Appendix 9 for details.

FIGURE 2.2 The link between poverty and GDP growth became weaker



Source: World Bank calculations using 2009/10 BCWIS, 2015/16 BMTHS, and World Development Indicators for GDP data.

43 Statistics Botswana and the World Bank have updated Botswana's official poverty measurement methodology using international best practice. The previous methodology would suggest a poverty rate of 16.3 percent instead of 16.1 percent for 2015/16. See Annex 8 for a technical overview of the updated measures.

44 The household surveys correspond to the 2002/03 Household Income and Expenditure Survey (HIES) conducted from June 2002 to August 2003, the 2009/10 Botswana Core Welfare Indicators Survey (BCWIS) conducted from April 2009 to March 2010, and the 2015/16 Botswana Multi-Topic Household Survey (BMTHS) conducted from November 2015 to December 2016. This document will refer to these surveys as 2003, 2009, and 2016, corresponding to the year with the most survey month coverage.

45 Alternatively, using GDP data post the 2009 recession, the elasticity fell 60 percent from -2.1 in 2003-10 to -0.86 in 2010-16.

BOX 2.1 Data challenges, comparable poverty estimates, and poverty projections

Data challenges

Botswana faces multiple data challenges that limit its ability to inform and implement effective policymaking. The challenges include availability, quality, and use of data, and a weak statistical infrastructure. The country does not conduct frequent income and expenditure surveys to track poverty. Ministries and line departments are also not capturing information regularly to inform progress and better outcomes and lack integrated data systems. Evidence-based policymaking requires Botswana to act on its commitment to invest in frequent, timely, and relevant data across its statistical system and strengthen its monitoring and evaluation system.

The poverty statistics and projections presented in this Poverty Assessment result from several years of collaboration between Statistics Botswana (StatsBots) and the World Bank Group (WBG). The country has undertaken five household income and expenditure surveys (HIES). These include the 1985/86 BHIES, the 1993/94 BHIES, the 2002/03 BHIES, the 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and the 2015/16 Botswana Multi-Topic Household Survey (BMTHS). The next HIES for poverty measurement is planned for 2024/25.

Comparable poverty estimates between 2009/10 and 2015/16

In 2019, the WBG and StatsBots began a collaboration to update and strengthen the country's official poverty measurement methodology and poverty rate for 2015/16. Appendix 8 provides a technical report that covers the comparability of the 2009/10 BCWIS and 2015/16 BMTHS; the construction of a comparable nominal consumption aggregate between those two surveys; the construction of a spatially deflated ("real") consumption aggregate; the construction of a comparable harmonized poverty line for poverty trend analysis; and the resulting updated poverty and inequality measures. The latter poverty and inequality measures are used throughout the Poverty Assessment.

SWIFT Poverty Projections for 2019, 2020, 2021, and 2022.

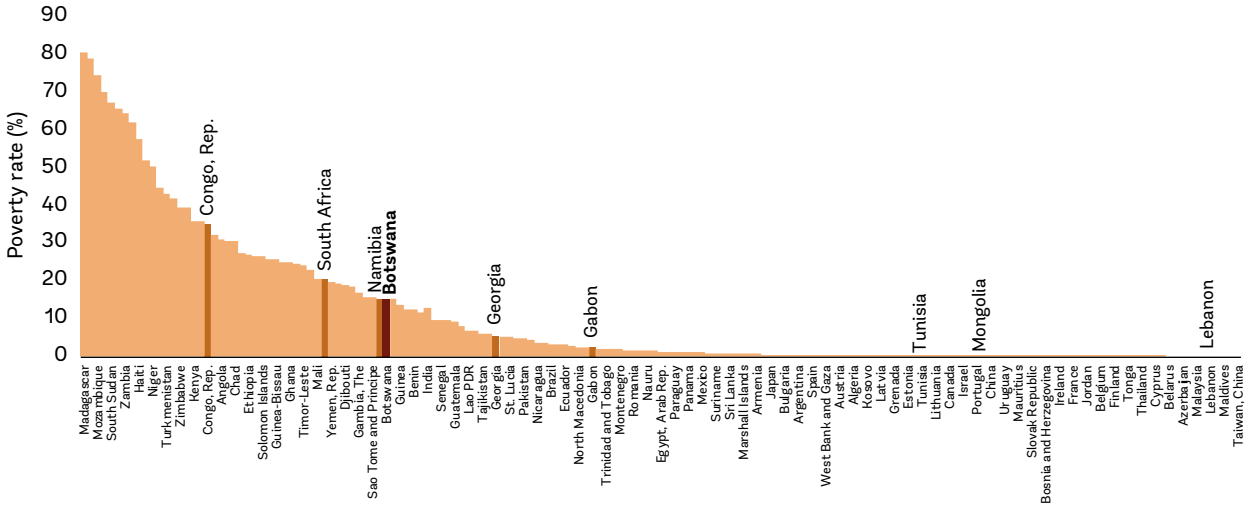
More recently, to provide timely statistics for planning and decision-making, Statistics Botswana began to field a lighter, quarterly, multi-topic household survey whose primary module would be on labor force statistics while other modules would rotate. This Quarterly Multi-Topic Survey (QMTS) would not collect income and expenditure data for poverty measurement. Nevertheless, it presents essential information on employment, wages, and other labor force statistics, as well as including (in different rounds) data on household demographics, dwelling characteristics, education variables, and select ICT data, among others. The QMTS has been undertaken in quarters 3 and 4 of 2019, quarters 1 and 4 of 2020, quarter 4 of 2021, and quarter 4 of 2022.

In 2021, the WBG and StatsBots began a collaboration to fill the poverty data gaps using a methodology called *Survey of Well-being via Instant and Frequent Tracking* (SWIFT). The SWIFT program was created in 2014 to produce cost-effective and timely poverty statistics. It uses multiple imputation, survey-to-survey, and machine learning techniques to train poverty projection models and produce poverty rate estimates. The WBG and StatsBots began to use SWIFT to impute poverty into the QMTS surveys for 2019 through 2022, using the last poverty survey (2015/16 BMTHS) as the training data to create the poverty models. Appendix 9 provides a brief technical overview of the poverty projections.

Botswana's poverty rate remains high relative to structural peers and upper-middle-income countries, placing it within the world's top 25 percent poorest countries. Poverty declined under the international

FIGURE 2.3 Botswana is poorer than most of its structural peers

a. Most recent $2.15 poverty estimate by country (%)

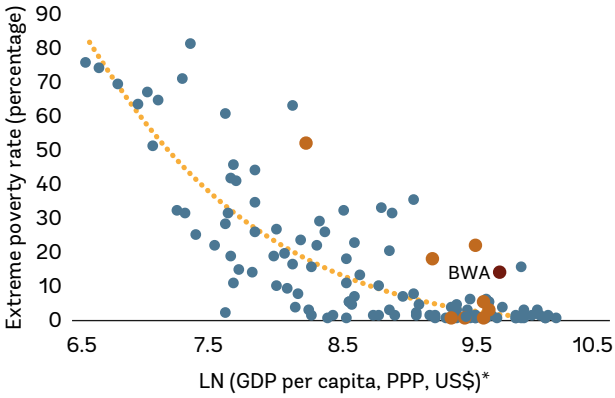


Source: Poverty and Inequality Platform, pip.worldbank.org.

poverty line ($2.15 per day, 2017 PPP) from 17.7 to 15.4 percent between 2009 and 2016. However, it increased by 3.1 percentage points when measured under the upper-middle-income-country global poverty line ($6.85 per day, 2017 PPP), reaching 63.5 percent in 2016. Under this higher global line, Botswana ranked second poorest among its structural peers[46] and as the poorest among upper-middle-income countries. Botswana's poverty rate under the $2.15 PPP line exceeds those of its structural peers Georgia, Gabon, Mongolia, Tunisia, and Lebanon, and approaches rates in South Africa and Namibia; only the Republic of Congo is significantly poorer (Figure 2.3). Botswana's estimated poverty rate for 2019 in terms of the international poverty line ($2.15 PPP) is more than four times higher than its GDP per capita would predict (Figure 2.4).

FIGURE 2.4 Poverty is high relative to income level

b. $2.15 poverty and GDP per capita (2017 PPP)

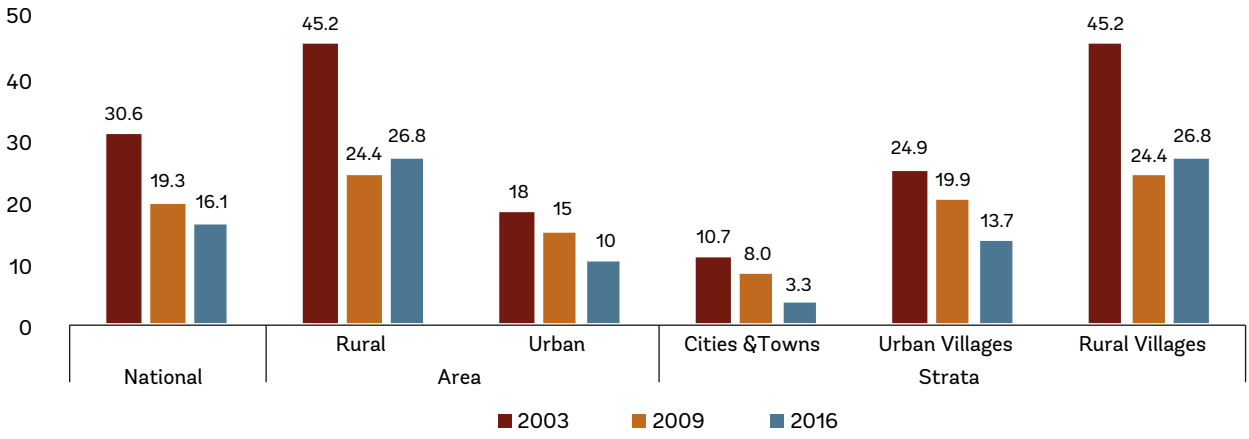


Source: Poverty and Inequality Platform, pip.worldbank.org; and World Development Indicators, version 7/25/2023.

Between 2009 and 2016, rural poverty increased and urban poverty decreased, widening the urban-rural gap as rural labor outcomes weakened. Data from 2016 indicated the poverty rate in rural areas (26.8 percent) was two and a half times higher than in urban areas (10 percent) and 66 percent higher than the national average. Even as national poverty declined between 2009 and 2016, it increased by 2.5 percentage points in rural areas. Thus, the overall decline in poverty in Botswana was driven primarily by welfare improvements among urban households. Poverty decreased in *cities and towns* from 8 to 3.3 percent and in *urban villages* from 19.9 to 13.7 percent between 2009 and 2016 (Figure 2.5). Even though the depth and severity of poverty have declined since 2003, levels in rural areas remain higher, with a slower decline in recent years. The poorest of the poor remain primarily in rural areas (Figure 2.6 and Figure 2.7).

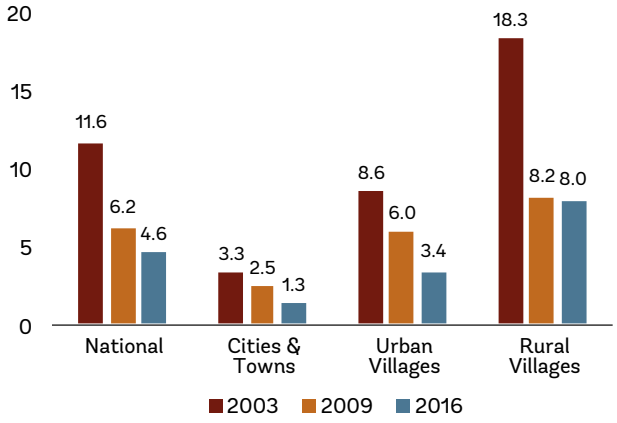
46 See Appendix 1 for the method for choosing Botswana's structural peers. For international poverty rates, see pip.worldbank.org.

FIGURE 2.5 Strong declines in urban poverty yet rural poverty increased



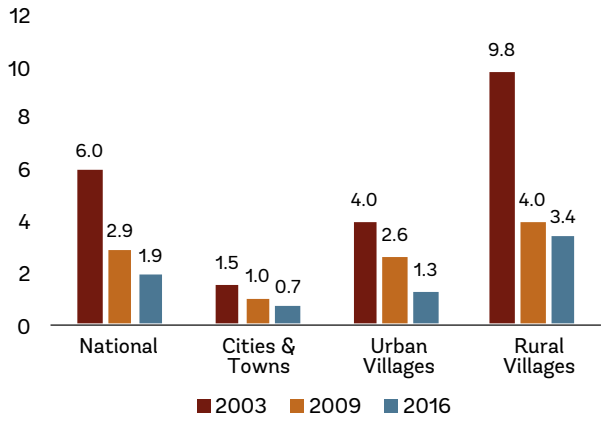
Source: 2002/03 Household Income and Expenditure Survey (HIES), 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS)

FIGURE 2.6 The intensity of poverty improved across strata (Poverty Gap by area, %)



Source: 2002/03 Household Income and Expenditure Survey (HIES), 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS).

FIGURE 2.7 The poorest of the poor were better off (Poverty Severity by area, %)



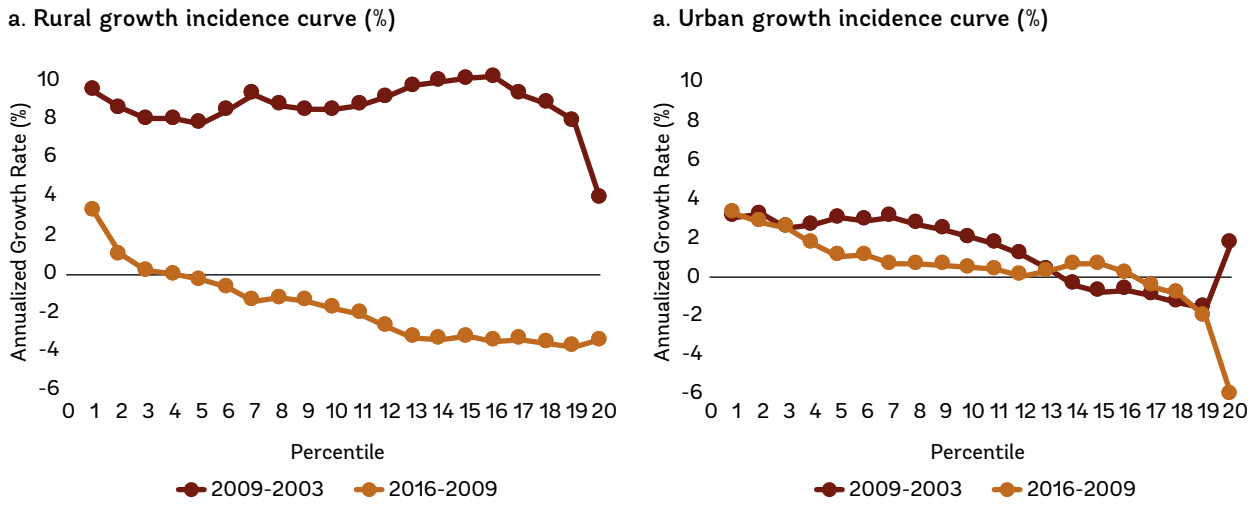
Source: 2002/03 Household Income and Expenditure Survey (HIES), 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS).

Consumption per capita growth was also weaker in rural areas. Whereas rural areas experienced strong consumption growth across all consumption deciles between 2003 and 2009, and faster than in urban areas, the 2015 recession and drought disproportionately affected households just above the poverty line that relied on subsistence farming and small holding of livestock. In 2016, consumption growth dropped for all but the poorest 15 percent of the population in rural areas (Figure 2.8a). In contrast, urban areas saw higher consumption per capita for all but the top 20 percent of the urban population (Figure 2.8b).

In 2016, Botswana was no longer among Africa's top performers in terms of shared prosperity. Between 2009 and 2016, shared prosperity, expressed as the annualized growth rate in consumption per capita of Botswana's poorest 40 percent (Bottom 40), reached only 1.2 percent, down from the 5 percent annualized growth estimated between 2003 and 2009. Nonetheless, consumption growth was negative for the rest of the population in that period, resulting in an overall -1.8 percent annualized consumption per capita decline

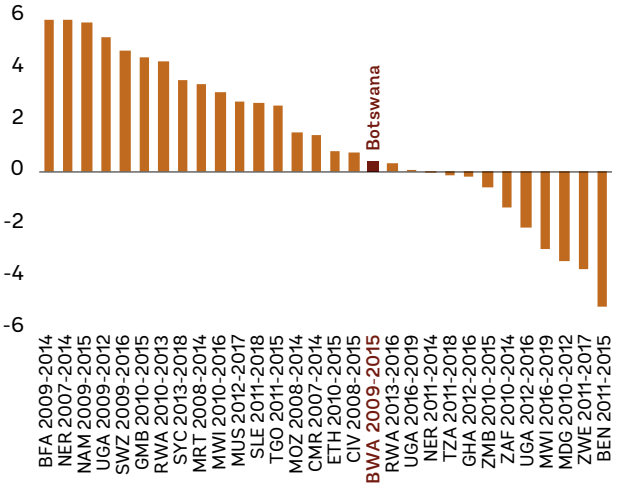
nationwide.[47] Using international estimates (the Global Database for Shared Prosperity), Botswana's shared prosperity indicator is no longer among the highest in Africa (Figure 2.9). The decline in consumption per capita among the middle and higher parts of the consumption distribution explains the increase in the poverty rate under the higher $6.85 per day global poverty line. Figure 2.10 shows the distribution of per capita consumption in 2009 (dotted line) and 2016 (the solid line with the colored bands for different consumption lines). While fewer people are living on less than $2.15 per day, there is a higher density of people below the $3.65 and $6.85 poverty lines.

FIGURE 2.8 Rural households fared worse than urban households across the income distribution



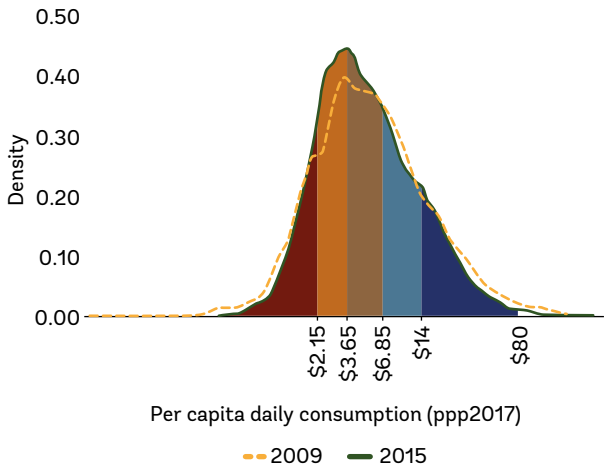
Source: World Bank calculations using 2002/03 Household Income and Expenditure Survey, 2009/10 Botswana Core Welfare Indicators Survey, and 2015/16 Botswana Multi-Topic Household Survey. On the horizontal axis, the population is divided into *ventiles*.

FIGURE 2.9 Botswana is no longer one of Africa's top performers on shared prosperity indicator



Source: World Bank Global Database of Shared Prosperity, April 2023 vintage; data spells circa 2010-2015.

FIGURE 2.10 Fewer people lived below the $2.15 poverty line in 2016 but more lived below $6.85

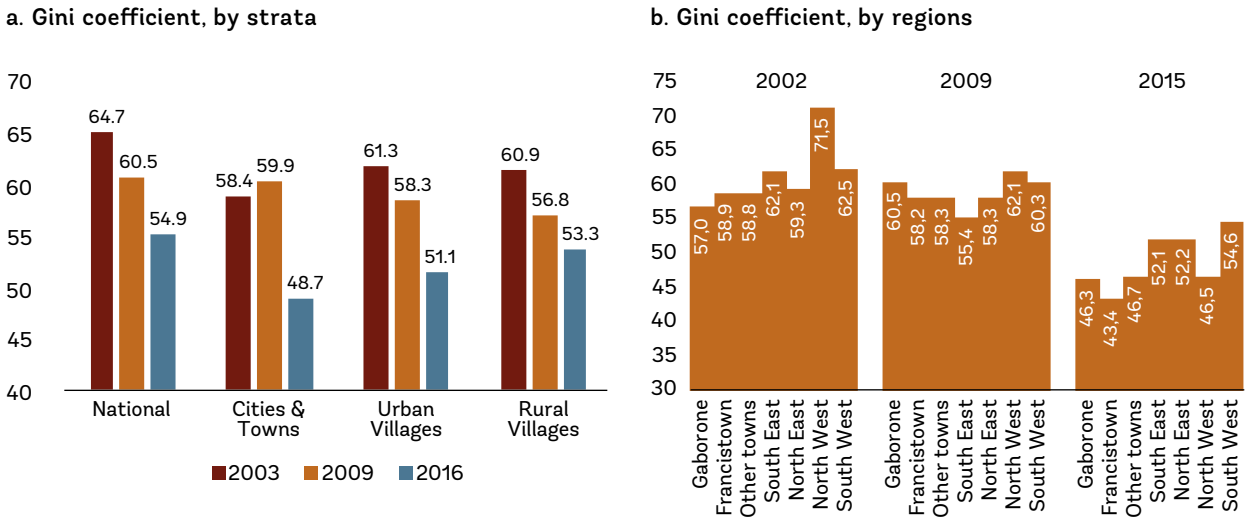


Source: World Bank calculations using 2009/10 Botswana Core Welfare Indicators Survey and 2015/16 Botswana Multi-Topic Household Survey.

47 Using the official welfare aggregate. These rates are slightly different from the World Bank's Global Database of Shared Prosperity (GDSP) that shows 0.42 and -3.3 percent estimates for the Bottom 40 and overall, respectively.

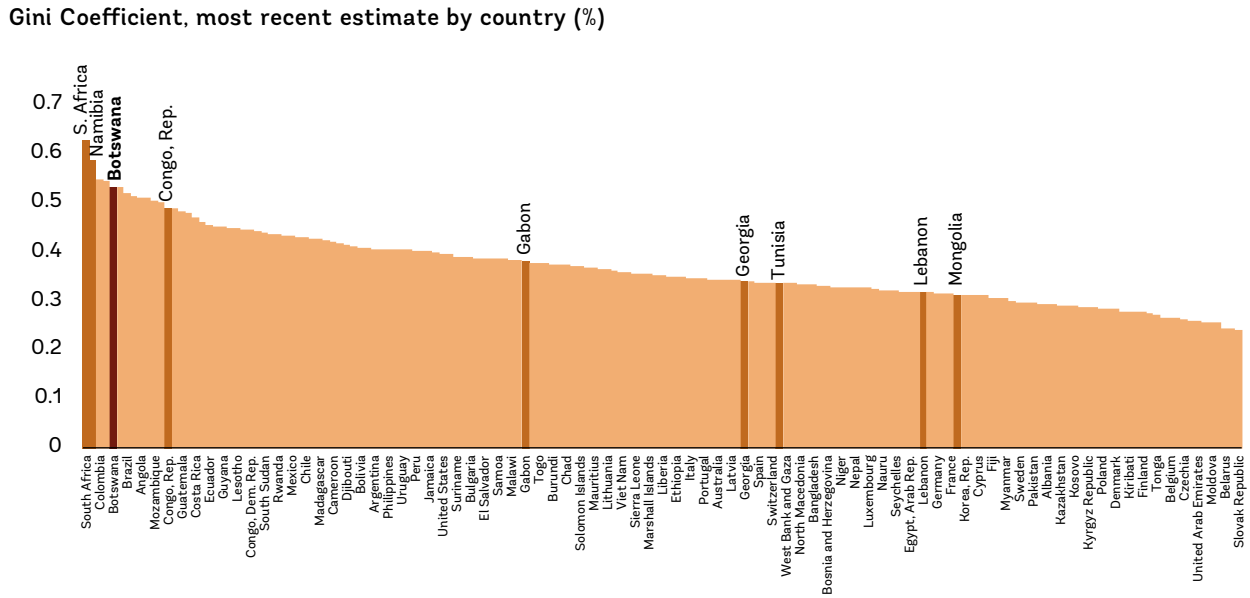
Despite the decline in inequality, Botswana's society remains among the world's top 10 most unequal countries. As measured by the Gini Coefficient, consumption inequality decreased from 60.5 in 2009 to 54.9 percent in 2016 (using official figures). This primarily reflected pro-poor growth in urban areas, especially *cities and towns*, where the Gini declined from 59.9 to 48.7 percent, with Francistown reaching 43.4 percent (Figure 2.11, a and b). The Gini coefficient for *rural villages* declined less than four percentage points; thus, inequality remained high at 53.3 percent, with *urban villages* at 51.1 percent. The North-West region has shown the strongest improvements in reducing inequality, surpassing the South-East, South-West, and North-East in 2016. Nonetheless, as discussed above, part of the drop in overall inequality was explained by declines in consumption levels among the highest deciles more so than by consumption improvements among the poor. In addition, among its structural peers, only South Africa and Namibia register worse inequality rates, and Botswana remains among the top 10 most unequal countries in the world (Figure 2.12). International experience suggests that Botswana would find it hard to reach an inclusive growth path and high-income status without addressing these levels of inequality and poverty.

FIGURE 2.11 Inequality improved across Botswana, with better outcomes in cities and towns



Source: 2002/03 Household Income and Expenditure Survey (HIES), 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS).

FIGURE 2.12 Botswana's inequality is among the highest in the world



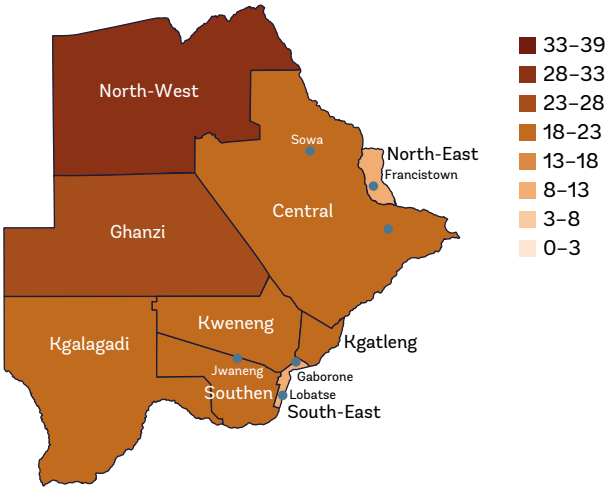
Source: Poverty and Inequality Platform, pip.worldbank.org. See Appendix 1 for information on structural peers.

2.2 DEMOGRAPHIC, EDUCATION, AND LABOR MARKET CHARACTERISTICS OF THE POOR, NEAR POOR, AND NON-POOR

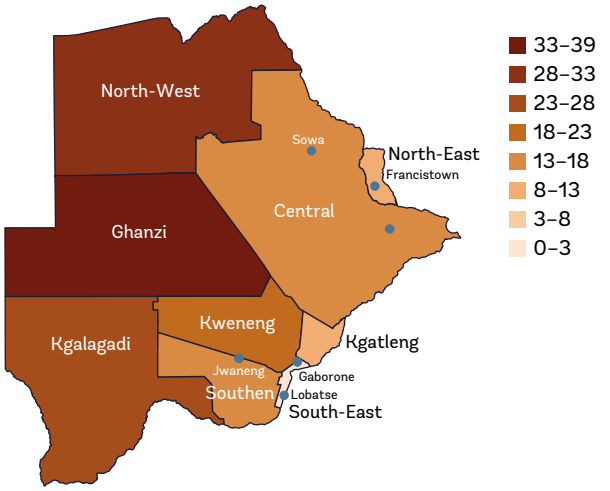
The poor are increasingly more concentrated in rural areas despite a surge in rural-to-urban migration. In 2016, over a third of Batswana (34.9 percent) lived in rural areas, a drop from 43 percent five years earlier. Nonetheless, between 2009 and 2016, the share of the poor living in rural areas increased from 56.2 to 58.2 percent. Remote areas like the North-West and Ghanzi districts, already the poorest districts (although not housing the poorest villages in 2011, see Box 2.2), experienced increased levels of poverty along with population growth, resulting in an increase of the share of the poor from 14 to almost 24 percent in 2016 (Figure 2.13 and Table 2.1).[48] Although the poverty rate only increased by 1.5 percentage points in the Kweneng district, its population share increased from 16.3 to 16.9 percent, resulting in a strong increase in the share of the poor population from 17 to 22.6 percent. On the other hand, poverty fell in and around cities to the south- and north-east. The Kgatleng, Central, and South-East districts saw some of the most substantial declines in poverty rates between 2009 and 2016. The Central district's population share declined from 33 to 31 percent, but its share of the poor population declined more strongly from 39 to 30 percent in the period. The South-East, where the capital of Gaborone is located, had a decline in the share of the poor population from 7.5 to 3 percent while being home to 17 percent of the population of Botswana. The regional convergence in poverty seen in 2009 has dissipated as welfare disparities across Botswana have grown.

FIGURE 2.13 Regional poverty is diverging, increasing in the west and decreasing in the east

a. Poverty rate by region 2009 (official line, %)



b. Poverty rate by region 2016 (official line, %)



Source: World Bank calculations using the 2009/10 Botswana Core Welfare Indicators Survey (BCWIS) and 2015/16 Botswana Multi-Topic Household Survey (BMTHS).

48 The Kgalagadi district also had a strong increase in the poverty rate, but the decline in the population between 2009 and 2016 (in an already sparsely populated area with desert conditions) resulted in around the same number of poor people. This suggests that the non-poor left the district, possibly affected by drought conditions and in search of better opportunities.

TABLE 2.1 The number of poor increased in the west while declining in the Central and South-East districts

Poverty Rate by Region (national poverty line, %)

Region	2009		2016	
	Poverty Rate	Number of Poor	Poverty Rate	Number of Poor
Southern	19.6	35,031	17.4	35,832
South East	8.9	27,035	2.9	10,225
Kweneng	20.1	61,559	21.6	75,570
Kgatleng	19.5	16,221	11.2	10,557
Central	22.9	141,604	15.4	100,327
North East	12.7	20,288	8.3	11,561
North West	30.3	39,997	31.7	61,385
Ghanzi	26.0	10,509	38.5	17,356
Kgalagadi	19.7	10,232	26.1	10,843

Source: World Bank calculations using 2009/10 BCWIS and 2015/16 BMTHS.

BOX 2.2 Poverty Map 2011

The poorest ten percent of villages in 2011 were primarily rural and located in southeastern Botswana, but many could also be found spread throughout the country. As shown earlier, nearly one-fifth of Batswana (or more than 362,000 people) lived below the official poverty line in 2009.[49] This corresponded to a quarter of the rural population, 20 percent of the population in *urban villages*, and 8 percent in *cities and towns*. The North-West and Ghanzi districts had the highest poverty rates, at 30.3 and 26 percent, respectively, accounting for more than 50,000 poor people (14 percent of the poor population).[50] However, the 2011 poverty map[51] of Botswana shows that most of the poorest villages were found in the Southern district (Figure B2.1 and Figure B2.2). While the Southern district had an overall poverty rate of 19.6 percent in 2009, representing 35,000 people (or less than 10 percent of all the poor), the 20 poorest villages (18 of which were in the Southern district) had poverty rates between 62 and 77 percent.[52] Botswana's 500 "villages" (some of which represent cities or towns) were ranked from poorest to richest and grouped into ten deciles of 50 villages each, with decile 1 representing the poorest 50 villages and decile 10 the wealthiest 50 villages. Villages from the poorest decile (red dots) are spread throughout the map and are the ones that require the most urgent attention. The poorest decile included predominantly rural villages (85 percent), while the rural share of the following three poorest deciles varied from 76 to 92 percent (Figure B2.3).

49 The only available poverty map is based on the 2009/10 survey and 2011 Census, therefore this section focuses on 2009 poverty to provide the spatial context and later incorporates more recent data.

50 As shown earlier, by 2016 the poverty rates in the North-West and Ghanzi districts had increased to 31.7 and 38.5, respectively, and together accounted for almost 79,000 poor people or 23.6 percent of all the poor.

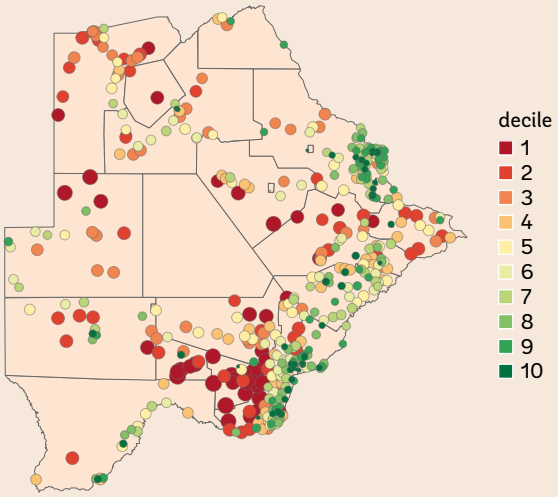
51 A poverty map allows for an estimation of poverty rates at much more disaggregated geographical levels than the household surveys alone can provide. Poverty maps combine a household survey and a population census (usually collected within a few years of each other) to provide a highly detailed spatial distribution of poverty within a country. The population census provides complete coverage of a country's population and includes some data on infrastructure and socio-economic characteristics, while the survey data provides the detailed consumption data needed for poverty analysis but lacks the highly detailed level of spatial disaggregation. The accuracy and precision of a poverty map rely on the degree of comparability between the variables in the census and the survey, and the power of these comparable variables to predict consumption in the survey data.

52 These 20 villages have relatively small populations and therefore they represent only 3.5 percent of the poorest population.

BOX 2.2 (cont.)

The wealthiest ten percent of villages were 96 percent urban and almost all were in or near the main cities of Gaborone and Francistown. These villages (dark green dots) were primarily in the Southern, South-East, and Kgatleng districts (all near the capital of Gaborone) as well as in the North-East district (home to the second largest city of Francistown, Figures B2.1 and B2.2). The South-East district, home to Gaborone, had a low poverty rate of 8 percent in 2009 but represented around 27,000 poor people given its large population size. The North-East district had the second lowest poverty rate in 2009 at 12.7 percent with 20,000 poor people. By 2016, poverty in these two districts had declined to 2.9 percent in the South-East and 8.3 percent in the North-East.

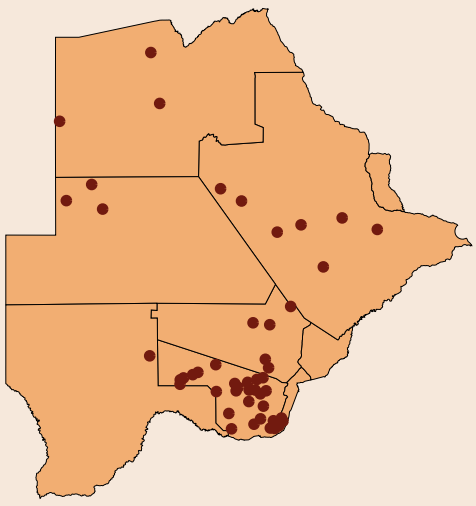
FIGURE B2.1 2011 Poverty Map by Village Deciles



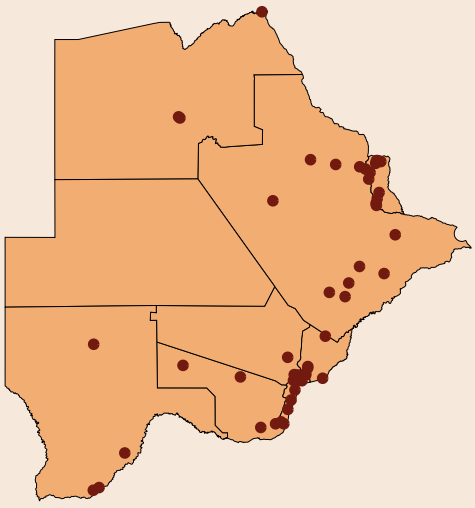
Source: World Bank calculations based on the 2011 Botswana poverty map, World Bank (2015). https://www.statsbots.org.bw/sites/default/files/publications/POVERTY%20Mapping%202010_May%2028%202015.pdf. Note: decile 1 = 50 poorest villages; decile 10 = 50 richest villages.

FIGURE B2.2 The poorest 50 villages were primarily in the Southern district while the least poor included Gaborone and Francistown and their surroundings, 2011

a. Decile 1



b. Decile 10

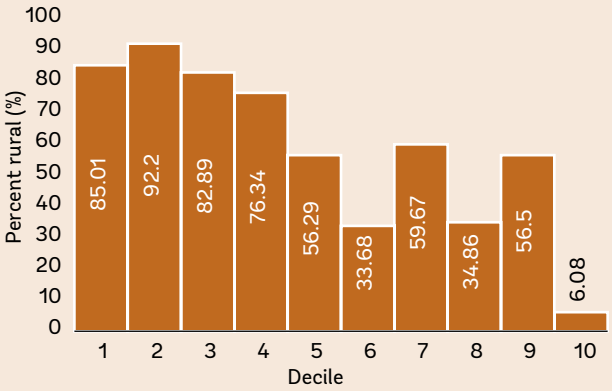


Source: World Bank calculations based on the 2011 Botswana poverty map, World Bank (2015). *Note:* decile 1 = 50 poorest villages; decile 10 = 50 richest villages.

BOX 2.2 (cont.)

The urban population has grown steadily, primarily in urban localities outside of cities, and is projected to be around 70 percent of the total population in 2022. Preliminary estimates from the 2022 Population Census show a population of 246,325 for Gaborone and 102,444 for Francistown.[53] Gaborone is the country's economic hub, home to government offices, ministries, institutions, diamond cutting and polishing operations, and diamond sorting and trading centers. The mining industry also dominates Francistown. Botswana's relatively small cities lack economic diversification and density, making it difficult to achieve economies of scale. Unemployment levels in 2022 are also higher than in 2009 or 2016. Despite population growth in cities and towns between 2011 and 2022, these areas represent a smaller share of the total population, declining from 21.7 percent in 2011 to 19.2 percent in 2022. The proportion of Batswana living in Gaborone declined by a percentage point from 11.4 to 10.4 percent over the same period. Instead, neighboring localities (including Kweneng East and the census districts of Kgatleng and South-East near Gaborone) gained a share of the total population as these areas provide alternative accommodation and business opportunities.

FIGURE B2.3 The four poorest deciles had the largest rural shares, 2011



Source: World Bank calculations based on the 2010 Botswana poverty map, World Bank (2015). *Note:* decile 1 = 50 poorest villages; decile 10 = 50 richest villages.

Poverty remains highest among children, large families, female-headed households, and people with lower levels of education. Between 2009 and 2016, the share of poor people in female-headed households declined from 58.1 to 56.8 percent. In contrast, the share with secondary or higher education increased from 14.6 to 20.4 percent as education improved for the poor and non-poor (Table 2.2). The poverty rate increased with household size, from 8 percent for households of four people to 34 percent for households with seven or more people (Figure 2.14). However, these poverty rates are all lower than in 2009. Households whose head had low levels of education faced poverty rates of 21 percent on average, down from 24 percent in 2009. In contrast, those with secondary or tertiary education had much lower poverty rates (13 and 2 percent, respectively, Figure 2.15). Nonetheless, nearly 4 out of 5 poor individuals continue to have low levels of schooling (Table 2.2). At 12 percent, working-age individuals continued to have the lowest poverty rate, in contrast to nearly 1 in 4 children ages 0-5 living in poverty, albeit down from 27 percent in 2009 (Figure 2.16 and Figure 2.17).

The working poor were primarily employed in services while the share in agriculture declined by more than half in 2016. Since 2009, the share of the working poor in agriculture decreased from 44 to 18 percent (Figure 2.18). In contrast, 72 percent of the working poor were employed in the service sector, primarily in public administration (28 percent) and *other services* (29 percent). The latter, in large part, include domestic workers. Overall, employment in public administration grew by 34.7 percent between 2009 and 2016, with 16 percent of this increase coming from the working poor. Approximately half of rural public administration includes

53 Updated (but still preliminary) Census 2022 estimates as of December 2022. See statsbots.org.bw December 2022.

low-paying Ipelegeng workfare program workers, relative to only 20 percent of urban workers.[54] This suggests that the working poor pushed out of agriculture by the 2015 shocks sought income via the workfare *Ipelegeng* program in rural areas or as domestic personnel in private households. As shown in Chapter 1, however, the decline in agricultural employment seems to have been temporary.

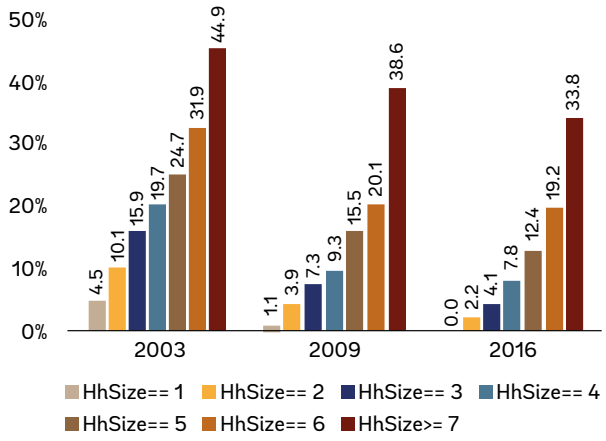
TABLE 2.2 Profile of the Poor: Official Poverty Line

Region	2002/03			2009/10			2015/16		
	Non-poor	Poor	Total	Non-poor	Poor	Total	Non-poor	Poor	Total
Demographics									
Age (household head)	25.5	22.9	24.7	27.6	22.3	26.6	27.6	22.5	26.7
Share living in households headed by a male	53%	46%	51%	52%	42%	50%	49%	43%	48%
Household size	5.6	8.1	6.4	4.9	8.5	5.6	5.0	9.0	5.6
Share Living in Cities and Towns	30%	6%	23%	24%	7%	21%	24%	4%	21%
Share Living in Urban Villages	36%	28%	33%	36%	37%	36%	45%	37%	44%
Share Living in Rural Villages	34%	66%	44%	40%	56%	43%	30%	58%	35%
Education (household head)									
Low education (primary or less)	66%	94%	75%	57%	85%	63%	47%	78%	52%
Mid education (secondary)	34%	6%	25%	27%	13%	24%	31%	17%	29%
High education (+ than secondary)				16%	2%	13%	21%	3%	18%
Sector (household head)									
Agriculture and Fishing	16%	42%	21%	24%	44%	26%	11%	18%	12%
Mining	3%	1%	3%	3%	1%	3%	2%	0%	2%
Manufacture and Utilities	11%	10%	11%	8%	5%	8%	7%	5%	7%
Construction	10%	7%	9%	7%	6%	7%	5%	4%	5%
Wholesale and Retail	14%	11%	13%	10%	10%	10%	15%	11%	14%
Public Administration	15%	11%	15%	17%	13%	16%	19%	28%	19%
Education	9%	4%	8%	6%	1%	5%	8%	4%	8%
Other services	21%	15%	20%	25%	20%	24%	33%	29%	32%
Type of employment (household head)									
Wage employee	40%	15%	34%	36%	17%	33%	40%	20%	37%
Farm self-employed	5%	8%	6%	7%	10%	8%	5%	5%	5%
Non-farm self-employed	7%	6%	7%	8%	6%	8%	9%	4%	8%
Access to services									
Water				96%	95%	96%	97%	95%	96%
Sewage				38%	14%	34%	51%	31%	48%
Electricity	35%	3%	25%	49%	24%	44%	71%	30%	64%
Welfare									
Daily consumption per capita (PPP 2017)	13.2	1.4	9.6	13.3	1.5	11.0	11.3	1.6	9.7

Source: World Bank calculations using 2002/03 Household Income and Expenditure Survey (HIES), 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS).

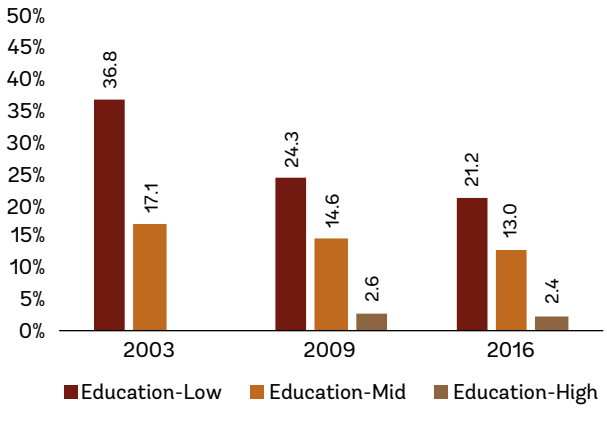
54 Nearly 26,000 out of an estimated 54,000 employed in rural public administration.

FIGURE 2.14 Poverty Rate by Household Size (%)



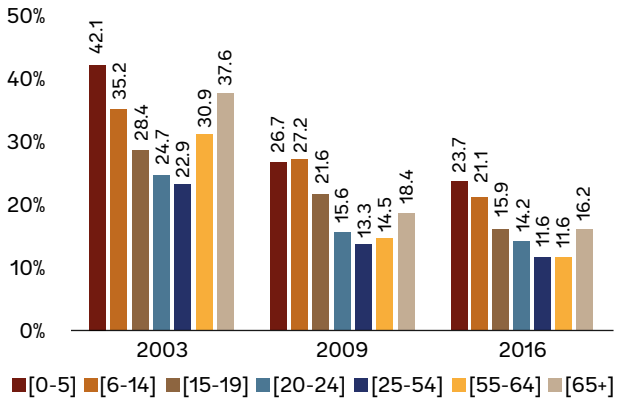
Source: World Bank calculations using 2002/03 BHIES, 2009/10 BCWIS, and 2015/16 BMTHS.

FIGURE 2.15 Poverty Rate by Education Level of Household Head (%)



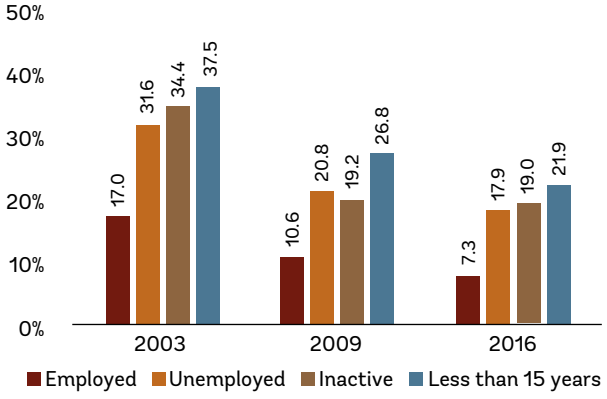
Source: World Bank calculations using 2002/03 BHIES, 2009/10 BCWIS, and 2015/16 BMTHS.

FIGURE 2.16 Poverty Rate by Age Group (%)



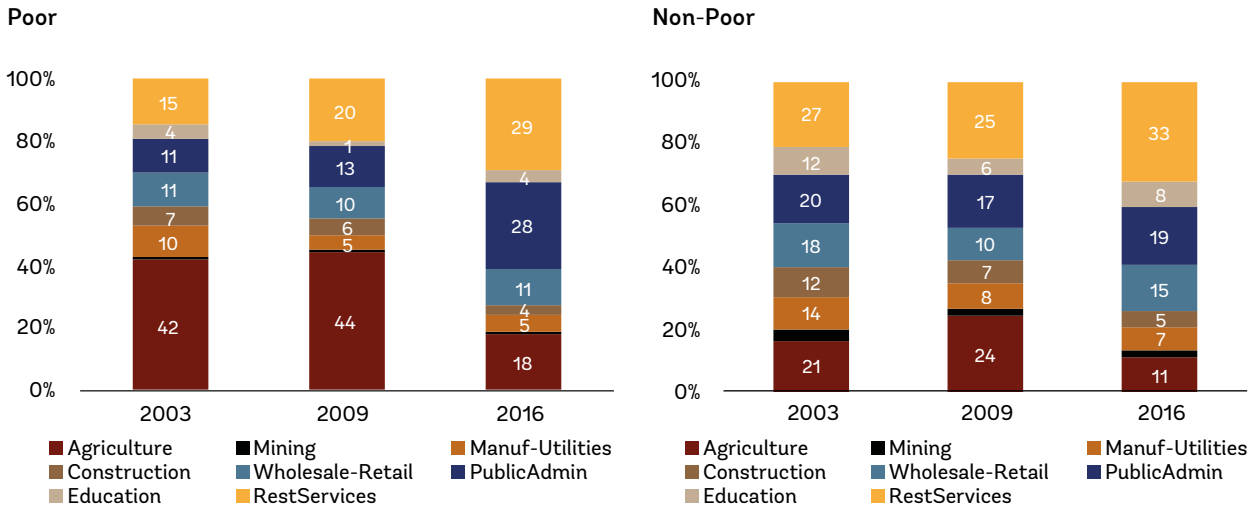
Source: World Bank calculations using 2002/03 BHIES, 2009/10 BCWIS, and 2015/16 BMTHS.

FIGURE 2.17 Poverty Rate by Labor Force Status of Household Head (%)



Source: World Bank calculations using 2002/03 BHIES, 2009/10 BCWIS, and 2015/16 BMTHS.

FIGURE 2.18 Employment by Sector and Poverty Status (%)



Source: World Bank calculations using 2002/03 Household Income and Expenditure Survey (HIES), 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS).

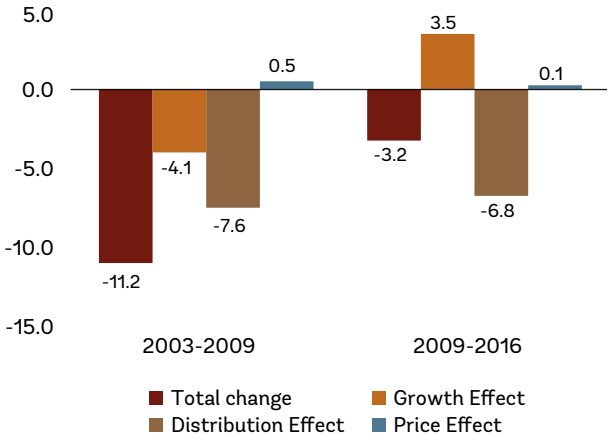
2.3 DRIVERS OF POVERTY AND INEQUALITY

Over the last ten years, a more equal distribution of consumption contributed strongly to poverty reduction, while low or negative consumption growth in recent years pushed poverty higher. Between 2003 and 2009, consumption growth explained over a third of poverty reduction while a better distribution of consumption contributed two-thirds. Conversely, negative consumption growth in 2009-16 increased poverty by 3.5 percentage points (p.p.), while a more equal distribution of consumption more than offset this effect, resulting in lower overall poverty (Figure 2.19). In rural areas, the negative growth of mean per capita consumption had a larger negative impact on poverty (+8.3 p.p) than the positive impact of an improved distribution of consumption (-6.8 p.p), resulting in an overall increase in rural poverty between 2009 and 2016 (Figure 2.20). In urban areas, these two effects also worked in opposite directions, but the improved distribution of consumption was larger and resulted in a decline in urban poverty. In both areas and time periods, price effects had minimal impact on the poverty results.

Labor income was the main driver of poverty reduction in urban areas between 2009 and 2016, while the significant decline in the share of employed adults in rural households increased rural poverty. In urban areas, 80 percent of the poverty reduction came from improvements in labor income, with non-labor income and a higher share of adults in the household (that is, a lower dependency ratio) also contributing (Figure 2.21). This aligns with the labor market analysis presented in Chapter 1; urban areas register better labor market outcomes than rural areas. In rural areas, the significant decline in the share of employed adults in rural households pushed poverty higher. The change in the consumption-to-income ratio was also correlated with higher rural poverty as poor rural households faced lower consumption levels and an increased proportion worried about not having enough food.

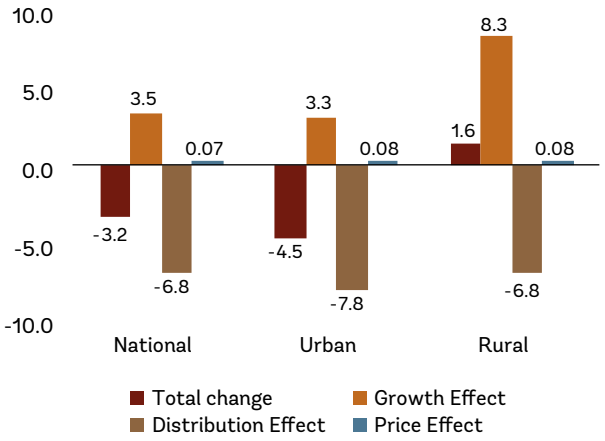
Although income from employment is central to reducing poverty and inequality, social protection programs in Botswana have a significant impact. Without Botswana's social protection transfers (from 29 programs across nine ministries), the poverty rate of 16 percent in 2016 would have been almost 24 percent, and the poverty gap would have been 9.5 instead of 4.6 percent. Removing just the thirteen social assistance programs would increase the poverty headcount by nearly a third (to 22.8 percent). The primary school feeding program, which reaches approximately 269,000 children, and the old-age pension, which reaches more than

FIGURE 2.19 Decomposition of the change in poverty into growth, distribution, and price effects, National, 2003-2009 and 2009-2016 (percentage points)



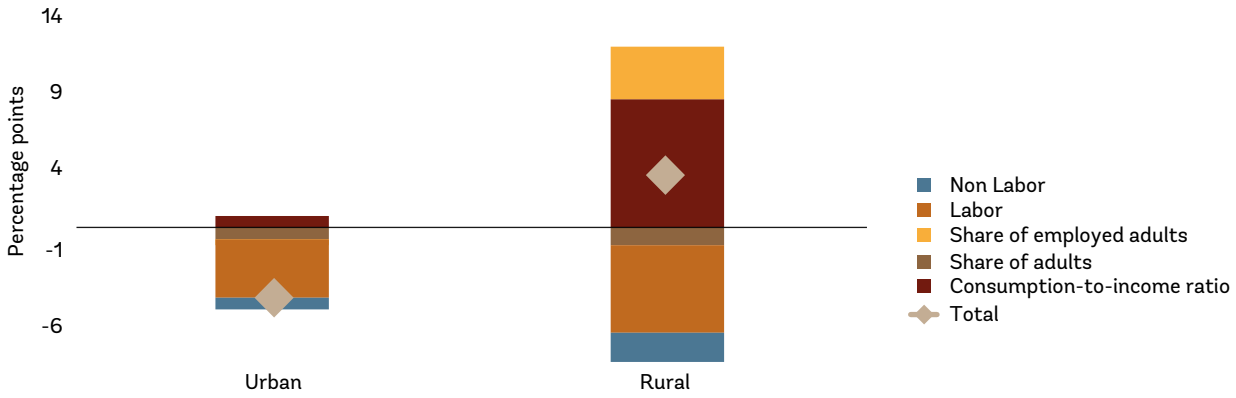
Source: World Bank staff calculations.

FIGURE 2.20 Decomposition of the change in poverty into growth, distribution, and price effects, by area, 2009-2016 (percentage points)



Source: World Bank staff calculations.

FIGURE 2.21 Shapely decomposition of changes in poverty by income source (2009-2016)



Source: World Bank staff calculations.

126,000 people (about 5.5 percent of the population in fiscal year 2020), have the largest impact on poverty, but some of the lowest levels of expenditure (see Chapter 5).[55]

Labor market factors, particularly skills differences, were the primary contributors to inequality in 2016, whereas demographics and education had been the largest contributors in 2009. Labor market factors contributed the most (35.6 percent) to inequality in 2016, up from 20.3 percent in 2009, followed by demographics (27.9 percent), education (25.9 percent), and location (10.6 percent, Figure 2.22).[56] In contrast, for other countries in the Southern Africa Customs Union (SACU), differences in educational attainment among adult household members were the most important driver of overall inequality. Differences in occupation type (professionals and senior managers, which suggest differences in skills or abilities) explain 29 percent of total inequality relative to only 6 percent for labor force participation. Post-secondary education, with its high earnings, explains 24 percent of total inequality,[57] followed by differences in age (17.4 percent) and location (10.6 percent). The age factor contributed less to inequality, suggesting the "demographic dividend" (more working-age household members and fewer dependents) became more even across households since 2009. In addition, an increase in the share of tertiary education among adults in Botswana may have helped reduce the contribution of higher education to inequality relative to the contribution of the labor market. Lastly, unlike in other SACU countries, location increased in importance as a source of inequality in 2016, explained primarily by a divergence in inequality across regions in Botswana.

Wage income is the primary driver of inequality, more so than in the rest of SACU, suggesting declines in inequality may be partially explained by smaller wage gaps. Wage income accounts for 85 percent of inequality[58] (both at the national level and for rural areas) (Figure 2.23), a rate higher than the 72.3 percent average for SACU members. A marginal change in wage income is estimated to change the Gini Coefficient by 5.2 percent at the national level and 8.3 percent in rural areas (Figure 2.24). Social protection transfers

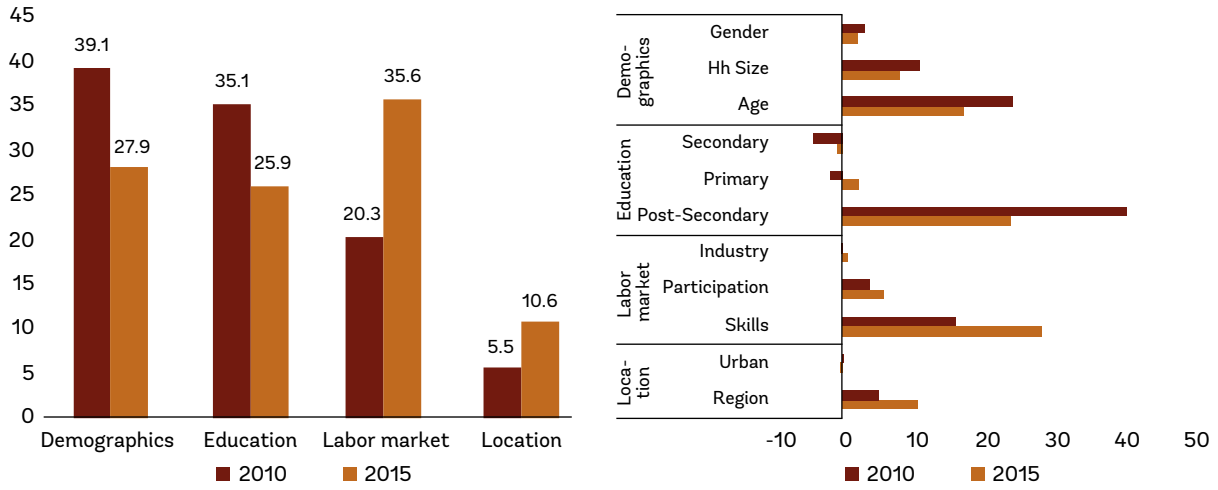
55 For more detail on Botswana's social protection programs, see World Bank (2022c).

56 See Sulla et al. (2022) (*Inequality in Southern Africa: An Assessment of the Southern Africa Customs Union*). This decomposition of inequality is based on a technique proposed by Fields (2003), which adopts a regression-based approach to estimate standard income- or consumption-generating equations. The main drivers of inequality can be identified from the contributions of explanatory variables (such as education, labor market factors, and demographics) to the distributional changes in welfare aggregates captured by the size of the estimated coefficients (Heshmati 2004). The estimated coefficient of each variable in the regression captures its estimated share in overall inequality. Labor market factors include labor force status ("participation"; whether people work or not), industry of employment, and occupation type (proxying for skills or abilities).

57 Individuals with university-level education, who in the majority are English-speaking non-nationals (34 percent of non-nationals have a university degree as compared to 18 percent of nationals), show much higher levels of consumption expenditure. The costs of sending children to school, both direct and indirect, are higher (in proportion to their average consumption) for rural and less affluent households and become prohibitive at higher levels of education. (Sulla et al. [2022])

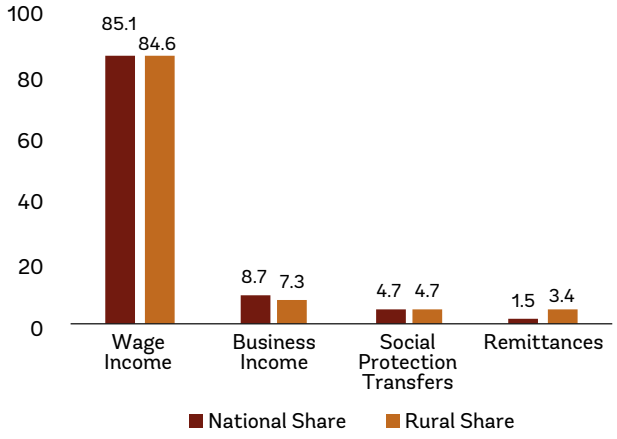
58 See Sulla et al. (2022). The decomposition of inequality by income sources follows Lerman and Yitzhaki (1985) and Stark and others (1986). A module developed by López-Feldman (2008) implements this approach in Stata.

FIGURE 2.22 Decomposition of Inequality



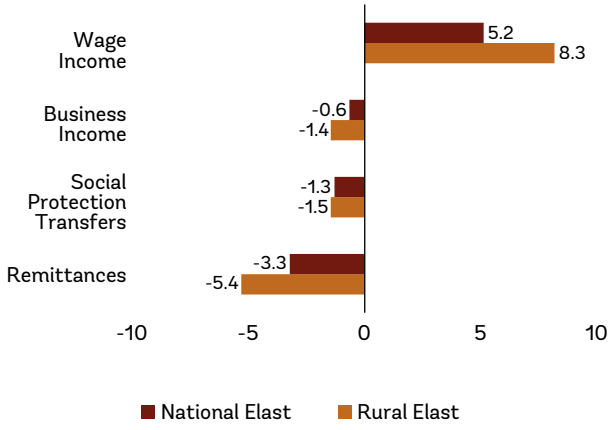
Source: Inequality in Southern Africa: An Assessment of the Southern Africa Customs Union (World Bank 2022).

FIGURE 2.23 Decomposition of Inequality by Income Source in Botswana at National level and for Rural Households (%)



Source: World Bank calculations based on Sulla et al. (2022). Numbers vary slightly due to the use of a methodology that considers survey weights.

FIGURE 2.24 Marginal effect of income source change

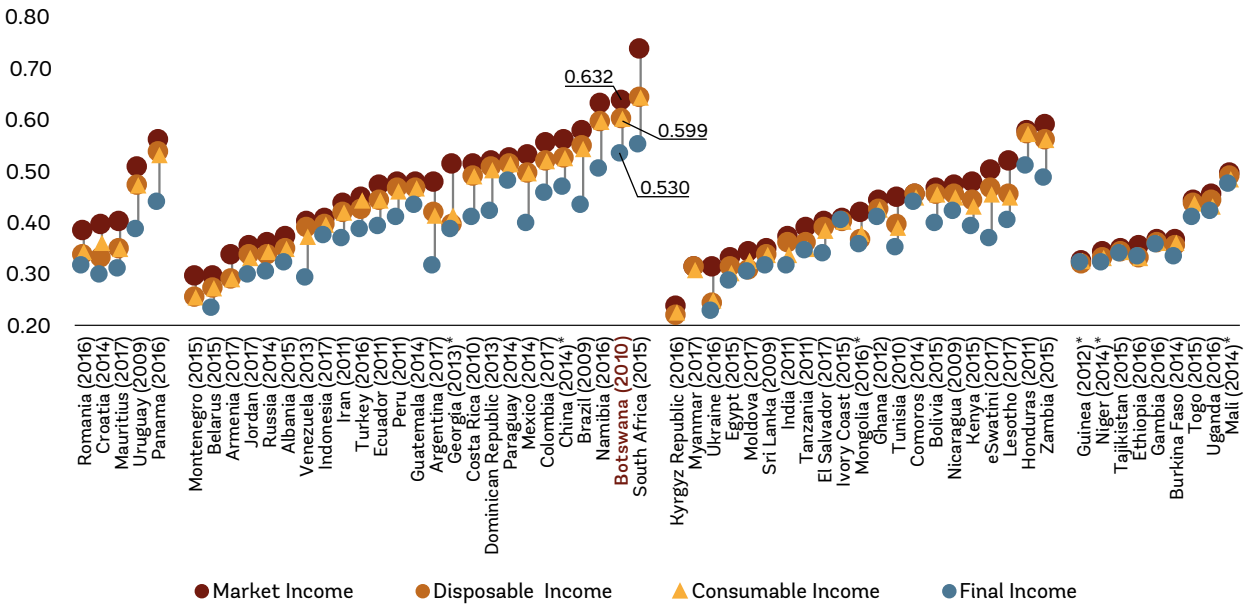


Source: World Bank calculations based on Sulla et al. (2022). Numbers vary slightly due to the use of a methodology that considers survey weights.

are a larger share of total inequality than remittances (4.7 percent versus 1.5 percent). Yet, on the margin, their equalizing effect on incomes is small and smaller than that of remittances (3.3 versus 1.3 percent).[59] Nonetheless, the impact of social protection transfers and remittances is small relative to the disparities caused by differences in wage income. The marginal elasticity for rural households is 3.6 times larger for remittances than for social protection transfers despite smaller shares of total inequality. These results are consistent with the significant contributions of labor market outcomes to inequality. These results suggest that beyond continued improvements in educational attainment and dependency ratios, reducing inequality will require policies that reduce differences in wage incomes, for example, by strengthening skills and abilities and by reducing wage differences between the public and private sectors.

59 These estimates are slightly different than those reported in Sulla et al. (2022) (the regional report "*Inequality in Southern Africa*") because a different methodology was used that takes into account survey weights.

FIGURE 2.25 Gini Coefficient by Country and Income Source



Source: Adapted from World Bank 2022a. Poverty and Shared Prosperity Report, 2022.

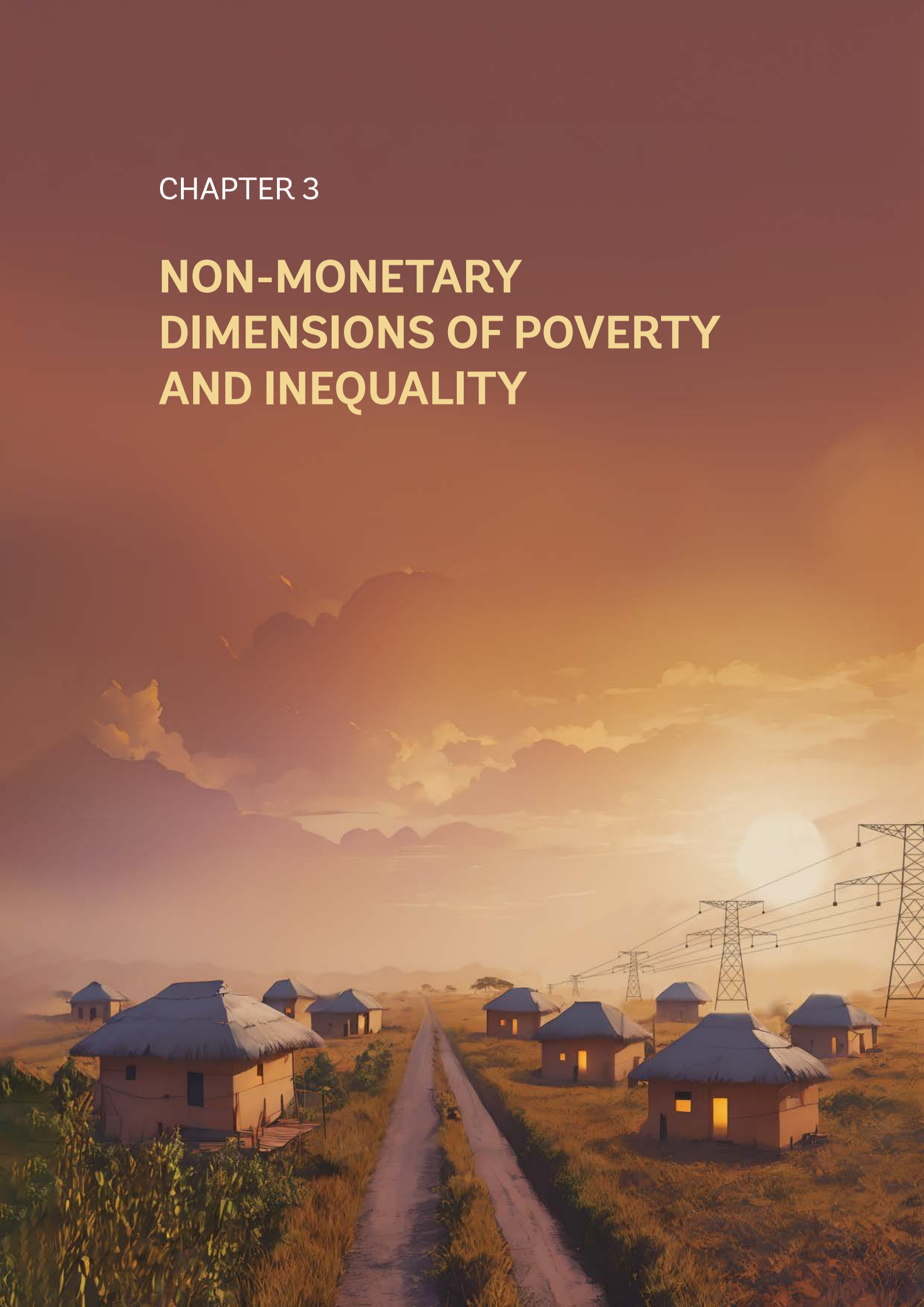
Fiscal policy has also contributed to reducing inequality. The Commitment to Equity (CEQ)[60] methodology traces how inequality evolves as different transfers and taxes are added or subtracted from welfare aggregates. Botswana's most recent CEQ analysis uses the 2009/10 BCWIS.[61] Results show a 10-percentage point decrease in the Gini Coefficient after accounting for the fiscal policy impact, with education and health transfers contributing two-thirds of this reduction (Figure 2.25). Botswana's direct taxes and transfers contributed three percentage points to reducing inequality in 2009, reflecting a stronger impact on inequality than in two-thirds of the 60 countries where the CEQ framework has been implemented. Nevertheless, Botswana still has one of the highest levels of inequality (after South Africa).

60 The CEQ methodology is a diagnostic tool that helps identify how fiscal policy affects equity. Three different income stages are estimated: market income (before any fiscal policy), disposable income (after direct taxes and transfers), and consumable income (after indirect taxes and subsidies). Changes in the Gini Coefficient between the different concepts quantifies the distributional impact of taxes and transfers. Lastly, final income also incorporates health and education expenditure (Lustig and Higgins, 2016).

61 International Monetary Fund 2018. https://commitmentoequity.org/wp-content/uploads/2020/05/cr18268.pdf. The 2009/10 survey used for the CEQ analysis in Botswana corresponds to a year of fiscal stimulus which could amplify the fiscal incidence on welfare aggregates. If there have been significant changes in the structure of household income and expenditures or the structure of taxation and social spending since 2010, these findings would not reflect accurately how fiscal policy impacts Botswana today.

CHAPTER 3

NON-MONETARY DIMENSIONS OF POVERTY AND INEQUALITY



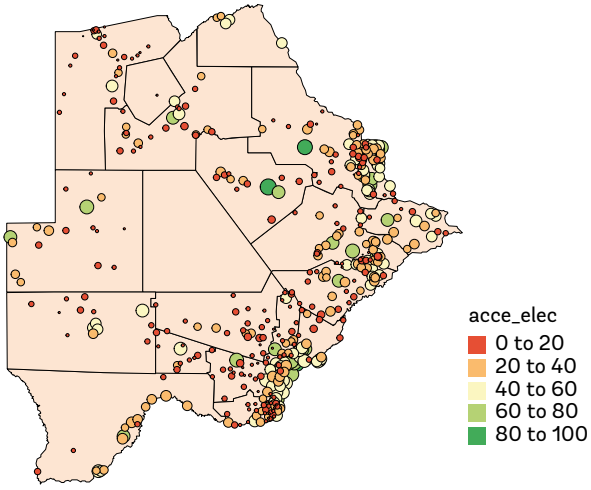
The chapter presents non-monetary measures of welfare to capture deprivations beyond consumption and income, including education and basic infrastructure such as electricity, water, and sanitation. It also analyzes the impact of drought and rainfall shocks on poor villages. The first section combines the 2011 poverty map and census to examine spatially disaggregated village-level outcomes. The results show that access to electricity and sanitation was low and highly unequal in 2011, whereas access to water was almost universal. The following section focuses on urban-rural trends: poor households had important improvements in access to sanitation and little improvement in access to electricity in 2016, while levels overall remain low, especially in rural areas. Satellite data then shows that despite policy goals of universal access, electricity remained unequal and city-centric in 2019. The Human Opportunity Index, which focuses on opportunities among children, highlights the need to target quality infrastructure programs in rural areas. Health and education outcomes show improvements but face quality challenges, and the Human Capital Index remains considerably lower than the average for countries with similar income. The Multidimensional Poverty Measure then combines data on monetary poverty, basic infrastructure, and education to monitor a broader measure of poverty and shows bigger improvements than monetary poverty alone. However, large gaps remain relative to peers. The last section's drought and rainfall spatial data shows stronger negative impacts on the poorest locations, particularly during a year of known increases in rural poverty (2015/16) but also during 2019, in line with projected poverty increases.

3.1 ACCESS TO ELECTRICITY AND SANITATION AT THE VILLAGE LEVEL IS LOW AND HIGHLY UNEQUAL

Access to electricity and improved sanitation was low and highly unequal across households in 2011, while access to improved water was more universal. The 2011 Population and Housing Census showed large differences in access to electricity and sanitation across the country, with access highest among households living in or near the largest cities, such as Gaborone and Francistown in the east (Figure 3.1.a and Figure 3.1.c). A few western and northern villages also showed relatively high access to services (Figure 3.1.a). Many villages had limited access to electricity, with fewer villages having higher access rates (Figure 3.1.b). In contrast, for sanitation, a comparable number of villages had varying degrees of access (Figure 3.1.d). The 2011 Census also showed access to improved water was near universal (95.7 percent), with high levels of access for villages across the country (Figure 3.1.e and 3.1.f). In terms of poverty, households in poorer villages experienced worse access rates to electricity and sanitation than those in wealthier villages but similar rates of access to improved water (Figure 3.2).

FIGURE 3.1 Access to electricity and improved sanitation is highly unequal while access to improved water is more universal (2011 Census)

a. Access to electricity (%), 2011



b. Number of villages at each percentage of access

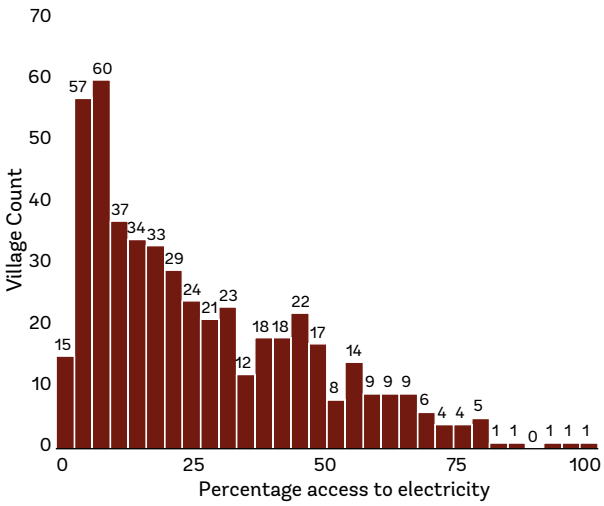
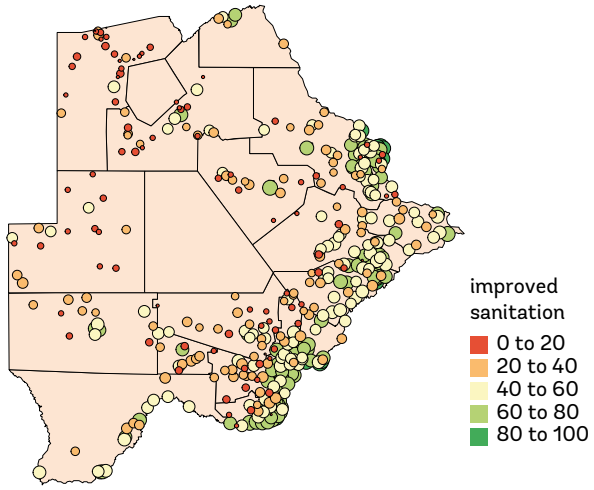
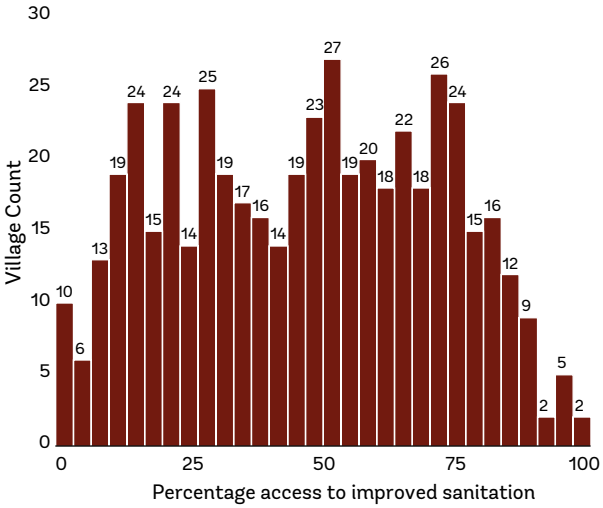


FIGURE 3.1 (cont.)

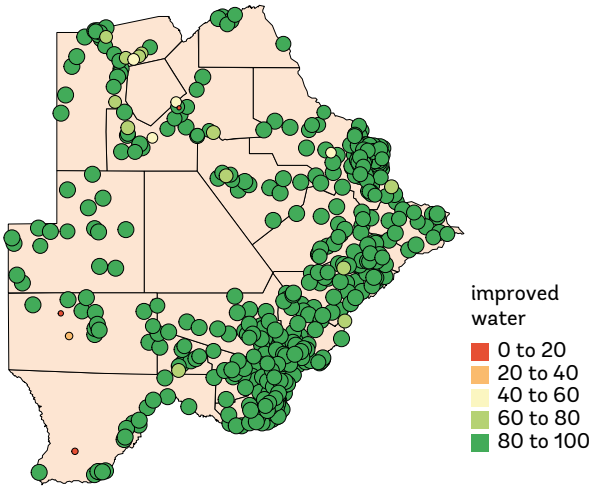
c. Access to improved sanitation (%), 2011



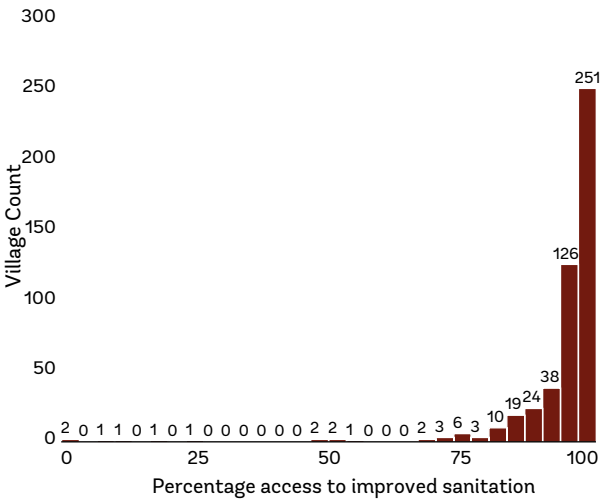
d. Number of villages at each percentage of access



e. Access to improved water (%), 2011

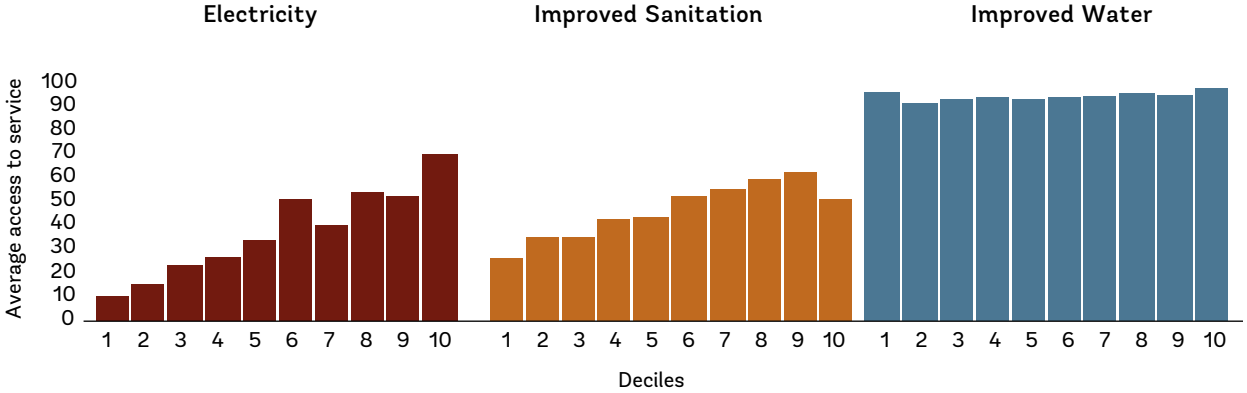


f. Number of villages at each percentage of access



Source: World Bank calculations based on the 2011 Botswana poverty map, Statistics Botswana (2015) and the 2011 Population and Housing Census. Note: decile 1 = 50 poorest villages; decile 10 = 50 richest villages.

FIGURE 3.2 Poor villages had much lower access to electricity and improved sanitation than wealthy ones, whereas access to improved water was almost universal



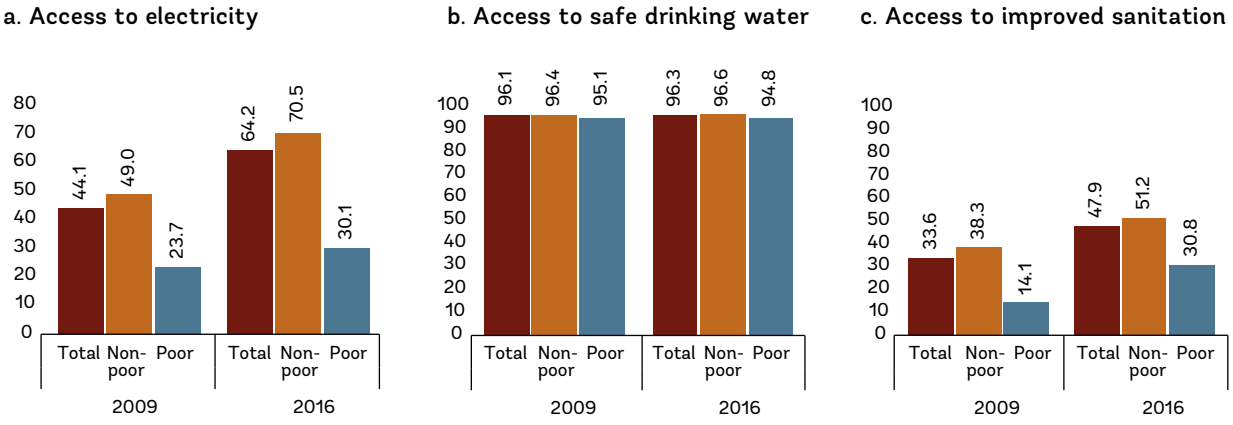
Source: World Bank calculations using the 2011 Population and Housing Census and the 2011 Poverty Map.

3.2 ACCESS TO BASIC SERVICES INCREASED IN 2016 BUT SOME SERVICES REMAIN LOW FOR AN UPPER-MIDDLE-INCOME COUNTRY

Despite efforts to achieve universal access by 2040, at 65 percent, access to electricity in 2016 is low relative to Botswana's per capita income. The 0.005 US$/kWh tariff on electricity customers to connect low-income households to the grid has not been enough to fund universal grid access, and off-grid solutions have yet to be promoted in Botswana. In addition, the COVID-19 pandemic in 2020 and 2021 interrupted and slowed the long-term trend of increasing access by approximately 1.5 percentage points per year. In rural areas, access to electricity was only 35.2 percent in 2016, leading many rural households to rely on wood fuel for cooking, heating, and lighting, resulting in hazardous indoor air pollution. At 80.4 percent, urban areas had much higher access to electricity in 2016. Moreover, despite improvement over time, only 30 percent of poor households had access to electricity in 2016, compared to 71 percent of non-poor households (Table 2.2 and Figure 3.3). In addition, improvements in access to electricity in 2009 -16 favored non-poor households. Low levels of access to electricity in rural areas and among poor households result in less productivity and lower levels of development.

Botswana has near universal access to safe drinking water, yet supply is limited to certain hours and days in many parts of the country. As of 2016, 96.3 percent of households had access to improved drinking water (Figure 3.3) and 9 out of 10 households received water from a piped network. Even though access rates align with structural peers, water supply is limited to eight hours per day, three days a week in many parts of the country, forcing households with a piped connection to use alternative sources such as mobile water tanks. In addition, groundwater is overexploited, and saline intrusion is a recurrent problem across Botswana. Critical industries like agriculture, mining, and tourism depend on an adequate water supply.[62] Moreover, the 2015 drought highlighted the country's vulnerability to climate change, as cereal crop production declined by 70 percent and livestock mortality increased by 20 percent. Botswana is forecast to become highly water-stressed by 2040.[63] If no action is taken, the annual water supply-demand gap will increase from an estimated 20Mm3 in 2020 to 114Mm3 by 2035.

FIGURE 3.3 Poor households face significant differences in access to electricity and sanitation



Source: World Bank calculations using 2009/10 BCWIS and 2015/16 BMTHS.

62 The livestock subsector accounts for 66 percent of agricultural water use. Mining's water consumption share is third after agriculture and domestic consumption.

63 The Water Resources Institute indicates that water stress levels for Botswana, Namibia, South Africa, and Lesotho will reach levels between 40-80 percent by 2040. Available at: https://www.wri.org/insights/ranking-worlds-most-water-stressed-countries-2040

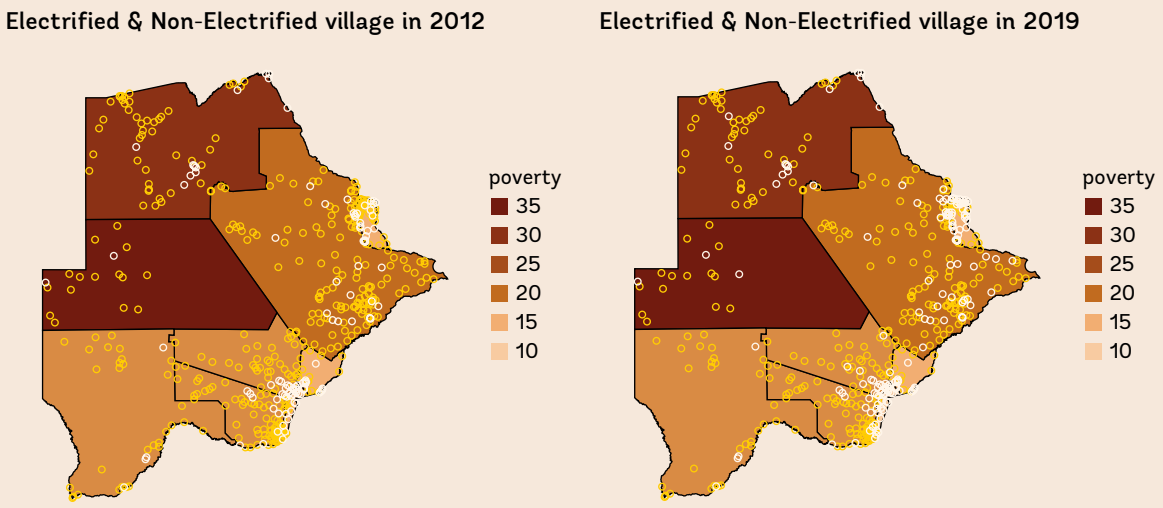
Access to improved sanitation has expanded but remains quite low, especially among poor households. Access to improved sanitation increased from 34 to 48 percent between 2009 and 2016. Poor households benefitted the most, as access more than doubled for this group, from 14 to 31 percent during the same period (Table 2.2 and Figure 3.3). Despite these advances, large gaps remain between urban and rural areas and between poor and non-poor households, while access levels are below the average in Upper-Middle-Income Countries. Low access to improved water and improved sanitation adversely affects the human capital formation of poor and rural households.

BOX 3.1 Electrification Rate Maps 2012-2019

Satellite data is used to generate estimates of electrification at the highest resolution. The rates are estimated for 2012-2019 and validated against population estimates based on computer vision techniques identifying human settlements. This chapter utilizes the estimated predicted likelihood of electrification HREA data to generate the electrification maps for Botswana in 2012, 2015, and 2019.

Since 2012, progress in electrification has been gradual and remains unequal amongst Botswana's villages, with stronger growth in the northeast and southeast. To estimate electrification rates across Botswana beyond the latest available census (2011), satellite data from the High-Resolution Electricity Access (HREA) project was used. The analysis maps the HREA likelihood, calibrated to replicate the share of households with access to electricity in the latest available household survey (2015/16 BMTHS). Electrification rates are estimated for 2019, a year without available survey or census data, using HREA calibrated data and validated against population estimates based on computer vision techniques that identify human settlements. The results show a gradual increase in the predicted likelihood of electrification across villages between 2012 and 2019, with a more significant concentration around Gaborone and Francistown (Figure B3.1; map shows higher concentration of white circles around the main cities).

FIGURE B3.1 Electrification rates are higher and have improved more in the northeast and southeast



Source: World Bank calculations using Min and O'Keeffe (2021) dataset for electricity access and 2009/10 BCWIS for poverty by district. *Note:* White circles represent electrified villages; yellow circles represent unelectrified villages.

BOX 3.1 (cont.)

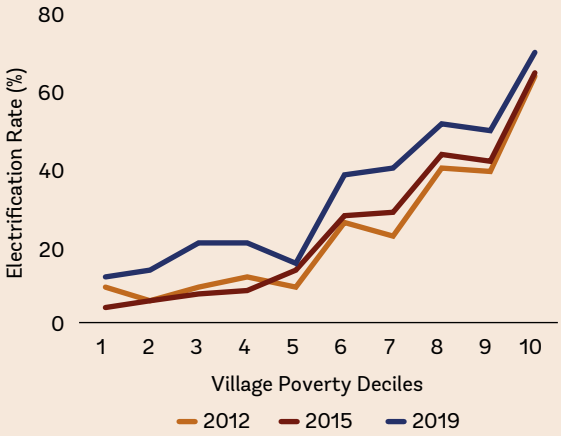
The electricity shortage of 2015 negatively impacted the poorest 40 percent of villages, which had estimated electrification rate declines in that year. While all poverty deciles have seen growth in estimated electrification rates between 2012 and 2019, there is significant inequality in power access growth across groups and intertemporally. Holding villages constant at their 2010 poverty level (or decile rank), Table B3.1 shows that between 2012 and 2015, the poorest 40 percent of villages saw declines in the proportion of their electrified villages. As discussed in Chapter 1, electricity shortages in 2015 led to the importation of nearly 40 percent of the country's electricity demand at premium tariffs and without a guaranteed supply. This result suggests that the electricity shortages experienced in Botswana in 2015 had a stronger and more direct negative impact on the poorest households. It is important to note that the rising incidence of privately owned generators in less poor neighborhoods will not be captured by the satellite data employed. Nonetheless, the conclusion is still valid.

Despite growth in the estimated electrification rate across all deciles in 2019, the gap between the poorest and wealthiest villages in terms of electrification remains large. Between 2015 and 2019, all ten deciles saw a rise in the electrification rate (Table B3.1 and Figure B3.2). Nevertheless, the gap in the electrification rate between the poorest and wealthiest villages remains extremely large. The richest ten percent of villages had, on average, an electrification rate of 70 percent in 2019, while the poorest ten percent had a rate of less than 12 percent. In addition, the increase in the electrification rate between 2012 and 2019 was the smallest among the poorest ten percent of villages, while the rate was 12 or 17 percentage points higher for some of the wealthier villages.

TABLE B3.1 Electrification rate for 2012 - 2019 by 2011 Village Poverty Deciles

Decile	2012	2015	2019
1	9.8	4.2	11.8
2	6.1	6.3	14.3
3	9.4	8.0	20.8
4	12.5	8.9	20.8
5	10.0	14.0	16.0
6	26.5	27.7	38.8
7	23.1	29.2	40.4
8	40.0	43.8	52.0
9	39.6	41.7	50.0

FIGURE B3.2 Electrification Rate by 2011 Village Poverty Deciles, 2012-2015-2019



Source: World Bank calculations using Min and O'Keeffe (2021) dataset for electricity access and 2010 Poverty Map to calculate the village poverty deciles. *Note:* Decile 1 = poorest 50 villages; decile 10 = wealthiest 50 villages.

While Botswana has made some headway regarding health outcomes, significant challenges remain. By providing antenatal care and antiretroviral treatment to 9 out of every ten pregnant women, Botswana became the first high-burden country to bring mother-to-child transmission of HIV below 5 percent. The HIV case rate has dropped below 500 per 100,000 live births[64], accompanied by an increase in life expectancy from 60.2 years in 2010 to 69.3 years in 2018. While maternal mortality declined from 188.9 per 100,000 live births in 2011 to 133.7 in 2018[65], it remains considerably higher than the average in other Upper-Middle-Income countries (57

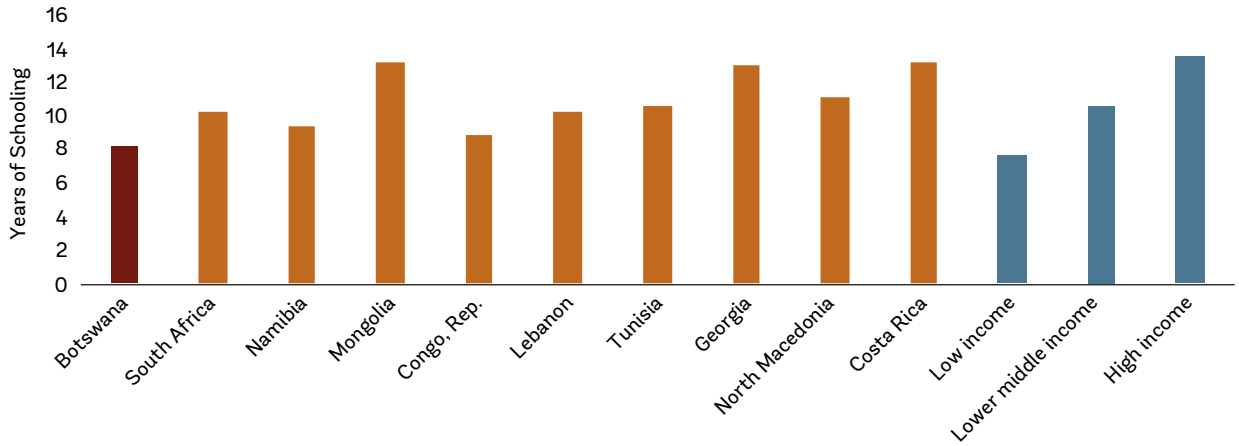
64 See this report https://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2021/december/emtct_botswana

65 Statistics Botswana (2020) Key Statistics @ http://www.statsbots.org.bw/

maternal deaths per 100,000 births) and not commensurate to the level of health sector investment.[66] Similarly, Botswana continues to experience rates of malnutrition like other countries in Southern Africa that have much lower income levels. Infant and under-five mortality also declined between 2015 and 2021, from 36.6 to 28.3 deaths per 1,000 live births and 45.4 to 34.9 deaths per 1,000 live births, respectively.[67] Nonetheless, infant mortality is slightly higher than 28.4 deaths registered globally and three times higher relative to Upper-Middle-Income countries.[68] In contrast, the neonatal mortality rate and levels of stunting among children under five remained relatively unchanged. The neonatal mortality rate decreased from 23.3 to 21.9 per 1,000 live births between 2015 and 2020, while levels of stunting stagnated at 22 percent in the past two decades[69]. Botswana continues to register one of the highest incidences of tuberculosis globally and is facing a considerable burden from non-communicable diseases. Estimated death rates from cancers and cardiovascular disease have remained higher than 100 and 250 per 100,000 population, respectively.

Considerable progress has been made in increasing school enrollment at younger ages; however, the quality remains low. Education Management Information Systems (EMIS) show the share of children aged 5 enrolled in pre-primary schools increased from 20 percent in 2013 to 43 percent in 2018. Household survey data from 2015/16 indicates that less than a third of children between the ages of three and five were enrolled in community-based preschool centers by private providers. Nonetheless, at the end of junior secondary, dropout rates remain high, the senior secondary gross enrollment rate is only 62 percent, there is a shortage of classrooms and learning materials, and teachers receive very limited in-service training at the secondary level. Moreover, Botswana's expected years of schooling, adjusting for the quality of education, are low for its income level and below its structural peers (Figure 3.4).[70] Public spending on education is high, representing over a fifth of the government budget (22.3 percent) and 8.4 percent of GDP in 2020 (among the highest in the world). A large share is earmarked for tertiary education, primarily benefiting students from the top two income quintiles. Technical or vocational (TVET) per-student spending is lower than secondary education per-student spending. Thus, school dropouts go to underfunded, bad-quality TVET institutions, if at all. Only 20 percent of poor households have household heads with secondary or higher education compared to 52 percent of nonpoor households (Table 2.2). As discussed in Chapter 2, poorer households have lower levels of human capital accumulation, limiting the productive capacity of the workforce.

FIGURE 3.4 Expected Years of Schooling



Source: Human Capital Project (2020).

66 Total current expenditure on health as a percentage of GDP was 6 percent in 2019 with total spending increasing in real terms by 8.6 percent between 2013/2014 and 2018/2019. World Development Indicators
67 World Bank. World Development Indicators.
68 Ibid.
69 World Bank from UNICEF/WHO/World Bank Joint Child Malnutrition Estimates - Country Level Models, April 2021,
70 Note: Expected years of school is calculated as the sum of age-specific enrollment rates between ages 4 and 17. Age-specific enrollment rates are approximated using school enrollment rates at different levels: pre-primary enrollment rates approximate the age-specific enrolment rates for 4- and 5-year-olds; the primary rate approximates for 6-11 year-old; the lower-secondary rate approximates for 12-14 year-olds; and the upper-secondary approximates for 15-17 year-olds.

FIGURE 3.5 Human Capital Index and log GDP per capita, 2020

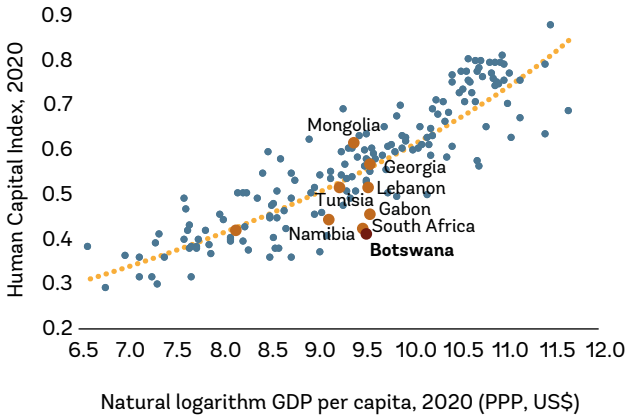
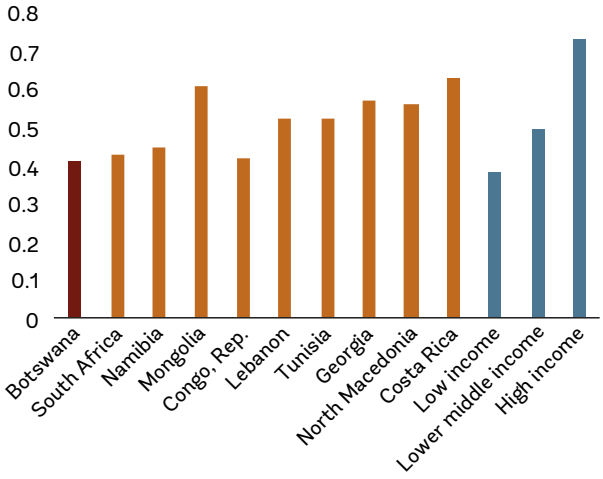


FIGURE 3.6 Human Capital Index, select countries, 2020



Source: Human Capital Project (2020). *Note:* The Human Capital Index is designed to capture the amount of human capital a child born today could expect to attain by age 18. The HCI is higher on average in rich countries than poor countries and ranges from around 0.3 to around 0.9. The units of the HCI have the same interpretation as the components measured in terms of relative productivity.

Despite recent advancements, Botswana's Human Development outcomes remain poor for a country with similar income and characteristics. The Human Capital Index (HCI)[71] slightly increased from 0.37 in 2010 to 0.41 in 2020, placing it just above the average HCI score for Sub-Saharan Africa (0.40) and considerably lower than the average of Upper-Middle-Income Countries (0.56) (Figure 3.5 and Figure 3.6). This indicates that a Botswana child is only 41 percent as productive as an adult as he could have been had he received complete education and full health.[72] Moreover, children in Botswana face stark differences in life prospects depending on their circumstances at birth and during their early years, as shown via the results of the Human Opportunity Index (see Box 3.2).

BOX 3.2 The Human Opportunity Index

The Human Opportunity Index (HOI) measures how individual circumstances such as place of residence, gender, and education of the household head can affect a child's access to basic goods and services such as education, water, electricity, and sanitation.[73] The index considers two concepts: the average coverage of a basic good or service and the inequality in the distribution of the good or service across circumstances. The HOI is based on children aged 14 and under to remove the effects of individual effort and choices and focus on opportunities essential to early development (Barros et al. 2009). Promoting more egalitarian access to basic goods and services of quality early in life will likely reduce inequality of outcomes in adulthood and increase economic efficiency. The HOI focuses on the extensive margin - whether or not there is access to a service. Nonetheless, the quality of an 'opportunity' could be heterogeneous across or within regions.

71 The Human Capital Index (HCI) measures the expected productivity as a future worker of a child born today. It is a function of education and health, underscoring their importance for the productivity of people. It ranges between 0 and 1, where 1 indicates the benchmark of complete education and full health.

72 World Bank. World Development Indicators.

73 The index is expressed on a scale of 1 to 100, with higher figures reflecting good levels of equity and lower figures reflecting poor and/or inequitable access. See Paes de Barros et al. (2008) and Molinas et al. (2012).

BOX 3.2 (cont.)

Access to basic goods and services is highly relevant to the development of children, yet remains largely unequal between urban and rural areas and far from universal in some cases. Poor households often lack access to adequate water and sanitation, electricity, and education, limiting their ability to participate in and contribute to growth. Despite progress in providing access to electricity, as of 2016, the HOI value for improved sanitation (40.6) remains low. This is of particular concern given that water and sanitation influence health and other important childhood opportunities, such as not missing school days due to preventable illnesses. Nonetheless, Botswana has near-universal coverage and HOI values for school enrollment, with slight increases between 2009 and 2016 (Figure B3.3). In addition, there are substantial differences between urban and rural areas regarding access to basic services. For all the opportunities analyzed, urban coverage is more than double that of rural areas, with access to improved sanitation showing the largest gap (Figure B3.4).

An increase in available opportunities primarily drives improvements in the HOI. Changes in the HOI can be decomposed into three components: (i) the composition effect, which refers to changes in the composition of the group analyzed (for example, an increase in parent's education or rural-to-urban migration); (ii) the scale effect, which represents a change in the available number of opportunities (for example, more electricity connection spots/towers); and (iii) the equalization effect, which measures the shift towards a more equal distribution of the opportunity under consideration. In 2003-16, the scale effect explained most HOI changes, particularly for electricity (Figure B3.5). Greater electricity coverage allowed more households to connect to the grid. In contrast, changes in sewage and water in 2009-16 were primarily driven by the composition effect.

Household per capita income, dwelling location, and parental education are the most important factors determining whether a child has access to essential childhood opportunities. The D-index provides insight into how an opportunity would have to be reallocated across children to ensure no association between access to services and their circumstances at birth. Approximately 62 percent of the differences in access to safe water and adequate sanitation relate to parent's education or household per capita income. Likewise, opportunities to live in a home with access to water appear heavily correlated with place of residence (Figure B3.6). Rural-urban disparities in basic infrastructure, such as access to safe running water and improved sanitation, highlight a need to target quality infrastructure programs in rural areas.

FIGURE B3.3 Human Opportunity Index, 2016

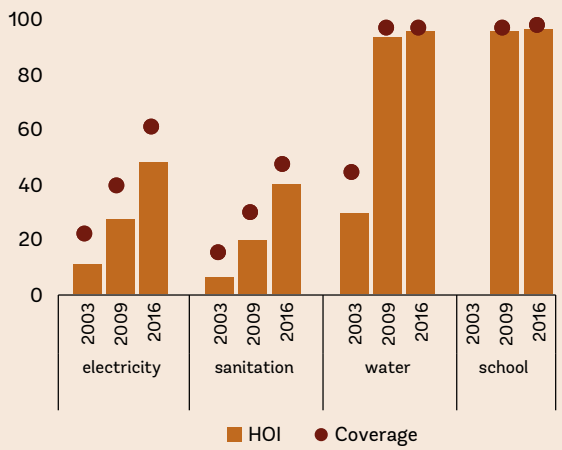
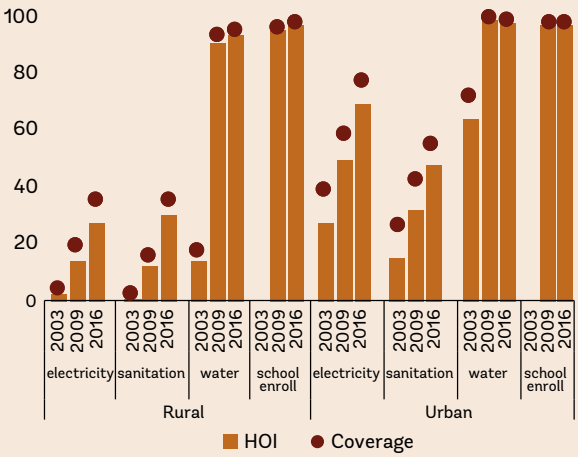


FIGURE B3.4 Human Opportunity Index, 2016, by Area



Source: World Bank calculations using HIES (2002/03), BCWIS (2009/10), and BMTHS (2015/16).

BOX 3.2 (cont.)

FIGURE B3.5 HOI Decomposition, 2003-2009-2016

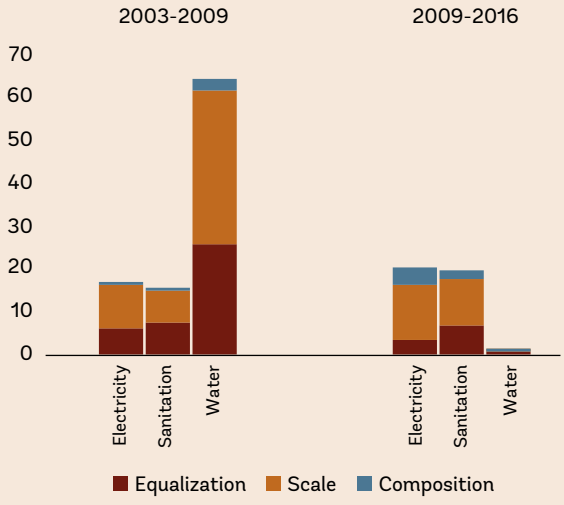
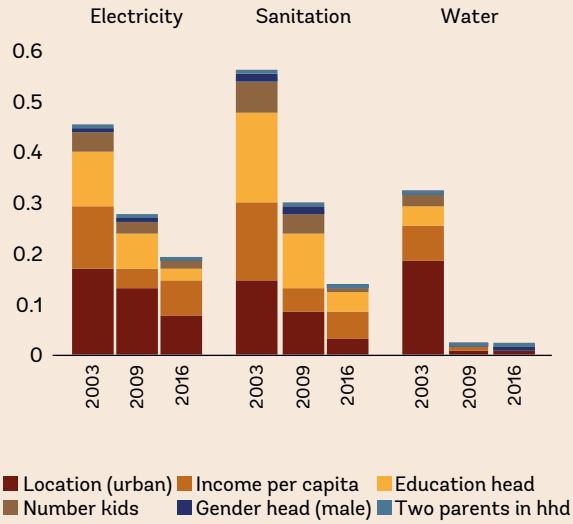


FIGURE B3.6 D-index Decomposition, 2003-2009-2016



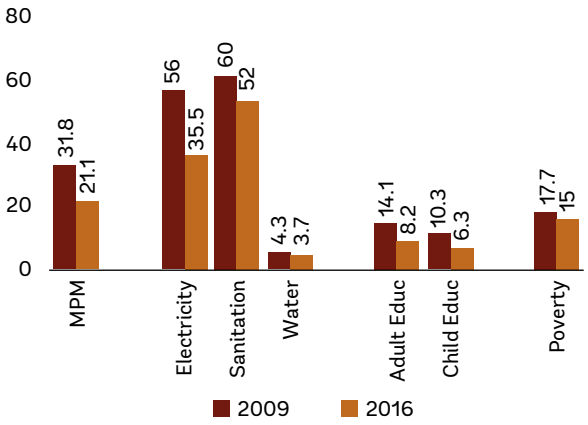
Source: World Bank calculations using 2002/03 HIES, 2009/10 BCWIS, and 2015/16 BMTHS. *Note:* The circumstance groups used in this analysis are urban or rural residence, family per capita income, education of the household head, number of children 0-14 years old, gender of the household head, gender of the child, and presence of both parents in the household. When all possible groups have the same access, the D-Index is zero and the HOI is equal to the coverage rate. In the other extreme, if one group has full access while another has no access, the D-index equals one and the HOI is zero.

3.3 MULTIDIMENSIONAL POVERTY

Multidimensional poverty in Botswana shows stronger improvements than monetary poverty. The country's Multidimensional Poverty Measure (MPM) dropped nearly 11 percentage points, from 31.8 to 21.1 percent in 2009-16 (Figure 3.7). The World Bank's MPM measures the share of households deprived in monetary poverty, education, and basic infrastructure services (Box 3.3). At 52 percent, access to sanitation remains the highest deprivation rate among basic infrastructure services, followed by electricity (35.5 percent) and access to water (3.7 percent). Even though electricity continues to have the second-highest deprivation rate, access to this service improved significantly since 2009, resulting in a 37 percent drop in the deprivation rate in 2016. Although starting from much lower deprivation rates, access to water and indicators for education also showed slight improvements in this period.

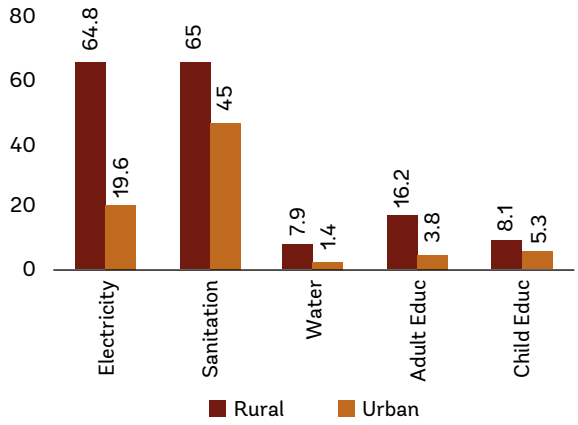
Deprivation rates are highest in rural areas, with significant gaps between urban and rural areas. In 2016, at 64.8 percent, rural areas experienced more than three times the deprivation rates in access to electricity compared to urban areas (19.6 percent). Similarly, nearly two-thirds of rural households did not have access to improved sanitation compared to 45 percent of urban households. Disparities also persist in education variables; 16 percent of rural households have at least one adult with less than complete primary education, relative to less than 4 percent in urban households (Figure 3.8). In addition, only 5 percent of urban households have at least one school-aged child up to grade 8 not enrolled in school compared to 8 percent among rural households.

FIGURE 3.7 Multidimensional Poverty Measure, Deprivation by Dimension, 2009 and 2016 (%)



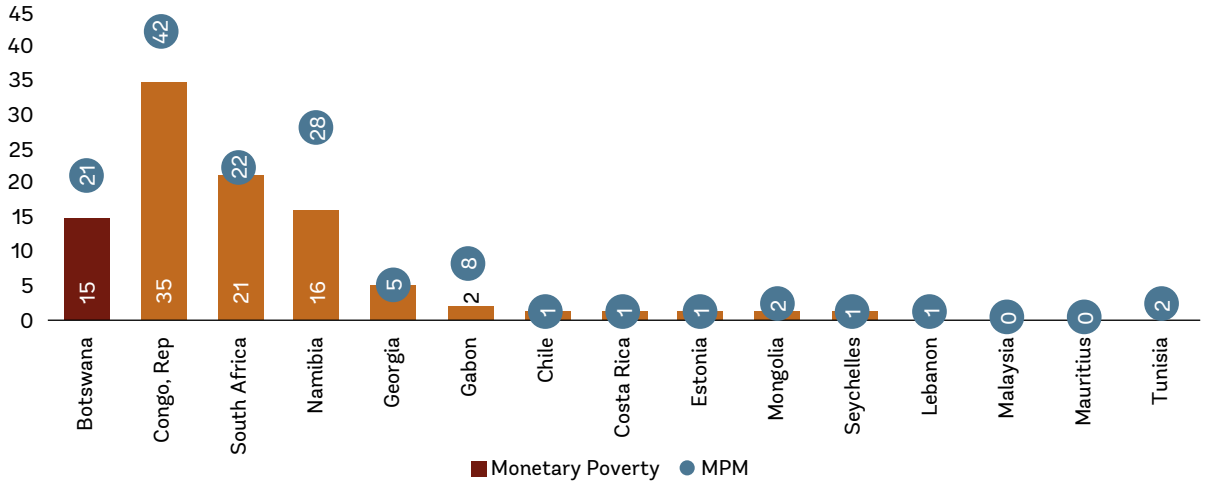
Source: World Bank calculations.

FIGURE 3.8 Deprivation in Access to Services by Area, 2016 (%)



Source: World Bank calculations.

FIGURE 3.9 Individuals in households deprived in monetary poverty and overall MPM



Source: World Bank Global Monitoring Database (GMD). Multidimensional Poverty Measure, April 2023. https://www.worldbank.org/en/topic/poverty/brief/multidimensional-poverty-measure

Cross-country comparisons show similar rates of multidimensional poverty in Namibia and South Africa but large gaps with other structural as well as aspirational peers (Figure 3.9). Botswana and Namibia had similar levels of extreme poverty circa 2015 under the international poverty line of $2.15 per day (2017 PPP). However, Namibia had a higher multidimensional poverty measure (at 28 percent versus 21 percent for Botswana) due to worse electricity, water, and sanitation deprivation rates, while similar education rates. Botswana and South Africa had similar levels of MPM circa 2015 because better results across all non-monetary dimensions compensated for South Africa's higher monetary poverty rate.[74] Comparisons with other structural peers, such as Georgia, Gabon, Mongolia, Lebanon, and Tunisia, or some possible aspirational peers, such as Chile, Estonia, Seychelles, and Mauritius, show large gaps with Botswana's non-monetary dimensions of poverty. The main drivers of Botswana's high MPM are the high levels of monetary poverty and the high deprivation rates in access to sanitation and electricity. It is harder to achieve higher living standards when poverty in all its forms is considered, but the MPM provides a way for policymakers to monitor improvements in this broader concept of welfare.

74 Recent concerns regarding access to electricity in South Africa could result in a worse MPM.

BOX 3.3 Multidimensional Poverty Measure

The World Bank's Multidimensional Poverty Measure (MPM) seeks to understand poverty beyond monetary deprivations by including dimensions such as access to education and basic infrastructure. However, maintaining monetary poverty as one of the dimensions (in the form of the monetary headcount rate at the $2.15 international poverty line) also allows for a broader definition of poverty. Including monetary and nonmonetary dimensions differentiates the WB's MPM from other prominent global multidimensional measures (such as the Multidimensional Poverty Index developed by the United Nations Development Programme and Oxford University). A country's MPM is at least as high as or higher than monetary poverty, reflecting the additional role of nonmonetary dimensions to poverty and their importance to general well-being.

A focus on non-monetary deprivations highlights to policymakers the importance of improving other aspects of human welfare that may not be well-captured by monetary measures alone. For example, some rural households may be considered nonpoor in income but lack access to water, electricity, or education. Alternatively, households that are both income-poor and deprived in nonmonetary dimensions are much worse off in terms of well-being than households that are income-poor but have access to basic services. Considering multidimensional poverty can provide a means for monitoring improvements in broader welfare.

The MPM comprises six indicators mapped into three dimensions of well-being: monetary standard of living, education, and basic infrastructure services (Table B3.2). These six standardized indicators include consumption- or income-based poverty, educational enrollment, educational attainment, and access to drinking water, sanitation, and electricity. Each is defined as a 0-1 variable, where "1" means the individual or household is deprived in that indicator. The MPM summarizes the number of deprivations into a single index, which requires a decision on how to weight each indicator. In the World Bank's MPM, dimensions and indicators within each dimension are weighted equally. Individuals are considered multidimensionally deprived if they fall short in at least one dimension or a combination of indicators equal in weight to a full dimension. In other words, if a household faces deprivations in indicators whose weight adds up to 1/3 or more, it is considered poor. Since the monetary dimension has only one indicator and there are three equally weighted dimensions, anyone who is income-poor is also poor under the broader multidimensional poverty concept. In addition to selecting the dimensions and the indicators, one must also specify the deprivation parameters or thresholds for each indicator. As an example, the threshold chosen for the educational enrollment indicator is that at least one school-age child up to the age of grade 8 is not enrolled in school. Table B3.2 presents the detailed indicators, weights, and thresholds for all dimensions and indicators that comprise the MPM.

TABLE B3.2 Multidimensional Poverty Measure Indicators, Weights, and Thresholds

Dimension	Parameter	Weight
Monetary	Daily consumption or income is less than US$ 2.15 per person	1/3
Education	At least one school-age child up to the age of 8 grade is not enrolled in school	1/6
	No adult in the household (age of grade 9 or above) has completed	1/6
Access to basic infrastructure	The household lacks access to limited-standard drinking water	1/9
	The household lacks access to limited-standard sanitation	1/9
	The household lacks access to electricity	1/9

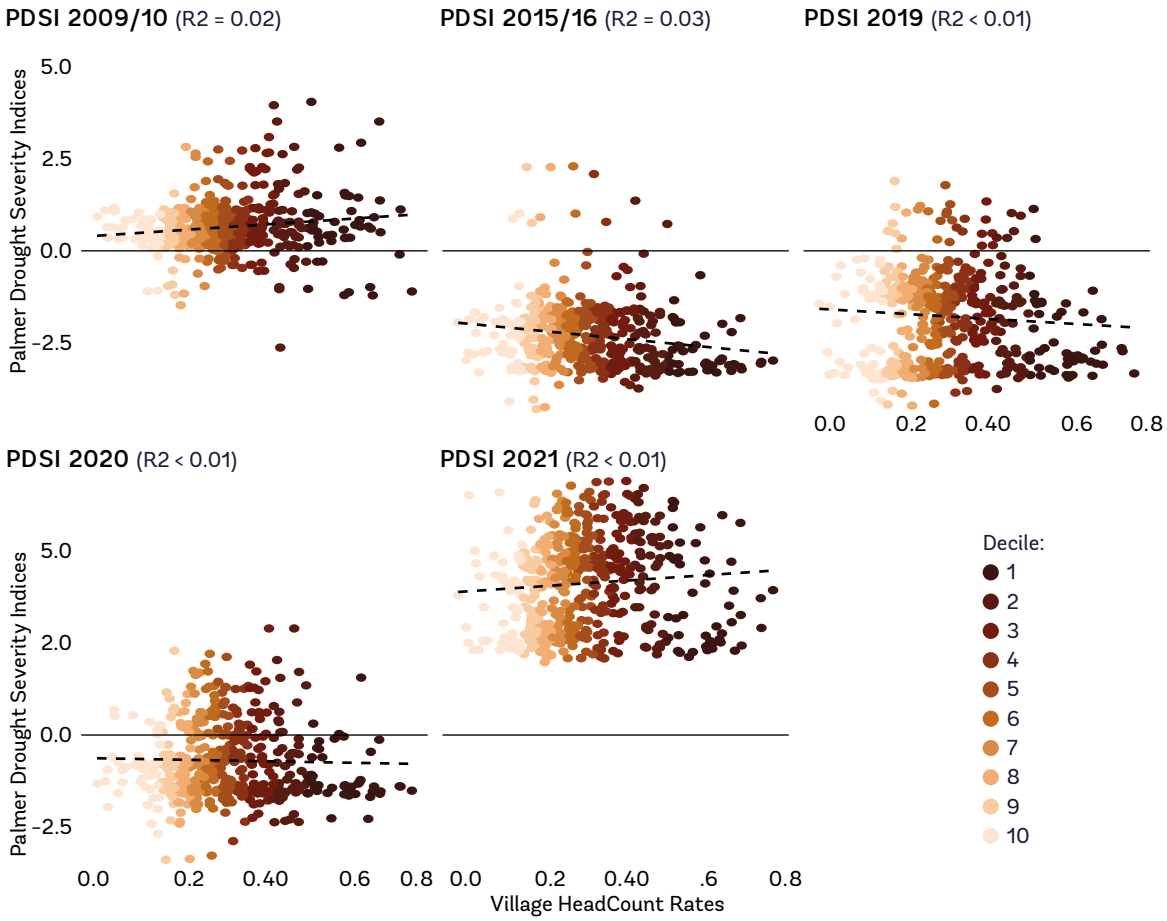
Source: World Bank. 2020b. Poverty and Shared Prosperity 2020: Reversals of Fortune. https://openknowledge.worldbank.org/handle/10986/34496

3.4 POOREST LOCATIONS FACE HIGHER RISK FROM NATURAL HAZARDS

Droughts are the second most common natural disaster in Botswana, particularly in the southern and eastern regions. Approximately 40 percent of the total population experiences low levels of effective precipitation, and under future projected climate conditions, the share of the population affected by droughts is expected to increase. The losses disproportionately affect the agricultural sector, as 40 percent of the country's livestock and all crops (except for maize and sorghum) are affected by droughts.[75]

The poorest villages are the most negatively affected by droughts and flooding. In 2016, almost 28 percent of Botswana's rural labor force worked in the agricultural sector, a sector whose productivity is sensitive to changes in climatic conditions, especially due to Botswana's challenges with water scarcity. In 2015 and 2019, Botswana suffered severe droughts, as seen via the strong negative values of the Palmer Drought Severity Index in Figure 3.10, with another but less severe drought impacting villages in 2020.[76] On the other extreme, Botswana seems to have faced very wet conditions in 2021, raising concerns about possible urban flooding, such as during the damaging floods of 2017. On the other hand, the PDSI was around zero during 2009/10, coinciding with a year of strong poverty reduction in Botswana.

FIGURE 3.10 Palmer Severity Drought Index (PDSI) and Village 2011 Poverty Rate by Deciles, 2009-2021

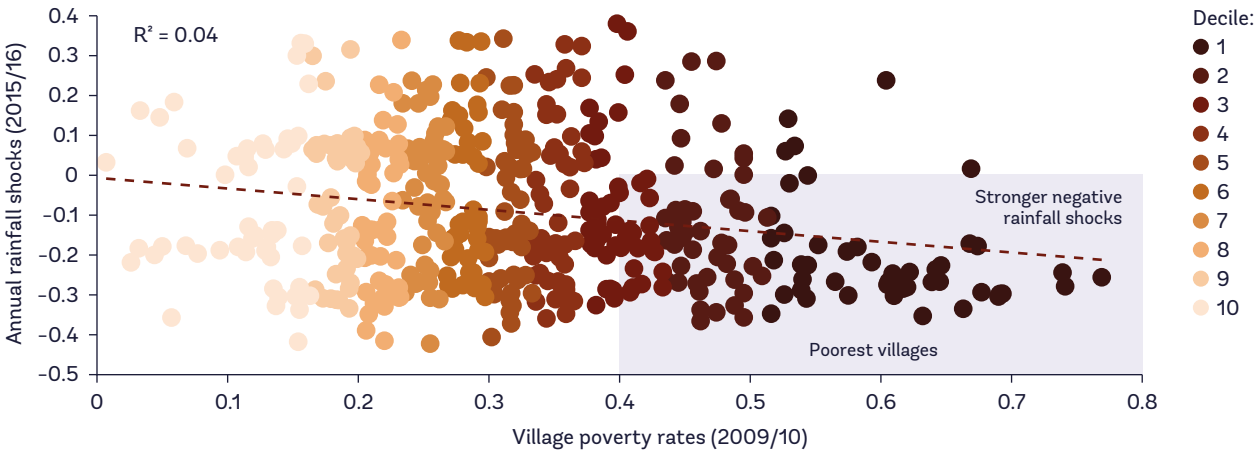


Source: World Bank calculations using the PDSI created by the Gridded Surface Meteorological (gridMET) database. Abatzoglou (2013). *Note:* The PDSI ranges from −5 (extreme drought) to 5 (extremely wet).

75 "Syed, T.; Goodman, P.; Mataruka, Z.; Evans, D. E.; Pachena, H.; Canales Gomez, A. C. C. 2022. Roadmap for sustainable livestock value chains in Southern Africa. © World Bank.". https://documents1.worldbank.org/curated/en/099430006082232802/pdf/P174621055c7850b80808d09c38c18d5ed9.pdf

76 The Palmer Severity Drought Index (PDSI) is created by the Gridded Surface Meteorological (gridMET) database (Abatzoglou, 2013) at 4km resolution to show driest (-5) to wettest areas (+5).

FIGURE 3.11 Palmer Severity Drought Index (PDSI) for 2015/16 by Village 2011 Poverty Rate



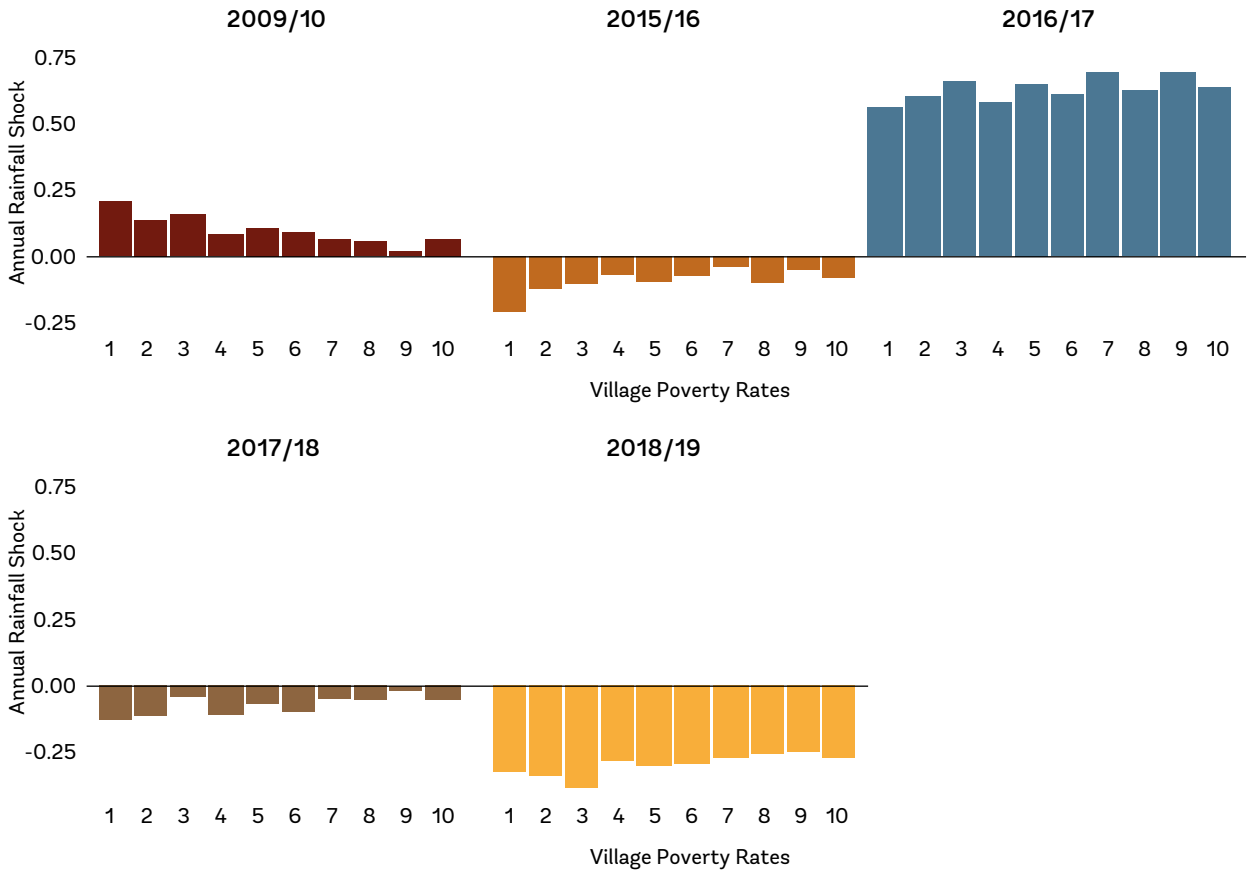
Source: World Bank calculations using the PDSI created by the Gridded Surface Meteorological (gridMET) database. Abatzoglou (2013).
Note: The PDSI ranges from –5 (extreme drought) to 5 (extremely wet).

Although drought hit most villages in 2015, it produced more damage among poorer villages where subsistence farmers work (Figure 3.11). The 2016 household survey shows that the number of people working in agriculture declined steeply relative to 2009, which, at a minimum, seems correlated with the drought conditions experienced in 2015/16. As shown in Chapter 2, poverty in rural areas increased in 2016 as subsistence and non-subsistence farmers could not make up for lost consumption via other sources of income. This points to the importance of efficient water management and irrigation policy, given the prevalence of subsistence (low-scale) agriculture in poorer areas.

The Palmer Severity Drought Index shows similar drought conditions in 2019 as in 2015, which suggests that subsistence farmers may have again faced declines in welfare in 2019. Although there is no household survey with consumption data available to directly measure poverty that year, the poverty projections undertaken via survey-to-survey imputations show an increase in poverty in 2019 (Figure 2.1 and Appendix 9). Concerns with droughts go beyond the vulnerability of subsistence farmers, however; Botswana's tourism depends on water-based wildlife, and it is considered the most important services sector export.

Similar results are confirmed by an indicator that focuses on annualized rainfall shocks. Seasonal rainfall provides an important means of natural irrigation for farmers as it is a determinant of the quality of the subsequent harvest season. However, a significant proportion of the agricultural population (particularly in subsistence agriculture) live around the poverty line and are often one bad harvest away from falling into extreme poverty. This section uses standardized differences between mean annual rainfall at the village level in 2009/10, 2015/16, 2016/17, 2017/18, and 2018/19 to historical average annual rainfall between 1982 and 2019 to see how poor villages (defined based on the 2011 poverty map) might have been affected by the difference in annual expectations of rainfall (rainfall shocks). Similar to Figure 3.10, villages with higher poverty levels correlate with more negative rainfall shocks. In addition, these annual rainfall shocks appear stronger in the poorest deciles in both 2015 and 2019 (Figure 3.12, where decile 1 represents the poorest villages). These results suggest that the poorest villages with the most cropland cover suffer more severely from these downturns.

FIGURE 3.12 Average annualized rainfall shocks by village poverty decile, 2009-2019



Source: World Bank calculations using CHIRPS data (Funk et al., 2015) for rainfall shocks and 2011 Poverty Map for village poverty rates. *Note:* Village poverty rates are maintained constant at the 2011 Poverty Map rates and villages are grouped into deciles from poorest to richest.

CHAPTER 4

SOCIAL PROTECTION IN COVID TIMES: RESPONSES AND LESSONS LEARNED

4.1 THE PRE-COVID-19 SOCIAL PROTECTION SYSTEM [77]

Social protection programs have a significant impact on poverty reduction. As discussed in Chapter 2, the 2016 poverty rates could be nearly five percentage points higher without these programs. Botswana's primary school feeding and Old-Age Pension programs contribute the most to poverty reduction while having low expenditure. Social protection can also contribute to human capital outcomes as well as resilience and shock response. Productive economic inclusion programs could be used to support income generation and resilience. Botswana's steps towards developing systems such as its social registry or stronger poverty targeting could help shock responsiveness.

TABLE 4.1 Overview of social cash transfer programs in Botswana

Program	Launch	Targeting	Beneficiaries	Benefit value	Budget
Old Age Pension	1996	Universal, age 65 years and older	126,424	P530/month cash (increased to P630 in 2022 and P730 in 2023)	P736 million in 2019/20
OVC Grant	1999/ 2009	Categorical, age 18 and under, orphaned or in need of care	20,146 in 2021/22	P600-P700 food basket, other in-kind benefits	P246 million in 2019/20
Disability Allowance	2015	Categorical, age 18 and older, medical declaration of disability	7,805	P450/month cash (increased to P550 in 2022)	P35 million in 2019
War Veteran's Pension	1998	Categorical, age 65 and older, fought in WWII, and surviving dependents	1,270	P600/month cash (increased to P700 in 2022)	P10 million in 2019/20
Destitute Persons' Allowance	1980/ 2002	Means-tested	38,973	P500-650 in-kind, P300/month cash, additional services	P332 million in 2019/20
Vulnerable Group Feeding	1988	Categorical, vulnerable children, women, sick and destitute, no means test	307,225	Take-home food rations	P714 million in 2017/18
School feeding programme (primary)	1997	Categorical, primary school pupils in government schools	390,294 in 2018/19	Cooked meal daily	
School feeding programme (secondary)	1997	Categorical, secondary school pupils in government schools	183,896 in 2015/16	Two cooked meals daily (+1 if boarding)	P308.5 million in 2017/18
Community Home Based Care	1995	Categorical, means-tested with same criteria as DPA	1,252 in	P500 food basket/ P1,200 oral tube feeding, additional services	P15 million in 2018/19
Ipelegeng (workfare)	1978/ 2008	Age 18 years and older, able-bodied, 'lottery system', limited to 1 month	70,000/ month	P567/month (casual labourers)/ P651/month (supervisors) cash	P635 million in 2019

Source: Gronbach et al. (2023 forthcoming) *Note:* Beneficiary numbers for 2019/20, unless otherwise specified. The value of the Botswana Pula in relation to the dollar crashed in March/April 2020, from about $0.09 to about $0.08 (i.e., $1 bought about P11 before the COVID-19 lockdowns, then about P12.5). The Pula strengthened against the dollar in late 2020 and 2021 before depreciating in 2022. In October 2022, the Pula was worth US$ 0.074 (i.e., $1 bought about P13).

77 This chapter is based on Lena Gronbach, Jeremy Seekings and Winnie Arthur, 'Lessons learned on social protection responses to Covid-19 in Botswana'. Forthcoming. CSSR Working Paper from the Centre for Social Science Research at the University of Cape Town. See also Gentilini et al. 2022: Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures.https://openknowledge.worldbank.org/entities/publication/fa7a2f3c-efbd-5950-bfac-4b2b4bfc8cad

The social protection system comprises three pillars: feeding schemes, workfare, and support for specific categories of deserving poor (the elderly, people living with disabilities, and 'destitutes'). Table 4.1 provides an overview of the country's social programs before the COVID-19 outbreak.[78] The school feeding and the Old-Age Pension programs had the largest number of beneficiaries and the highest expenditure levels among the ten programs analyzed. Primary and secondary education school feeding programs catered to more than 390,000 and 183,000 students, respectively. Likewise, the Old-Age Pension program covered about 5.5 percent of the population (126,424). At 635 million Pula (USD 60 million in 2019), the Ipelegeng workfare program had the third largest budget in 2019. According to the Quarterly Multi-Topic Household of 2019 (quarter 3), approximately 57 percent of households benefitted from at least one of the country's social protection programs. Moreover, coverage rates were higher in rural areas and among poorer households.

The conservatism of Botswana's system[79] is evident in comparison with South Africa. More than half of the population lives in households that benefit from a feeding scheme, workfare, or social grants for the elderly, orphans, and 'destitutes'. However, benefits are parsimonious or provided in kind, the means test for some cash transfer programs is severe, and none of the programs are statutory. The social protection systems in Botswana and South Africa exhibit similarities in their common emphasis on social assistance rather than social insurance and their shared inclusion of 'residual' elements (some programs are means-tested or otherwise targeted to the poor). Both countries retain extensive workfare and feeding schemes alongside cash transfer programs. Even though Botswana today has a higher GDP per capita than South Africa (having first caught up in the late 1990s) and coverage of social protection is extensive in both countries, benefits and total expenditure are much lower in Botswana. South Africa spent about 3.3 percent of GDP on social assistance prior to COVID-19, while Botswana spent less than 1 percent of GDP (excluding substantial expenditure on stipends for university students). Moreover, the Government of Botswana has resisted calls for a Child Support Grant along the lines of the South African program.

4.2 SOCIAL PROTECTION POLICY RESPONSES TO COVID-19

Botswana's COVID-19 response for poor and vulnerable households was modest. The government did not supplement existing social grants or introduce new emergency social grant programs. Thus, during the 2020 lockdown and economic contraction, Botswana did not expand vertically or horizontally its social protection system even though its workfare program, *Ipelegeng*, was kept partially active. While the authorities did oversee an extensive once-off emergency feeding program, the benefits were offset at least partly by the suspension of school feeding schemes. Net additional expenditure on social protection in 2020 only amounted to 0.1 percent of GDP. In contrast, the government quickly reallocated funds and introduced wage subsidies for formally employed workers. The wage subsidy was given for three months (April through June 2020) and cost approximately 0.5 percent of GDP.

There was reluctance to expand the country's social protection system – except for food distribution – during the 2020 pandemic. Botswana's social protection system evolved out of disaster relief during droughts and retained some flexibility to expand; even prior to COVID-19 there were strong calls for its expansion. In addition, Botswana has a well-established delivery system – both in cash and in-kind – to many citizens through various social programs. Moreover, the governing party has long emphasized compassion and concern for the poorest members of society. Even as the economic impact of the pandemic was evident within weeks[80] and

78 Table 4.1 excludes tertiary education funding, job creation and agricultural support programmes and community-based early childhood development schemes.
79 Botswana's 'conservative welfare state' originated in drought relief programs between the 1960s and 1980s before being institutionalized and expanded after 1990 (World Bank, 2022).
80 As early as 24th April 2020, the Minister of Finance and Economic Development predicted a 13 percent contraction in GDP and a 22 percent decline in government revenues. (Government of Botswana, Economic Briefing by Honorable Minister of Finance and Economic Development, 24 April 2020, cited in the Terms of Reference for the National Social Protection Recovery Plan, p.53.)

some reforms were proposed in a National Social Protection Recovery Plan as early as July 2020, the COVID-19 crisis was not accompanied by the anticipated social protection response. In contrast, Botswana's neighbors provided various options for COVID-19 responses, including the broad and expensive package in South Africa, once-off cash distribution in Namibia and Lesotho, and emergency programs targeted at the urban poor in Zambia.

In Botswana, as elsewhere, social protection measures were implemented after a lockdown had been imposed. The government's subsequent social protection reforms were shaped by both the character of the lockdown and the country's existing social protection system. The lockdown not only suspended school feeding programs but also limited access to markets or farms to purchase food.

The food basket program

In mid-April 2020, the country organized a massive food relief operation to mitigate the impacts of the COVID-19 lockdown. Household needs were assessed based on the 2002 National Policy on Destitute Persons.[81] District Councils mobilized to assist Social Welfare officers in procuring and distributing food supplies, and unemployed social work graduates were hired temporarily to assist with the household assessments. By the end of April, over 300,000 households had been assessed, and 244,000 had been recommended for assistance. The actual distribution of food baskets depended on procuring the required supplies and establishing distribution mechanisms. At the time, less than one in five households (47,000 of 244,000) identified needing food baskets had received them.[82] Overall, the assistance brought temporary relief, as nearly 80 percent of more than 500 thousand assessed households (approximately 430,000 households by one report) received a food basket in 2020, representing more than P400 million in additional government expenditure.[83] As lockdown restrictions eased in early May, the government ceased plans for a second round of food baskets and completed the only round by the end of May.

Despite the delay in distributing food baskets, the speed and reach of food distribution in Botswana were impressive, especially compared to neighboring South Africa.[84] Botswana was also much quicker than South Africa to reopen schools and resume school (and clinic) feeding schemes. The monetary benefit of the once-off food basket program per household was comparable to the once-off Emergency Income Grant in Namibia and substantially higher than benefits under emergency cash transfer programs in Zambia and most other African countries. However, it was much lower than the value of vertical and horizontal extensions of social grants in South Africa or the donor-funded emergency program in Kenya.

Wage subsidies

As in many African countries during the 2020 pandemic, Botswana implemented wage subsidies for formal workers.[85] Eligible employers could claim 50 percent of the wages of eligible employees, with a minimum subsidy of P1,000 per month and a maximum of P2,500 per month. Qualifying businesses had to apply on

81 The standard questionnaire recorded the number of people in the household, education level, employment status, among others.
82 Masisi, M. E. K. (2020b). *State of the Nation Address by His Excellency Dr. Mokgweetsi E.K. Masisi, President of the Republic of Botswana, to the First meeting of the Second Session of the Twelfth Parliament, 09 November 2020.* Gaborone: Government of Botswana. Retrieved from https://vision2036.org.bw/sites/default/files/resources/SONA%202020.pdf (20.04.2022).
83 According to one official report, a total of 537,466 households had been assessed and 429,255 households had received assistance by end of May. https://www.bocra.org.bw/sites/default/files/covid19-docs/NEOC%20BULLETIN%20ISSUE%2076.pdf. However other official reports apparently indicated different numbers.
84 See: Rodolfo Beazley, Jana Bischler and Alexandra Doyle (2021) 'Towards shock-responsive social protection: Lessons from the COVID-19 response in six countries', *Towards Shock-Responsive Social Protection*, Oxford Policy Management, Oxford; and Beazley, M. Marzi, and R. Steller (2021) 'Drivers of Timely and Large-Scale Cash Responses to COVID-19: what does the data say?', Social Protection Approaches to COVID-19 Expert Advice Service (SPACE), DAI Global UK Ltd, United Kingdom.
85 Similar wage subsidy schemes for formal sector workers were implemented in Benin, Cape Verde, eSwatini, Gabon, Lesotho, Mauritius, Namibia, Seychelles and South Africa (International Policy Centre for Inclusive Growth, 2021).

behalf of their employees through the Botswana United Revenue Service (BURS). Nonetheless, the subsidy focused on formal workers, so informal workers were excluded. The subsidy was set to run for three months (April – June 2020) and was later extended for businesses and employees working in the tourism sector. By the end of April 2020, 12,440 companies had applied for the wage subsidy, 12,413 of which had been approved. This covered 165,681 employees in April and amounted to payments totaling P233.7 million.[86] Overall, P833 million were paid between April and June 2020.[87]

Informal Sector Stimulus Fund

The lockdown caused considerable financial hardship for households that depended on informal sector livelihoods (such as street trading) that were prohibited at the time. While most of the funding for sectors hit by the lockdown and recession was reserved for formal sector enterprises, informal traders and Small, Medium, and Micro-sized Enterprise (SMME) owners could apply for P1,000 payments through a P100 million Informal Sector Stimulus Fund (ISSF), administered by the Local Enterprise Authority (LEA). The program was launched in May 2020. By June, LEA had received 30,929 applications, almost all approved and paid out. In the face of slow take-up, the program was extended but only reached 47,000 beneficiaries, significantly lower than the wage subsidy scheme for formal workers.

Workfare

Along with lockdown restrictions, the Ipelegeng workfare program was partially suspended. Workfare had long been a cornerstone of Botswana's drought relief and social protection strategies. *Ipelegeng* workers were paid until the end of April, including non-workdays due to the lockdown. A small number of people were employed in special programs. For instance, in the second half of 2020, about 20,000 people were hired to clean schools. Between the end of April and September 2020, the *Ipelegeng* program operated at a small fraction of its usual level of 70,000 people per month. Nonetheless, by September 2020, the *Ipelegeng* program resumed fully.

The government's resistance to expand the Ipelegeng workfare program while the economy was in recession in 2020 was likely rooted in its pre-COVID ambivalence over the program. The program had been criticized within and outside the government for its lack of developmental impact: *Ipelegeng* participants were widely viewed as unproductive and did not appear to acquire any significant skills but became 'dependent' on the program. In July 2020, the Ministry of Local Government and Rural Development announced it was reviewing and reforming *Ipelegeng* 'with a view to making it more productive and worthy of the budget it attracts on a yearly basis'.[88] The cabinet approved the proposed reforms in August 2020. The pilot reform would entail engaging workers for an extended period to work with trained artisans to construct housing for destitutes.

4.3 ASSESSMENT OF RESPONSES

In sum, while the scale and cost of COVID-19 emergency response programs were low relative to neighboring countries, measures were implemented faster. Unlike its neighbors, Botswana did not introduce a special social cash transfer for vulnerable individuals or households.[89] As previously discussed, the government did roll out, reasonably quickly, a massive food parcel operation, provided modest support for a small number

86 *Relief Fund to be audited: Matsheka.* Retrieved from https://twitter.com/bwgovernment/status/1253950300018413570 (09.04.2022).
87 https://www.sundaystandard.info/covid-wage-subsidy-was-costly-political-mess/
88 *Ipelegeng Temporarily Suspended due to Covid-19 Compliance - Hon. Molale.* Presidential (Covid-19) Task Force Bulletin, Issue 75. Gaborone: The National Emergency Operation Centre.
89 The South African Government paid supplements to the recipients of the 18 million social grants that it paid every month (i.e. it extended its social grant system 'vertically') and, after a short delay, introduced a very modest emergency grant (the COVID-19 Social Relief of Distress Grant) that soon reached 5 million more people (i.e. the Government extended the social grant system 'horizontally'). In Namibia, a once-off cash transfer was quickly implemented.

of informal businesses, and provided massive wage subsidies to formal workers, benefitting primarily non-poor urban households (Table 4.2). Nonetheless, the existing workfare and feeding schemes were interrupted, and the government did not consider supplements or expansion of its existing, modest social grant programs. The net cost of emergency programs amounted to a little over 0.1 percent of GDP, ten times lower than the assigned budget in South Africa (1 percent of GDP).

In Botswana, existing social assistance programs largely continued using their established payment infrastructure, both during and after the initial lockdowns, with only relatively minor modifications. The use of mobile payment technologies for cash transfers in response to COVID-19 has been a defining feature of the pandemic response across the African continent. Similarly, digital and mobile application and registration tools were used for various cash transfers and other social protection responses, in many cases for the first time. The trend was most pronounced in new cash transfers, explicitly launched in response to the pandemic. As Botswana did not implement new emergency programs, the pandemic did not trigger significant reforms in its payment system, and pre-existing cash transfer programs continued to use their pre-COVID

TABLE 4.2 Overview of Botswana's social protection responses to COVID-19

	Timeliness	Benefit Value	Reach	Duration	Cost
Wage subsidies	Disbursements approved in late April, presumably effected quickly thereafter	Generous for low-paid workers; averaging BWP 1,500/ employee/ month	In April, 165,000 employees (potentially more in May/ June)	3 months (except for tourism sector, further 6 months)	BWP 833m (first 3 months) + BWP 143m (tourism, further 6 months) = BWP 976m
Sectoral subsidies	Most paid in June	BWP 1,500 or BWP 2,500 per month for 3 months	10,000, less than anticipated	3 months	BWP 20m
Informal sector support	Pay-outs started in June, continued throughout 2020	BWP 1,000 once-off	47,000, less than anticipated	Once-off	BWP 50m
Food baskets	Some distributed in late April, most in May, some in June (but existing programmes suspended)	Baskets worth approximately BWP 1,000	Widespread, approximately 430,000	Once-off; plans for further distribution dropped	BWP 350-431m (but savings on other programmes)
Existing feeding schemes	*Largely suspended under lockdown*	*Not applicable*	*[Widespread, approximately 900,000 beneficiaries, suspended]*	*Not applicable*	*Net savings (estimated at BWP 100m)*
Workfare	*Benefits paid in April but programme then largely suspended to September*	*Not applicable*	*[About 73,000 workfare opportunities per month, suspended for 4 months]*	*Not applicable*	*Net savings (estimated at BWP 100m)*
Cash transfers	No reform	Not applicable	Not applicable	Not applicable	None

Source: Gronbach et al. (2023 forthcoming). *Note:* Negative responses in italics.

payment channels. Nonetheless, the pandemic accelerated the use of e-wallets for Ipelegeng and the Local Enterprise Authority informal enterprise subsidy, which was initiated prior to the 2020 crisis and expanded in 2020. However, COVID-19 may have encouraged a shift in thinking toward digital payment channels, as well as shifting from providing benefits in kind to cash-based programs and the consolidation of payment systems.

4.4 COVID-19 AND LONGER-TERM REFORMS

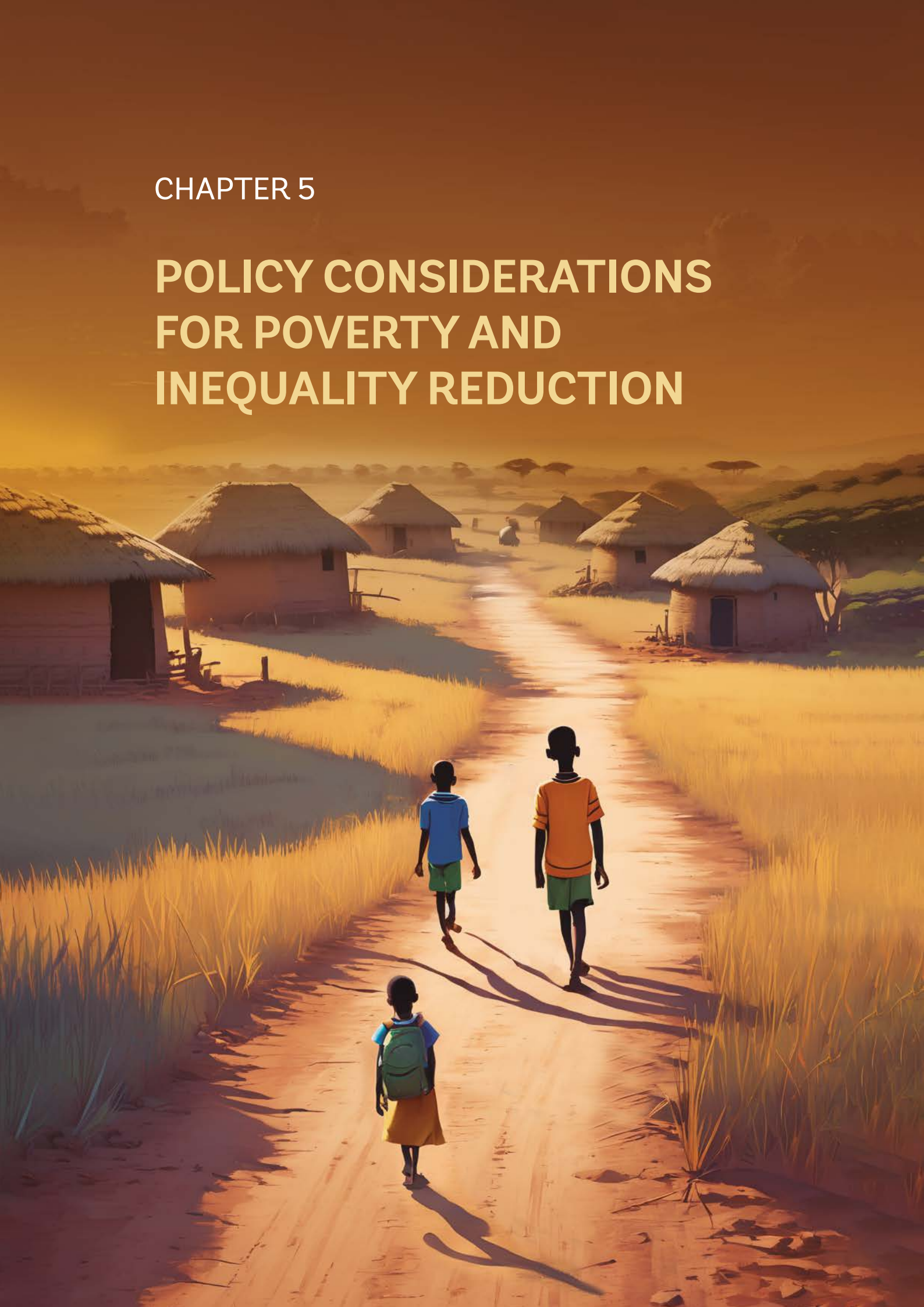
Despite its shock-responsive origins in drought relief, Botswana's social protection system proved surprisingly inflexible in response to the pandemic and ensuing economic hardship in 2020-21. Programs designed originally to respond to drought proved ill-suited to the conditions that resulted from a severe national 'lockdown' in April and May 2020. Faced with severe hardship under the COVID-19 lockdown, the state distributed food parcels widely, after an impressively short delay, and offered substantial wage subsidies. While wage subsidies were of little benefit to poor Batswana, the distribution of food parcels was a considerable achievement, helping to mitigate hardship in late April and May. However, the suspension of other feeding schemes and workfare and the reluctance to consider any expansion of cash-based programs meant that the overall response was modest. The absence of any cash-based response also meant that COVID-19 had little effect on consolidating and digitizing payment systems.

Evidence suggests the 2020 pandemic had little effect on the Government of Botswana's approach to social protection. The emergency provided an opportunity for international organizations to renew their advocacy of expansionary reforms – including targeted child grants. Nevertheless, the Government of Botswana showed interest only in those reforms that accorded with its existing approach, which focused on very bespoke programs implemented by social workers at the local level. The Government's response to COVID-19 was not to expand social protection in new directions but rather to ease the lockdown to return quickly to 'normality'. The authorities emphasized its existing preference for discretionary social protection rather than to introduce large-scale cash transfer programs.

The Government of Botswana's more cautious response to the shock of COVID-19 may reflect the limits of political pressure for change and the goal of self-reliance. The response mirrored the enduring and widespread commitment within Botswana to the norms and values underpinning Botswana's social protection system. These rested, above all, on the idea that assistance from the state should be linked, wherever possible, to the goal of people achieving self-reliance through productive work and thereby being able to fulfill their responsibilities to the wider society. Reform proposals that got traction within Botswana were generally those that moved social protection in a more developmental direction. In the future, this may include linking social assistance to productive economic inclusion approaches, investment in human capital, and support for labor market activation.

CHAPTER 5

POLICY CONSIDERATIONS FOR POVERTY AND INEQUALITY REDUCTION



Renewed policy efforts will be needed for Botswana to reach its goals of poverty eradication and high-income status. Several policy implications emerge from the analysis presented throughout the report and from sectoral work recently produced by the World Bank and/or recently included in the Botswana SCD Update and Country Economic Memorandum (CEM).[90] The suggested policy considerations are summarized around four areas. First, accelerating inclusive economic growth based on dynamic private sector-led job creation is crucial to increasing the income of poor people. Second, further investments in quality human capital among the poor are essential to improve welfare and boost workforce productivity. Third, additional investments in infrastructure and shock-responsive systems, especially in rural areas, are needed to better connect and protect the most vulnerable population. Fourth, strengthening data is vital for better evidence-based policy design that improves outcomes for all, particularly the poor.

Accelerating inclusive economic growth with private-sector-led job creation

Stronger poverty and inequality reduction requires a more diversified and inclusive growth model that supports private-sector job creation and is more resilient to shocks. The shocks that hit the economy since the last Poverty Assessment, as explained in Chapter 1, highlighted the country's fiscal vulnerabilities and weak economic diversification. More concerning, Chapter 2 showed that the ability of economic growth to lead to poverty reduction (i.e., the elasticity of poverty to GDP growth) declined in 2016. Per the SCD Update, Botswana needs to "develop a competitive, export-oriented private sector, leveraging regional integration" that maximizes economic inclusion. The CEM then proposes three guiding criteria, based on economic theory and empirical evidence, that could help policymakers more systematically select priority sectors. The sectors should be labor–intensive and tradable as they are most likely to create productive jobs for more people and foster innovation; globally competitive given Botswana's small and undiversified economy; and strategic towards high expected regional and global demand to increase market size, such as Botswana's potential in renewable energy, base minerals, and eco-tourism. Finally, promoting competition and expanding formal and informal employment opportunities will require a reduction in the excessive public sector footprint that creates barriers to entry, discourages diversification, and causes large economic inefficiencies. It will require facilitating external trade in goods and services and implementing adequate foreign investment rules to improve competitiveness and generate good jobs.

As structural transformation takes time, it is important to boost the productivity of farm and non-farm household enterprises, particularly in rural areas, and create jobs for the large unskilled population. In 2022, 9.8 percent of workers were farm self-employed, and 16.4 percent were non-farm self-employed, hardly unchanged over time. Farm policies that could boost productivity include investments in agricultural research and extension, irrigation (given the high vulnerability to droughts), and rural infrastructure, as well as efforts to bring poor farmers into the value chain more effectively. Livestock-related services (including from regional collaboration) need to reach the small-scale sector and poor subsistence farmers so that they can also benefit from Botswana's niche value chains in beef and livestock.[91] For non-farm household enterprises, policies to boost productivity include increasing access to credit (and building skills; see below). The Country Private Sector Diagnostic (IFC 2022) estimates the financing gap of small enterprises to be 19 percent of GDP. Limited access to credit limits the ability of the sector to create employment. Since 2009, job creation has not matched the growing labor force; instead, chapter 1 shows Botswana ranks in the bottom 30 percent of countries in terms of employment and has the second-highest unemployment rate among upper-middle-income countries.

90 World Bank (2023) and World Bank (2024a, forthcoming).
91 For a discussion of sustainable livestock value chains, see Syed and others (2022). World Bank (2023) also highlights that Botswana's livestock smallholders, lacking the scale to access large markets, could benefit from collaboration with Namibia on veterinary services, traceability, transboundary animal disease surveillance and control, and research and development.

Improving human capital particularly for the poorest

Improving the welfare of the poor and reinvigorating the growth model require substantial improvements in human capital to increase labor force productivity. As mentioned in Chapter 3, despite Botswana's considerable progress and despite investing significant resources, its human development outcomes remain well below the levels expected for a country of its income and characteristics. The government needs to redouble efforts toward more efficient investments in health and education to enhance the productivity of the current and next generation, particularly the poor.[92] The quality of education services is an important constraint, requiring policies addressing the coordination of service delivery among several Ministries; the shortage of classrooms and learning materials; giving teachers adequate classroom training and coaching; and fine-tuning education assessment systems to track progress and facilitate corrective action (see SCD Update, World Bank 2023).

The allocation of resources across education and training subsectors needs to be more pro-poor since the poor learn less and are more likely to drop out of education and training. As the data shows, Botswana's high degree of childhood inequality of opportunity constrains the upward mobility of the poor.[93] Only 20 percent of poor households have more than primary education compared to 52 percent of non-poor households. The country's low growth and high inequality require that fiscal resources are used efficiently and reallocated to high social value-added uses, such as policies that improve early life outcomes (World Bank 2022a). Significant challenges remain also in health outcomes among the poor, with both maternal and infant mortality rates much higher than the average for upper-middle-income countries. Policies could focus on strengthening the quality of health service delivery, including improving clinical guidelines and protocols, enhancing staff core competencies, and improving the availability of essential medicines (World Bank 2023).[94]

Strengthening skills training and qualifications, and better coordinating and monitoring employment programs, are also important for boosting the productivity of poor and vulnerable workers. Chapter 2 shows that differences in occupation types in the labor market (reflecting skill and ability differences) were the primary contributors to inequality in 2016, while poverty levels were much higher for Batswana with low education. However, skills development through technical and vocational programs or on-the-job training faces many limitations. The many existing technical programs and trainings for skills development are fragmented and uncoordinated and lack systematic evaluations of interventions. To better support youth transitions into productive employment (formal or self-employment) also requires stronger coordination of programs. This coordination requires significant collaboration across ministries and better partnerships with the private sector. In addition, the focus needs to be on skills with a high growth potential, such as digital and green skills. Even in urban areas, a lack of job creation and skills mismatches hamper the ability of disadvantaged households to generate income, and high wage inequality fuels overall inequality.

Investing in infrastructure and shock-responsive systems to connect and protect

Increasing access to quality infrastructure and basic services increases the productive capacity of the most vulnerable population. Access to basic services has increased significantly over the last decades, but some services remain below the average for upper-middle-income countries. Large gaps remain in access to electricity and sanitation between rural and urban areas and between poor and non-poor households. The

92 Fiscal policy analysis via the Commitment to Equity (CEQ) methodology showed education and health transfers contributing strongly to inequality reduction in 2009/10 (World Bank, 2022; Lusting and Higgins, 2016).
93 See Human Opportunity Index (chapter 3) while Sulla et al. (2021) shows that inherited circumstances account for 20 percent of Botswana's inequality. In addition, the forthcoming Africa Poverty and Inequality Report highlights intergenerational mobility in education for African countries is well below that of the developing world on average.
94 A forthcoming Public Expenditure Review in Health will dive more deeply into policies to strengthen health outcomes.

Human Opportunity Index shows that large gaps also remain between rural and urban children, with access far from universal. Worse, progress has slowed among poor households relative to nonpoor households. Geospatial data suggests that the electricity shortage of 2015 had particularly negative impacts on the poorest 40 percent of villages. Where access is high, such as for water, the quality of services is the important constraint. Promoting the inclusion of the rural population requires making connectivity (electricity, digital) affordable and reliable. To reach its goal of universal access to electricity, Botswana will need to mainstream off-grid solutions to deal with the deep spatial inequalities. Workers need support to develop new skills to reap the benefits of digitization. Investments to improve water service quality and access to sanitation are also priorities, particularly in rural areas and as urbanization continues. Per the SCD Update: "The interlinked challenges of water scarcity, limited wastewater treatment, the underprovision of sanitation services, and malnutrition continue to undermine people's health, limit the development of their skills, and hinder their productive participation in the labor force."

Investments in the capacity of social protection systems to respond to shocks while improving the targeting of safety net programs protect the poorest. Although Botswana responded better on some dimensions to the COVID-19 pandemic than many other African countries, the pandemic exposed significant gaps in its social protection system's shock responsiveness and resilience. Botswana needs to develop productive and shock-responsive social protection systems to mitigate shocks (including droughts and pandemics) and disaster vulnerability. Rural poverty increased in 2016 during a drought and a recession as the country faced water and electricity crises. Despite Botswana's social protection programs' significant impact on reducing poverty in 2016, they were insufficient to assist many poor rural households. Uninsured risks can trap families in a poverty cycle. Mitigating fragility helps build household resilience to avoid families falling back into poverty. The social protection delivery system also needs to identify poor and vulnerable households. Since the pandemic, Botswana has embarked on reforms to strengthen the administration of social assistance, including developing a unified social registry, but it will need to broaden and deepen the reforms.[95]

A fully operational social registry would significantly improve the targeting of human capital investments. In addition, the government also took important steps towards developing and pilot testing a proxy means test for improved eligibility determination for poverty-focused programs. The government should continue its plan to roll out this tool for targeting social assistance beneficiaries, starting with the Destitute Persons Programs.

Strengthening data for evidence-based policy design

Improvements in statistical data collection and use, data infrastructure, and monitoring and evaluation systems are important for transparency, accountability, and more robust evidence-based policy design. Tracking progress on poverty reduction requires frequently collecting reliable quality data on human capital, livelihoods, and welfare. The last available income and expenditure survey was collected in 2015/16. Fortunately, a new survey is expected to go into the field this year (2024/25), but a commitment to reduce these data gaps is needed. More broadly, investing in data is required to make informed public policy decisions and to track progress (or lack thereof), such as for malnutrition trends. The development and implementation of Botswana's National Development Plans require timely, reliable, high-quality data across sectors, the modernization of the National Statistical System, the integration of data systems, and strengthened monitoring and evaluation systems.

95 The National Social Protection Framework (NSPF) approved by the Cabinet in 2020 aims to establish a comprehensive and well-coordinated social protection system. See Government of Botswana, Economic Briefing by Honorable Minister of Finance and Economic Development, 24 April 2020, cited in the TOR for the NSP Recovery Plan, p.53

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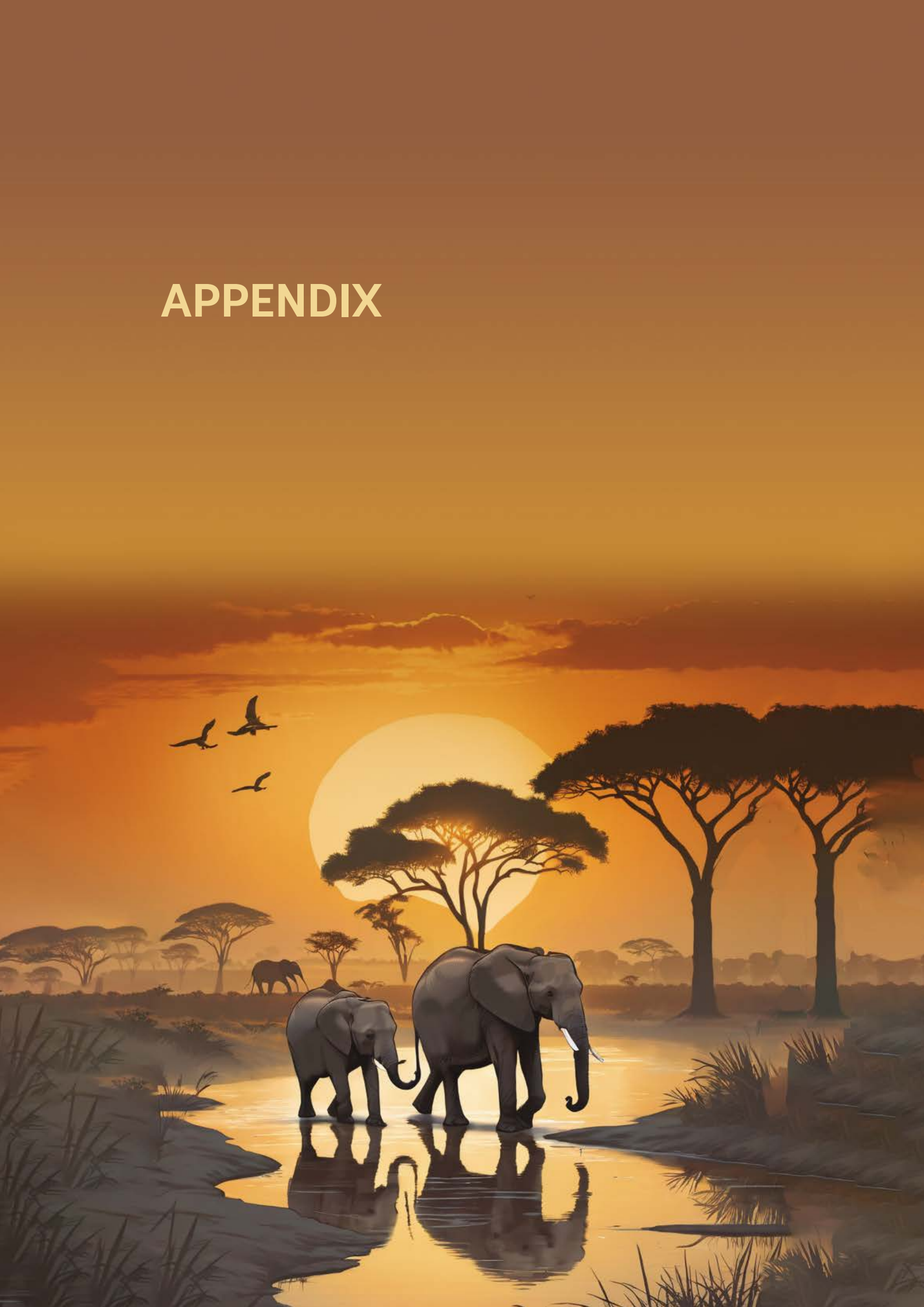
APPENDIX



APPENDIX 1

STRUCTURAL PEERS

Structural peers refer to countries around the globe that share economic characteristics similar to those of a particular country. In the case of Botswana, 20 indicators were selected for analysis from the World Development Indicators database, covering the period between 2012 and 2018. These indicators include GDP and its composition, population characteristics, and labor market indicators. The indicators were standardized, and the differences among countries concerning the best performance in each category were used to identify similar structural countries. For Botswana, eight countries were identified as structural peers, robust to different combinations of the indicators: Gabon, Georgia, Lebanon, Mongolia, Namibia, the Republic of Congo, South Africa, and Tunisia.

The 20 indicators chosen from the World Development Indicators database between 2012 and 2018:

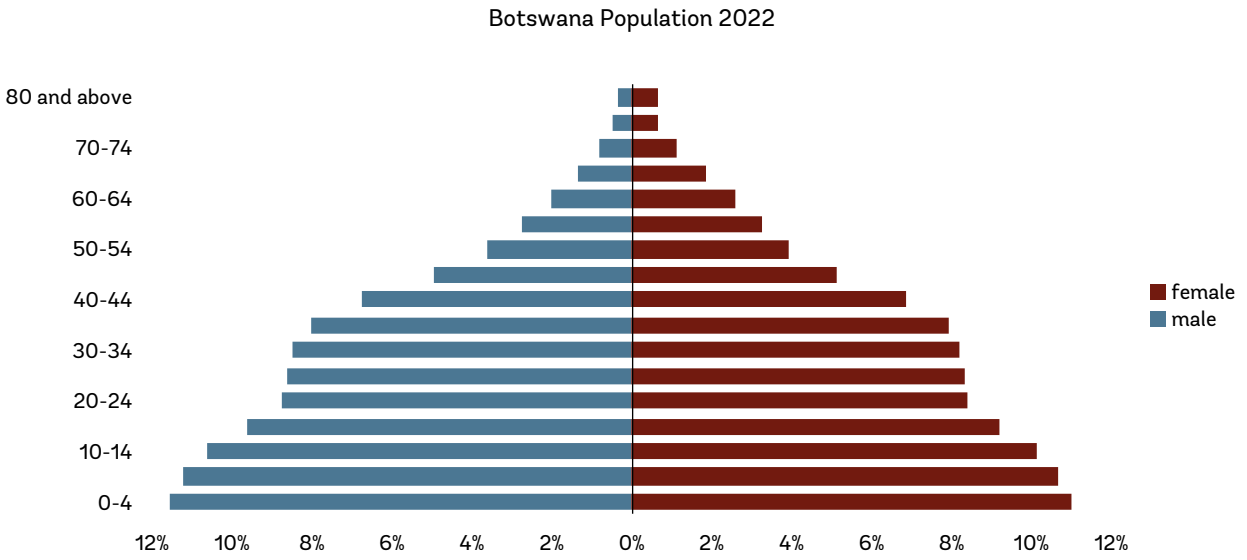
1. The labor force participation rate (% of total population ages 15-64)
2. The Gini Index
3. GDP per capita, PPP (current international $)
4. Industry (including construction), value added (% of GDP)
5. Manufacturing, value added (% of GDP)
6. Imports of goods and services (% of GDP)
7. Gross fixed capital formation (% of GDP)
8. Exports of goods and services (% of GDP)
9. General government final consumption expenditure (% of GDP)
10. Vulnerable employment, total (% of total employment) (modeled ILO estimate)
11. Mortality rate, under-5 (per 1,000 live births)
12. Rural population (% of total population)
13. Economically active population in agriculture (number)
14. Employment in agriculture (% of total employment) (modeled ILO estimate)
15. Access to electricity, rural (% of rural population)
16. Arable land (hectares per person)
17. Population, total
18. Total natural resources rents (% of GDP)
19. Survey mean consumption or income per capita, total population (2011 PPP $ per day)
20. Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)

Source: World Development Indicators (database), databank.worldbank.org/source/world-development-indicators, version 2022.

APPENDIX 2
POPULATION PYRAMID 2022

A population pyramid graphically shows the age-sex structure of a given population. Botswana's population pyramid for 2022 has a wide base, highlighting that Botswana has a relatively young population. The rapidly tapering top suggests that Botswana has a low life expectancy. The results of the 2022 Population and Housing Census show an estimated population of 2,346,179 and a population growth rate of around 1.4 percent. Life expectancy is around 66 years.

FIGURE A2.1 Botswana Population Pyramid 2022



Source: World Bank calculations based on World Development Indicators, version 7/25/2023. The 2022 values are projections from the 2011 Population and Housing Census.

APPENDIX 3

PROBABILITY OF BEING EMPLOYED

TABLE A3.1 Probability of being employed (Probit) 2015-2022

	BMTHS 2016	2019Q3	2019Q4	2020Q1	2020Q4	2021Q4	2022Q4
Demographics							
Age	0.172***	0.166***	0.175***	0.163***	0.170***	0.162***	0.167***
Age squared	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
Gender (=1 if male)	0.347***	0.345***	0.341***	0.340***	0.406***	0.375***	0.316***
Education (Primary or less = omitted category)							
Middle education	0.350***	0.388***	0.236***	0.231***	0.403***	0.375***	0.265***
High education	0.615***	0.512***	0.482***	0.395***	0.557***	0.754***	0.499***
Strata (Cities&Towns = omitted category)							
Urban Villages	-0.234***	-0.133***	-0.155***	-0.182***	-0.240***	-0.294***	-0.253***
Rural areas	-0.162***	-0.111***	-0.038***	-0.021***	-0.117***	-0.146***	-0.105***
Constant	-3.780***	-3.693***	-3.801***	-3.565***	-3.814***	-3.711***	-3.633***
Number of observations	1,360,089	1,572,922	1,618,129	1,637,913	1,631,858	1,637,768	1,611,721
Adjusted R2	0.173	0.159	0.174	0.166	0.176	0.178	0.165

Source: World Bank calculations. *Note:* The asterisk (*) indicates statistical significance at 1% (***), 5% (**), or 10% (*) level.

APPENDIX 4

EARNINGS REGRESSION

TABLE A4.1 Earnings regression (log monthly real wages, base 2010)

	BMTHS 2015	2019Q3	2019Q4	2020Q1	2020Q4	2021Q4	2022Q4
Demographics							
Age	0.113***	0.081***	0.094***	0.086***	0.066***	0.086***	0.065***
Age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.000***	-0.001***	-0.001***
Gender (=1 if male)	0.393***	0.474***	0.413***	0.355***	0.361***	0.340***	0.402***
Strata (Cities&Towns = omitted category)							
Urban Villages	-0.169***	-0.147***	-0.229***	-0.161***	-0.267***	-0.117***	-0.202***
Rural areas	-0.382***	-0.430***	-0.493***	-0.420***	-0.566***	-0.408***	-0.398***
Education (Primary or less = omitted category)							
Secondary	0.652***	0.599***	0.449***	0.551***	0.608***	0.611***	0.559***
Tertiary	1.788***	1.725***	1.496***	1.631***	1.767***	1.750***	1.813***
Sector (Agro & Fishing = omitted category)							
Mining	0.954***	1.023***	0.986***	0.897***	0.758***	0.785***	1.106***
Manufacturing & Utilities	0.307***	0.182*	0.353***	0.199**	0.074	0.108	0.163*
Construction	0.376***	-0.085	0.133	0.029	-0.074	-0.146	-0.015
Whole Sale & Retail	0.191**	0.222***	0.171**	0.060	-0.052	-0.076	0.118*
Public administration	0.078	0.117	0.156**	0.024	0.091	0.082	0.066
Education	0.567***	0.610***	0.618***	0.540***	0.329***	0.398***	0.430***
Rest Serv	0.248***	0.252***	0.316***	0.193***	0.073	0.101	0.163**
Constant	3.667***	4.193***	4.177***	4.289***	4.727***	4.203***	4.523***
Number of observations	5,259	2,920	2,745	2,690	2,678	2,601	2,992
Adjusted R2	0.501	0.526	0.514	0.534	0.538	0.545	0.530

Source: World Bank calculations based on BMTHS and QMTS surveys (various years). *Note:* The asterisk (*) indicates statistical significance at 1% (***), 5% (**), or 10% (*) level.

APPENDIX 5

POPULATION DISTRIBUTION FROM POPULATION AND HOUSING CENSUS 2001, 2011, 2022

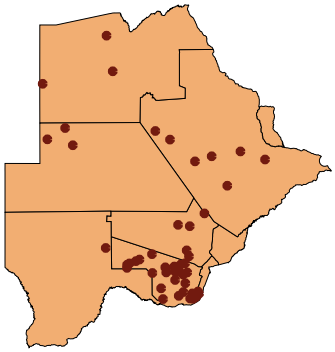
TABLE A5.1 Population Distribution

SN	District Code	Census Dlsfrtcts	Population Distribution			Populalfon Distribution (%)		
			2001	2011	2022	2001	2011	2022
1	01	Gaborone	186.007	231.592	244,107	11,1	11,4	10,4
2	02	Francistown	83.023	98.961	102.444	4,9	4,9	4,4
3	03	Lobotse	29.689	29.007	29.457	1,8	1,4	1,3
4	04	Selebi_phikwe	49.849	49.411	41.839	3	2,4	1,8
5	05	Orapa	9.151	9.531	8.614	0,5	0,5	0,4
6	06	Jwaneng	15.179	18.008	18.576	0,9	0,9	0,8
7	07	Sowa Town	2.879	3.598	2.901	0,2	0,2	0,1
8	10	Ngwaketse	113.704	129.247	140.321	6,8	6,4	6
9	11	Barolong	47.477	54.831	58.394	2,8	2,7	2,5
10	12	Ngwaketse West	10.471	13.689	23.253	0,6	0,7	1
11	20	South Ea.st	60.623	85.014	111.474	3,6	4,2	4,8
12	30	Kweneng East	189.773	256.752	330.442	11,3	12,7	14,1
13	31	Kweneng West	40.562	47.797	57.261	2,4	2,4	2,4
14	40	Kgatleng	73.507	91.660	121.411	4,4	4,5	5,2
15	50	Central Serowe Palapye	153.035	180.500	201.775	9,1	8,9	8,6
16	51	Central Mahalapye	109.811	118.875	130.530	6,5	5,9	5,6
17	52	Central 8obonong	66.964	71.936	76.922	4	3,6	3,3
18	53	Central 8oteti	48.057	57.376	74.099	2,9	2,8	3,2
19	54	Central Tutume	123.514	147.377	164.228	7,3	7,3	7
20	60	North East	49.399	60.264	68,9IO	2,9	3	2,9
21	70	Ngamiland East	75.070	90.334	120.603	4,5	4,5	5,1
22	71	Ngamiland West	49.642	59.421	73.122	3	2,9	3,1
23	72	Chobe	18.258	23.347	28.388	1,1	1,2	1,2
24	73	Delta		2.529	2.849		0,1	0,1
25	80	Ghanʒi	33.170	43.095	55.396	2	2,1	2,4
26	81	CKGR		260	488		0	0
27	90	Kgalagadi South	25.938	30.016	35.160	1,5	1,5	1,5
28	91	Kgalagadi North	16.111	20.476	23.215	1,0	1,0	1,0
Total			**1.680.863**	**2.024.904**	**2.346.179**	**100**	**100**	**100**

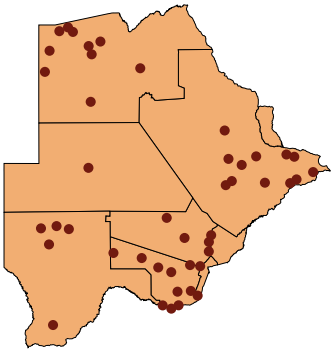
Statistics Botswana: Pg 8
https://www.statsbots.org.bw/sites/default/files/publications/2022%20Population%20and%20Housing%20Census%20Preliminary%20Results%20Aug.pdf

APPENDIX 6
MAPS OF VILLAGES BY DECILES

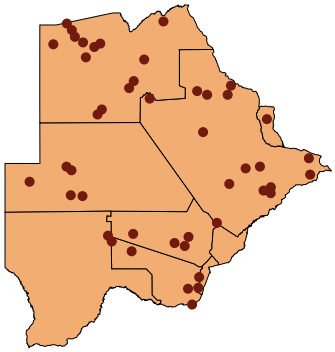
Decile 1



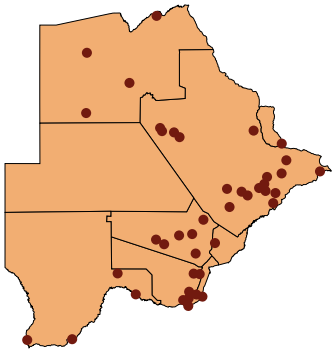
Decile 2



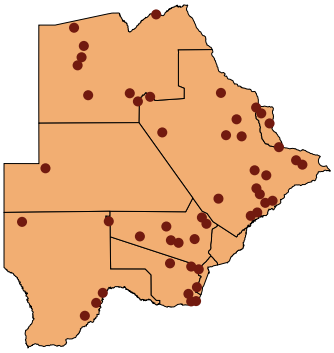
Decile 3



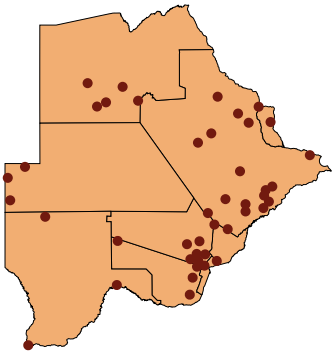
Decile 4



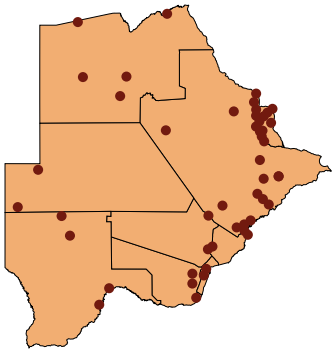
Decile 5



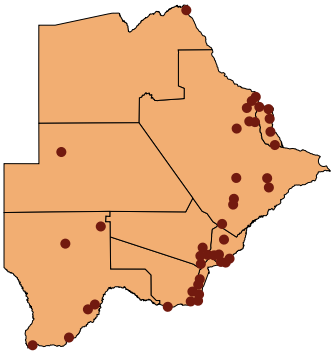
Decile 6



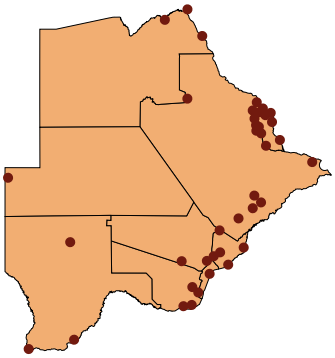
Decile 7



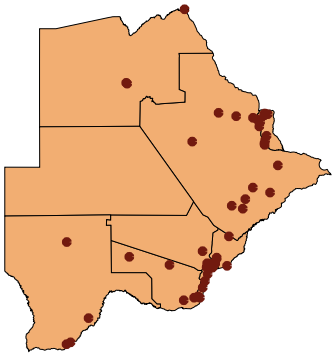
Decile 8



Decile 9



b. Decile 10



Source: World Bank calculations using 2011 Poverty Map.

APPENDIX 7

REDEFINING EMPLOYMENT IN BOTSWANA

Redefining Employment in Botswana: Comparable Labor Market Statistics for 2002-2022

Carolina Diaz-Bonilla
Santiago Garriga

Introduction

Botswana's employment and unemployment statistics and their trend over time vary depending on which international standard is applied. Since the launch of the first Quarterly Multi-Topic Survey (QMTS) in quarter 3 of 2019, Statistics Botswana has been applying the new international definition of employment in its official labor market statistics, causing a break with previous official statistics. Although one could argue the benefits of either definition, in the end the possibility to compare employment and unemployment statistics over time requires the application of the same definition across the entire time period. This note briefly explains the changes and presents a set of comparable labor market statistics for the full 2002-2022 period in Botswana.

Background on the new definition of employment

In October 2013, the 19th International Conference of Labour Statisticians (ICLS)[1], hosted by the International Labor Organization (ILO), adopted a new set of standards regarding the definition of employment, among other changes.[2] The new and more narrow definition of employment would refer to "work performed for pay or profit" while a different headline indicator was created for "own-use production work". Effectively this meant that the production of goods for own use, such as crop cultivation mainly or only for own/family consumption, would no longer be considered employment and, therefore, would no longer count towards employment or labor force participation. In the case of agricultural activities, this meant that employment would be determined by the self-declared main intended use of the output produced. As explained by Gaddis et al. (2020)[3]:

> "The main objective of these changes was to increase visibility of all forms of work, paid and unpaid, by advocating for separate measurement and acknowledging that individuals are often engaged in different types of work. These changes have significant implications for the calculation of labor statistics in developing countries, and especially in Sub-Saharan Africa, where a large share of the population is engaged in the production of goods for family use. They also raise important issues with how to measure this definition in a consistent and robust manner."

Comparable labor market statistics in Botswana for 2002-2022

The labor market statistics published by Statistics Botswana in 2002/03, 2009/10, and 2015/16, applied the 18th ICLS standard, while the statistics published in the QMTS surveys in 2019, 2020, 2021, and 2022 all applied the 19th ICLS standard. The current statistics are not inaccurate per se, they are in line with new international definitions from ILO, but they are not comparable to the earlier data. **The simplest explanation is that subsistence farmers are no longer considered employed in the 2019-2022 QMTS,**

1 The International Conference of Labour Statisticians (ICLS) is a "vehicle for standard-setting in labour statistics, hosted by the International Labour Organization (ILO) every five years". "Experts in labour statistics from all over the world attend the ICLS. This includes most notably statisticians who work in national statistical offices, ministries of labour and selected representatives of workers' and employers' organizations." The standards adopted are meant to reflect "best practice" but are not prescriptive nor binding. See: https://ilostat.ilo.org/about/standards/icls/?playlist=4194a13&video=38313ec

2 Available here (link).

3 https://documents1.worldbank.org/curated/en/468881598538973944/pdf/Who-Is-Employed-Evidence-from-Sub-Saharan-Africa-on-Redefining-Employment.pdf. The accompanying blog: https://blogs.worldbank.org/opendata/working-hard-and-not-being-counted-evidence-sub-saharan-africa-redefining-employment

while they were considered employed in 2015/16.[4] A concrete result of this is that the current official unemployment rate for Botswana in 2022-Q4 (considering the labor force as 15 years or above) is 25.4 percent, based on implementing the 19th ICLS standards, while it is 22.7 percent using the 18th ICLS standards.

The comparable labor market series presented below use the 18th ICLS standards for two important reasons. First, National Accounts data include subsistence farming as part of GDP. Therefore, to maintain comparability with National Accounts, the employment statistics are adjusted to also include subsistence farmers (which are a significant category across many Sub-Saharan African countries). Second, it is not clear whether it would be possible to adjust the oldest surveys to match the new methodology, especially since many of the questions in the recent questionnaire were not collected in the past. Therefore, it is simpler to harmonize the most recent data to match the older definitions.

Figure 1 below shows the new (comparable) labor market series that incorporates subsistence farmers. The three solid lines from 2002 and 2022 correspond to the labor force participation rate, the employment rate, and the unemployment rate (all consider a population of fifteen years or more) when subsistence farmers are maintained in the employment statistics. Note that we use the full range of available survey rounds to visualize long-run trends in labor market outcomes. The three dashed line correspond to the official statistics published by Statistics Botswana using the 2015/16 BMTHS and the 2019, 2020, 2021, and 2022-Q4 QMTS. The large drop in labor force participation and the large drop in the employment rate are due to a methodological change in the definition of these statistics and not due to changes in actual economic conditions.

The comparable labor market statistics show that the labor force participation rate was 63.7 percent in 2022 and the employment rate 49.2 percent, both higher than the official published statistics. The unemployment rate using the comparable data reached 22.7 percent in 2022, less than the official figure suggests, but nevertheless a worrying continuous increase since 2010. It also suggests that unemployment continued to increase between 2021-Q4 and 2022-Q4, rather than the decline seen in the official statistics.

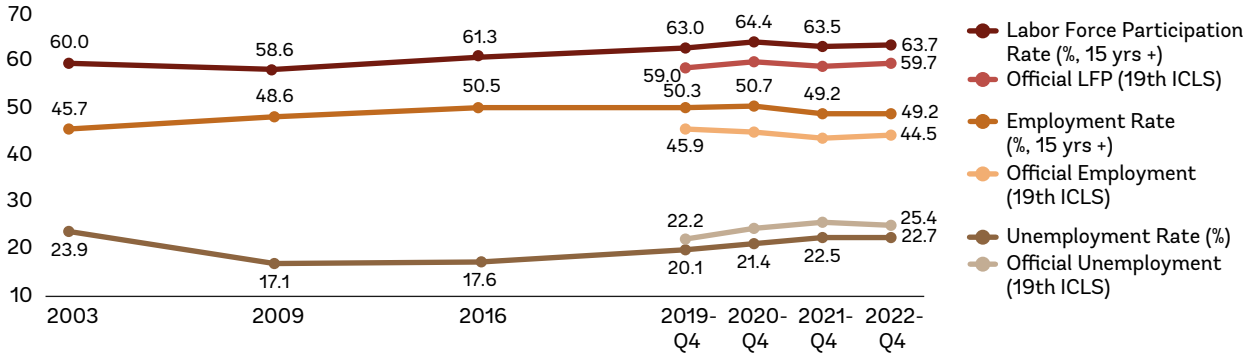
The 19th ICLS also changes the sectoral composition of the labor force towards non-agricultural sectors. As shown below, the 18th ICLS standard suggests that the services sector accounts for 66.7 percent of total employment in 2022 while the 19th ICLS standard would suggest that this is 73.2 percent instead. In other words, the new standard suggests that Agriculture is only 9.5 percent of employment, whereas using the 18th ICLS that is comparable to 2003-2016 shows that Agriculture makes up 17.6 percent of total employment in 2022.

A comparison of subsistence and non-subsistence agricultural workers between 2016 and 2022 shows that the number of subsistence farmers may have remained at similar levels in that period. However, non-subsistence agricultural employment increased since 2016 (Figure 4).

Applying the 18th ICLS standard would result in 70,273 subsistence farmers being considered “employed” in 2022. The 19th ICLS standard would instead consider them to be working for own production but not employed. In conclusion, the statistics that are officially published for 2019-2022 by Statistics Botswana are correctly following the ILO’s 19th ICLS standard. However, this results in statistics that are not comparable to the data for 2003-2016. Therefore, if the intention is to analyze long-term trends from before 2019, then an adjustment needs to be done to make the data comparable.

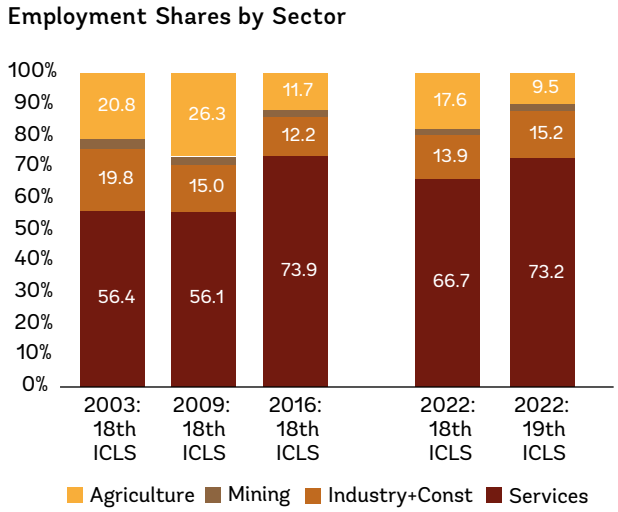
4 For instance, there is not a large drop in rural employment between 2015 and 2019 – it is, indeed, a change in methodology.

FIGURE A7.1 Labor force statistics for 2002-2022 using the 18th ICLS standard compared to 2019-2022 official data using the 19th ICLS standard



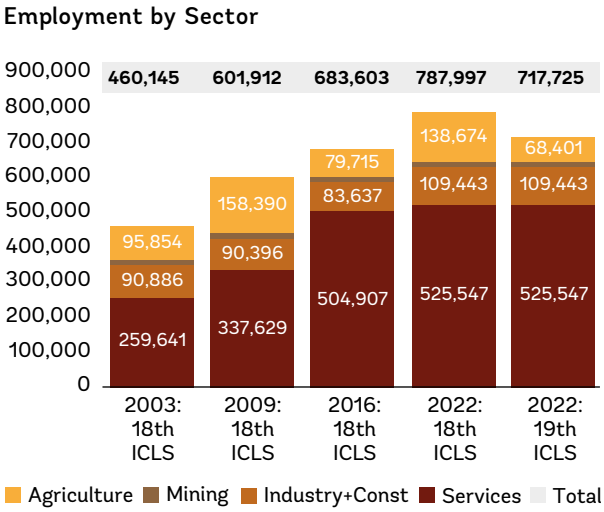
Source: World Bank calculations using 2002/03 HIES, 2009/10 BCWIS, 2015/16 BMTHS, and QMTS (various years).

FIGURE A7.2 Employment Shares by Sector - 2022 using 18th vs 19th ICLS standard



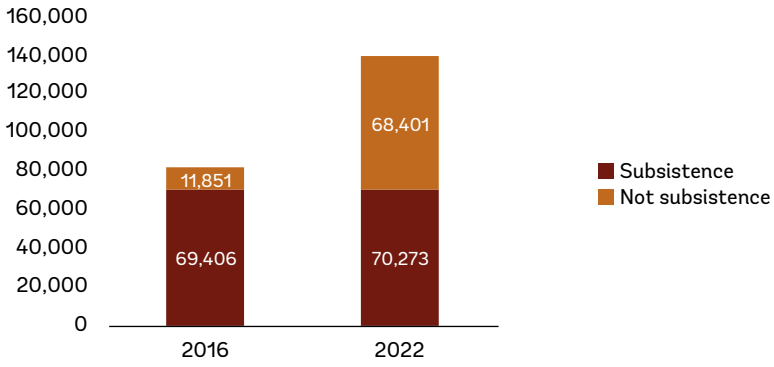
Source: World Bank calculations using 2002/03 HIES, 2009/10 BCWIS, 2015/16 BMTHS, and 2022-Q4 QMTS.

FIGURE A7.3 Employment by Sector - 2022 using 18th vs 19th ICLS standard



Source: World Bank calculations using 2002/03 HIES, 2009/10 BCWIS, 2015/16 BMTHS, and 2022-Q4 QMTS.

FIGURE A7.4 Subsistence and non-subsistence employment in 2016 and 2022 (Applying the 18th ICLS standard in both years)



Source: World Bank calculations using 2015/16 BMTHS and 2022-Q4 QMTS.

APPENDIX 8

TECHNICAL REPORT ON BOTSWANA'S HOUSEHOLD SURVEYS AND THE CREATION OF A COMPARABLE SPATIALLY-DEFLATED CONSUMPTION AGGREGATE[5]

1. Comparability of the BCWIS 2009/10 and the BMTHS 2015/16

Household Income and Expenditure Surveys (HIES) have a long and well-established tradition in Botswana. The first Botswana HIES (BHIES) was conducted in 1985/1986, which was followed by the 1993/94 BHIES, 2002/03 BHIES, 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and 2015/16 Botswana Multi-Topic Household Survey (BMTHS). This annex provides a brief account of the methodologies underlying the surveys conducted in 2009/10 and 2015/16.

How comparable is the BMTHS 2015/16 with the BCWIS 2009/10? What is the impact of different definitions and methods underlying the surveys on inequality and poverty estimates? A growing literature suggests that changes in survey design need to be considered when analyzing trends in consumption, inequality, or poverty over time (Lanjouw and Lanjouw, 1997; Beegle et al. 2012). The "details" related to: i) the method of data capture (e.g., diary versus recall); ii) the respondents (individuals versus households); iii) the reference periods for which consumption is reported (whether on week, two weeks, one month, all the way to one year); and iv) the degree of commodity detail (e.g., the detail of the Classification of Individual Consumption According to Purpose - COICOP system) greatly matter. Gibson et al. (2001), for instance, have shown the high sensitivity of inequality measures in China when incomes are collected for one month instead of one year. A large number of other examples could be easily cited (Smith, Dupriez, and Troubat, 2014).

In 2009/10, the Central Statistics Office, now Statistics Botswana, conducted the Botswana Core Welfare Indicator Survey. The survey was carried out between April 2009 and March 2010 and collected information on household consumption and expenditure, on income, employment, asset ownership, agriculture, health and nutritional status, and education. Preliminary results were published in Statistics Botswana (2013a) and a full report in Statistics Botswana (2013b).

In 2015/16, a new survey was launched, and fielded out between November 2015 and November 2016. The new Botswana Multi-Topic Household Survey improved on the 2009/10 BCWIS in several ways, as summarized in Table A8.1. The table summarizes a selection of indicators that play a role in constructing welfare indicators. The information has been organized into two broad categories: (i) the survey design and (ii) the questionnaire.

Both BCWIS and BMTHS were conducted nationwide, using administrative district and sub-district boundaries. Only private dwellings were within the scope of the surveys; institutional dwellings (prisons, hospitals, army barracks, hospitals, hotels, and other institutions) and places completely within industrial areas were excluded.

However, there are two key differences between the two surveys: (a) the reduction of the period of diary-keeping in each household from one month to 14 days; and (b) the switch from an expenditure- to a consumption-based food diary module. Both changes help align the BMTHS with the best practice of surveys of this kind elsewhere, the general tendency being to reduce the diary-keeping periods due to respondent fatigue. A drawback of these innovations, however, is that they are likely to create comparability issues (Beegle et al. 2012; Caeyers et al 2012). Non-food expenditures were inquired by recall, as in the previous surveys.

5 This appendix is from an unpublished report prepared by Giovanni Vecchi in May 2019. The original report was produced as part of a collaboration on data production and poverty analysis between the World Bank and Statistics Botswana, with a focus on the 2015/16 Botswana Multi-Topic Household Survey. The report benefited from discussions with the Statistics Botswana poverty statistics team: Mr. Moffat Malepa, Mrs. Kutlwano Sebolaaphuti, led by Dr. Burton Mugani (then-Deputy Statistician General for Economic and Social Statistics).

TABLE A8.1 Comparison of the 2009/10 BCWIS and 2015/16 BMTHS

	2009/10 BCWIS	2015/16 BMTHS
Survey design		
Sample frame	2002/03 Population and Housing Census	2011 Botswana Population and Housing Census
Sample design	Two-stage stratified	Two-stage stratified
Strata	3(1)	3(1)
PSU	288 out of 4,114 enumeration areas	599
Response rate (%)		98.2
Actual sample size (hh)	7,731	7,060
Actual sample size (ind)	27,211	24,719
Population (est.)	1,874,414	2,073,675
Households (est.)	541,593	589,725
Household size (est.)	3.46	3.52
Reference period	April 2009 – March 2010	Nov 2015 – Oct 2016
Rounds	12	12
Representativeness	National, by stratum within each of 7 regions	National, by stratum within each of 7 regions
Questionnaire		
Data collection	PAPI	CAFE
Food items: diary vs. recall	diary	diary
Information collected on food	expenditure	consumption and expenditure
Reference period (food expenditure)	4 weeks	14 days
Non-food expenditures: diary vs. recall	recall	recall
Reference period (non-food expenditure)	1, 3, and 12 months	1 week, 1 and 12 months

Notes: (1) three strata: cities/towns, urban villages, and rural areas. "PAPI" is for Paper-Assisted Personal Interviewing, "CAFE" is for Computer-Assisted Field-based data entry.

Overall, the 2009/10 BCWIS and the 2015/16 BMTHS are comparable surveys in terms of geographical representation, sample size, and the core modules of the questionnaires. A number of methodological differences might have an impact on the analysis, however. The main concerns are related to:

1. the sample frame (the new 2011 population census has replaced the 2002/03 one used in past),
2. the data entry system (PAPI vs. CAFE),
3. the diary duration (2 weeks vs. 4 weeks), and
4. the change of the information collected in the food diary (based on expenditures in the past, now based on both consumption and expenditures).

All this warrants caution in interpreting the results and deserves further research and investigation, a task beyond the scope of this report.

2. Construction of a comparable nominal consumption aggregate

This section focuses on the construction of a nominal consumption aggregate (CA) for 2015/16 that is as closely comparable as possible with the one used in 2009/10.

One distinctive feature of the official estimates produced by Statistics Botswana is that two versions of the consumption aggregate are used. A first definition is meant to describe the expenditure pattern of the households. This is what one finds in section 3.0 (Technical Information) of Statistics Botswana (2018), here reproduced in Table A8.2.

TABLE A8.2 Average monthly household expenditure by consumption item and amount in Pula - 2009/10 and 2015/16

Type of consumption expenditure/outlay	2009				2015			
	Cities/ Towns	Urban Villages	Rural	National	Cities/ Towns	Urban Villages	Rural	National
Food	694.78	649.07	352.89	537.61	485.97	501.00	513.98	501.77
Alcohol and Tobacco	268.51	259.10	292.38	275.38	161.42	148.83	113.89	139.89
Clothing and Footwear	343.44	266.11	140.21	233.68	365.14	235.61	150.68	238.23
Housing Costs	739.38	450.11	182.16	413.29	1196.82	736.01	297.06	698.20
H/hold Goods and Services	412.39	257.51	138.35	247.91	339.02	156.99	134.85	194.15
Medical/Health care	27.35	48.10	12.77	28.03	277.51	107.65	66.80	135.38
Transport	1150.40	629.49	305.76	629.27	1346.19	982.34	592.33	937.52
Communication	262.62	178.81	82.89	160.53	416.88	300.03	151.68	277.68
Recreation and Culture	241.13	144.59	67.34	137.37	201.72	111.48	50.86	112.80
Education	88.31	54.99	16.23	47.46	427.17	141.28	60.63	183.84
Restaurants and Hotels	223.49	47.87	17.05	80.39	269.10	140.31	66.30	146.51
Miscellaneous	479.14	255.05	115.91	255.00	586.35	362.31	197.45	360.65
Final Consumption Exp	4930.93	3240.80	1723.94	3045.93	6073.30	3923.83	2396.51	3926.63

Source: Statistics Botswana (2018: 15).
https://www.statsbots.org.bw/sites/default/files/publications/BMTHS%20POVERTY%20STATS%20BRIEF%202018.pdf

When it comes to measuring poverty and inequality, Statistics Botswana uses a second, more comprehensive definition of the consumption aggregate. Schematically, this second welfare indicator includes – in addition to all expenditure categories listed in Table A8.1 – the following items:

- non-food wages in-kind (section 5, questions 508-510),
- own production from livestock (section 11, question 1106),
- own production from crops (section 11, question 1106),
- education aid (section 2, question 233-238),
- social protection food aid (section 8, question 830),
- government in-kind social protection (section 8, question 831, 836).

The data shared by Statistics Botswana allow us to reproduce the official estimates (the first definition mentioned above) in Table A8.2. Table A8.3 shows the results (the upper panel refers to expenditure levels, while the lower panel refers to budget shares). For most consumption categories, we managed to match official estimates pretty closely. Two exceptions are food expenditures and housing costs.

TABLE A8.3 Average household nominal expenditure (per household per month) by main consumption categories

	Official estimates				New estimates			
	Cities/ Towns	**Urban Villages**	**Rural**	**National**	**Cities/ Towns**	**Urban Villages**	**Rural**	**National**
Food	486	501	514	502	942	1,049	1,095	1,039
Alcohol and Tobacco	161	149	114	140	206	184	169	184
Clothing and Footwear	365	236	151	238	372	241	154	243
Housing Costs	1,197	736	297	698	1,365	970	403	872
H/hold Goods and Services	339	157	135	194	342	164	139	199
Medical/Health care	278	108	67	135	283	110	62	136
Transport	1,346	982	592	938	1,295	943	549	894
Communication	417	300	152	278	428	311	148	283
Recreation and Culture	202	111	51	113	211	118	58	120
Education	427	141	61	184	426	140	62	183
Restaurants and Hotels	269	140	66	147	285	151	71	156
Miscellaneous	586	362	197	361	512	330	203	331
Final Consumption Exp.	6,074	3,925	2,397	3,927	6,666	4,709	3,114	4,642
	budget shares (%)				budget shares (%)			
	Cities/ Towns	**Urban Villages**	**Rural**	**National**	**Cities/ Towns**	**Urban Villages**	**Rural**	**National**
Food	8.0	12.8	21.4	12.8	14.1	22.3	35.2	22.4
Alcohol and Tobacco	2.7	3.8	4.8	3.6	3.1	3.9	5.4	4.0
Clothing and Footwear	6.0	6.0	6.3	6.1	5.6	5.1	4.9	5.2
Housing Costs	19.7	18.8	12.4	17.8	20.5	20.6	13.0	18.8
H/hold Goods and Services	5.6	4.0	5.6	4.9	5.1	3.5	4.5	4.3
Medical/Health care	4.6	2.7	2.8	3.4	4.2	2.3	2.0	2.9
Transport	22.2	25.0	24.7	23.9	19.4	20.0	17.6	19.3
Communication	6.9	7.6	6.3	7.1	6.4	6.6	4.7	6.1
Recreation and Culture	3.3	2.8	2.1	2.9	3.2	2.5	1.9	2.6
Education	7.0	3.6	2.5	4.7	6.4	3.0	2.0	4.0
Restaurants and Hotels	4.4	3.6	2.8	3.7	4.3	3.2	2.3	3.4
Miscellaneous	9.7	9.2	8.2	9.2	7.7	7.0	6.5	7.1
Final Consumption Exp.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: left panel is from Statistics Botswana (2018: 15); right panel is from our estimates.

Regarding housing, the category includes housing related costs and rent. In particular, in terms of rent, we include the rent paid as well as the approximation of rent for those who occupy a dwelling, reported in section 9 (question 913 and 915). Additionally, from the same section we include housing costs as spelled out in terms of electricity. Finally, from the recall of weekly, monthly, and annual payments (section 12), we include expenditure on all housing relative expenditure categories as defined by the respective COICOP codes.

In order to improve on the comparability of the total household expenditure between 2009/10 and 2015/16 each component was recalibrated so as to match the variables provided by the official Statistics Botswana datasets. Table A8.4 shows the estimated values of the components 1) to 6) above.
The rest of this section illustrates the details on how each main component was estimated based on the 2015/16 BMTHS.

TABLE A8.4 Average monthly household expenditure by consumption item and the adjustment terms of the comparable consumption aggregate

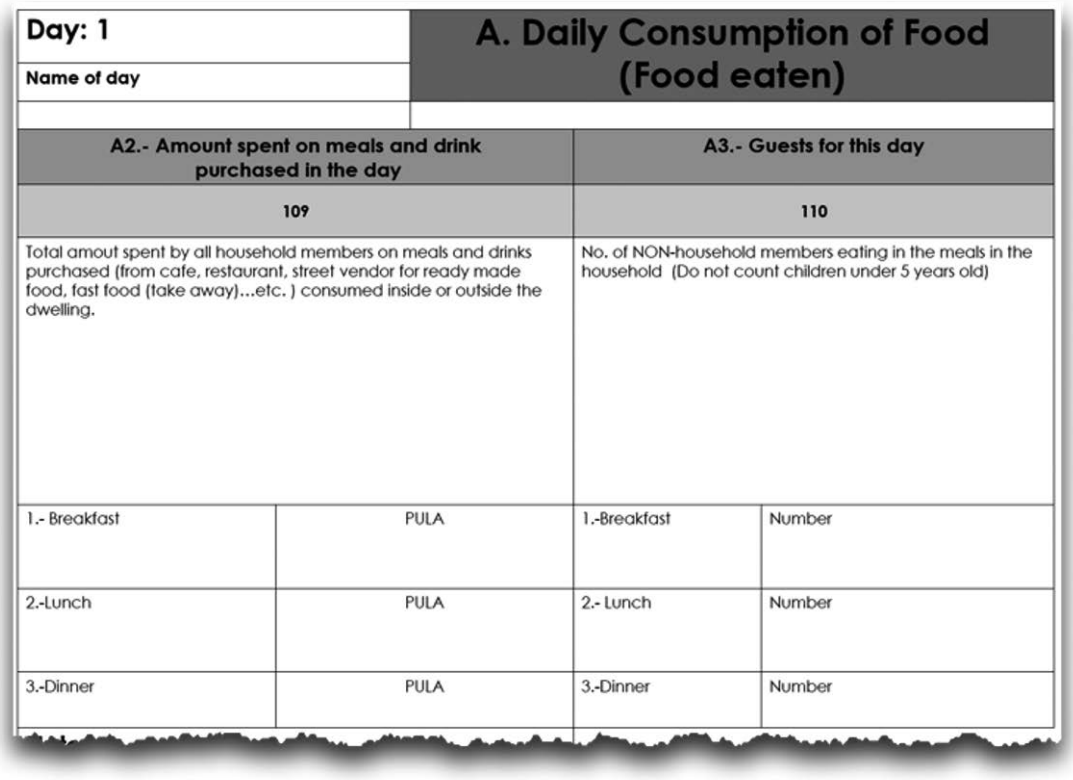
Component	Value (pula/hh/month)
Total consumption aggregate	4,642
Education aid	34
Own production consumption from livestock	27
Own production consumption from crops	20
Government in-kind aid	46
Wages in-kind (non food)	17
Social protection food aid	14

2.1 Food

The main component of food expenditures, **food consumption expenditure**, was calculated from the diary. We use the diary information on daily consumption of food. In particular, information on food eaten in the 2015/16 diary is organized in two parts. In Part A1 households report, on a daily basis, the consumption of food. This includes i) items purchased, ii) received as a gift, and iii) produced at home, but only reports the consumed quantities, and not the corresponding amounts. This makes it necessary to estimate the value of these items in order to construct the food component of the consumption aggregate. Figure A8.1 shows the structure of this first part of the diary in the 2015/16 BTHS questionnaire.

For consumption quantities, we use the variable "qty_g" produced by Statistics Botswana. This variable already converted non-standard measurement units (question 102 in Figure 2) into grams. Quantities were priced using the variable "unit_price", also extracted from the official Statistics Botswana datasets.

FIGURE A8.1 Food consumption: excerpt from the diary of the 2015/16 BMTHS



Day: 1		A. Daily Consumption of Food (Food eaten)	
Name of day			
A2.- Amount spent on meals and drink purchased in the day		A3.- Guests for this day	
109		110	
Total amout spent by all household members on meals and drinks purchased (from cafe, restaurant, street vendor for ready made food, fast food (take away)...etc.) consumed inside or outside the dwelling.		No. of NON-household members eating in the meals in the household (Do not count children under 5 years old)	
1.- Breakfast	PULA	1.-Breakfast	Number
2.-Lunch	PULA	2.- Lunch	Number
3.-Dinner	PULA	3.-Dinner	Number

Source: 2015/16 BMTHS questionnaire.

To obtain comparability of consumption aggregates between 2009/10 and 2015/16, we apply a bottom-coding procedure on the 2015/16 MBTHS data and adjust food consumption expenditure accordingly. This same procedure was implemented by the analysts at Statistics Botswana (as a way of dealing with extreme values and/or other data flaws/inconsistencies).

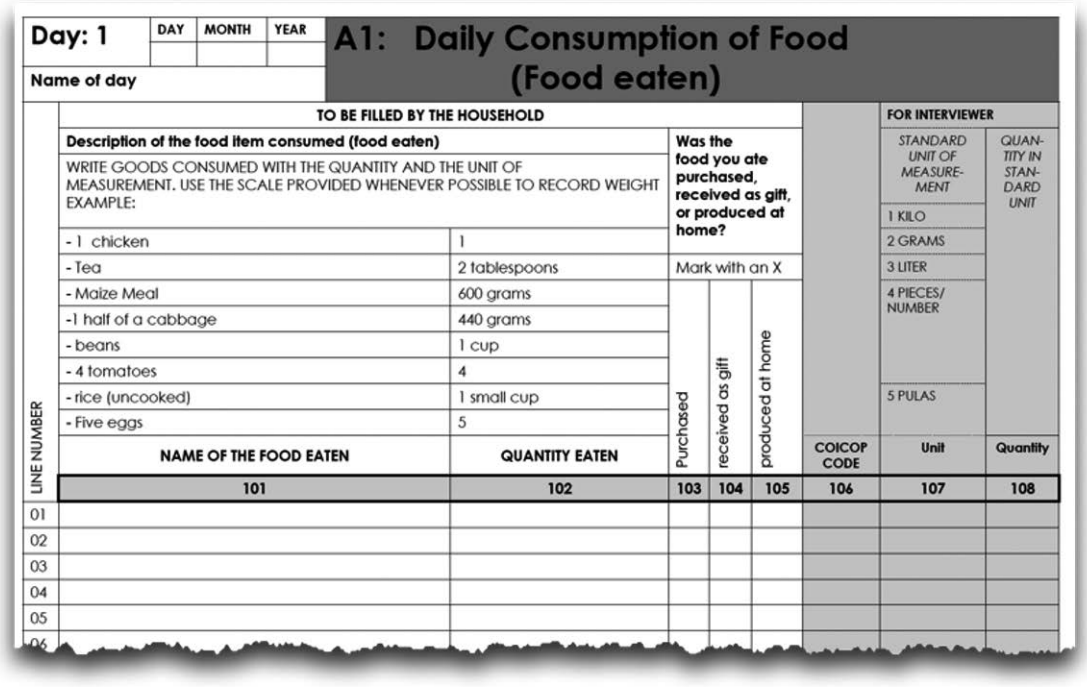
In addition to food consumption expenditure, we include meals consumed outside home, which is available from the questionnaire. Part A of the diary reports expenditures on meals and drinks, separately by breakfast, lunch, and dinner (Figure A8.2). The values in the diaries have been included in the food aggregate, as reported by the households, after annualizing the fortnightly expenditures.

Moreover, we include an estimate of the value of **school meals** for children studying in government schools. Based on the prices shared by Statistics Botswana, a meal for each primary school student is estimated at 103.3 Pula. Similarly, a meal for each secondary school student is valued at 182.5 Pula.

In addition, we take into account the value of food received as **in-kind wage**. This is available in section 5 of the questionnaire ("Wage earners: income, deductions, and employee benefits", section 5, question 506 and 507).

The total amount obtained by summing up all the components described in this section is used as the first building block for the construction of the consumption aggregate. In the next section, we discuss the second building block, namely how non-food expenditures were calculated.

FIGURE A8.2 Meals outside home: excerpt from the diary of the 2015/16 BMTHS



Day: 1 | DAY | MONTH | YEAR

Name of day

A1: Daily Consumption of Food (Food eaten)

TO BE FILLED BY THE HOUSEHOLD

LINE NUMBER	Description of the food item consumed (food eaten) WRITE GOODS CONSUMED WITH THE QUANTITY AND THE UNIT OF MEASUREMENT. USE THE SCALE PROVIDED WHENEVER POSSIBLE TO RECORD WEIGHT EXAMPLE: NAME OF THE FOOD EATEN	QUANTITY EATEN	Was the food you ate purchased, received as gift, or produced at home? Mark with an X: Purchased	received as gift	produced at home	COICOP CODE	FOR INTERVIEWER: STANDARD UNIT OF MEASUREMENT (Unit)	QUANTITY IN STANDARD UNIT (Quantity)
	- 1 chicken	1					1 KILO	
	- Tea	2 tablespoons					2 GRAMS	
	- Maize Meal	600 grams					3 LITER	
	-1 half of a cabbage	440 grams					4 PIECES/ NUMBER	
	- beans	1 cup						
	- 4 tomatoes	4						
	- rice (uncooked)	1 small cup					5 PULAS	
	- Five eggs	5						
	101	102	103	104	105	106	107	108
01								
02								
03								
04								
05								
06								

Source: 2015/16 BMTHS questionnaire.

2.2 Non-food expenditures

Total consumption includes the following non-food expenditures:

- **Health expenditures,** as available from Section 3 Part B (questions 341, 327, 329, 330, 333);
- **Education expenditures,** as available from Section 2 (questions 225, 226, 227, 228, 229, 230, 231).
- All **non-food expenditures** listed in Section 12 (Part A, expenditures in the past week, and Part B, expenditure in the past 12 months) as well as expenditure in Part C (regular monthly and annual payments).
- For **alcohol and tobacco**, in order to impute the relative expenditure, we include information on their use from section 3, part C. We combine the information with tobacco and alcohol prices supplied by Statistics Botswana. We thus use questions 344, 351, 352, 353, 354, section 3, part C, and by reconstructing the relative standard units of measurement, we combine the quantities with the prices and construct the relative monthly expenditure. Finally, we use the weekly recall expenditure on alcohol and tobacco, and in cases where the weekly recall expenditure estimate outweighs the previously obtained aggregate, we augment it with the residual part.

2.3 Durable goods and housing

As explained in Deaton and Zaidi (2002), both durable goods and housing require special treatment, which we briefly discuss in Box A8.2.

Regarding **durable goods** we did not estimate the consumption flow that comes from owning or having access to durable goods, for consistency with the official definition used in 2009. The assumption is that it was used the 'acquisition approach' (see, for instance, Amendola and Vecchi 2014), and this is what we have implemented for the comparable CA.

Regarding housing, we included actual rent, as well as the imputed rent, which we estimate through a standard hedonic regression model, for households who own their dwellings. Additionally, from the same section we include housing costs as spelled out in terms of electricity. Finally, from the recall of weekly, monthly and annual payments (section 12), we include expenditure on all housing relative expenditure categories as defined by the respective COICOP codes.

BOX A8.1 The consumption aggregate in Botswana and in theory

The welfare indicator described in section 2 can be assessed against the theoretical recommendations provided by Deaton and Zaidi (2002).

In the first place, Deaton and Zaidi argue that "Consumption is a theoretically more satisfactory measure of well-being" (p. 23): the Botswana consumption aggregate is therefore in line with the general theoretical framework used by welfare analysts.

Regarding food expenditures, Deaton and Zaidi argue that the consumption aggregate should include "not just (i) food purchased in the market place, including meals purchased away from home for consumption at or away from home, but also (ii) food that is home-produced, (iii) food items received as gifts or remittances from other households, as well as (iv) food received from employers as payment in-kind for services rendered, In some cases where food can be and is stored over long periods of time, and where the questionnaire permits it, "food consumed" can be distinguished from "food purchased". In principle, it is the value of the former that should go into the consumption aggregate." (p. 27). This is in line with the choices documented in section 3.1.

Regarding non-food expenditures, the consumption aggregate used by Statistics Botswana includes health expenditures, whereas Deaton and Zaidi argue that they should be excluded, or, more precisely, that they "should only be included if they have high income elasticity in relation to their transitory variance or measurement error" (p. 39).

Durable goods are not dealt with consistently with Deaton and Zaidi, whose recommendation is to "calculate an annual rental equivalent using an appropriate real rate of interest and median depreciation values for each item calculated across all households owning that item." (p. 39).

Finally, housing. Here the consumption aggregate of Statistics Botswana does not include imputed rent for owners, while Deaton and Zaidi argue that "if the dwelling is owned by the household or received free of charge, an estimate of the annual rental equivalent must be included in the consumption aggregate" (p. 39). We found no empirical reason that would advise against this choice, that is rental equivalents do not seem inaccurate.

2.4 Aggregation

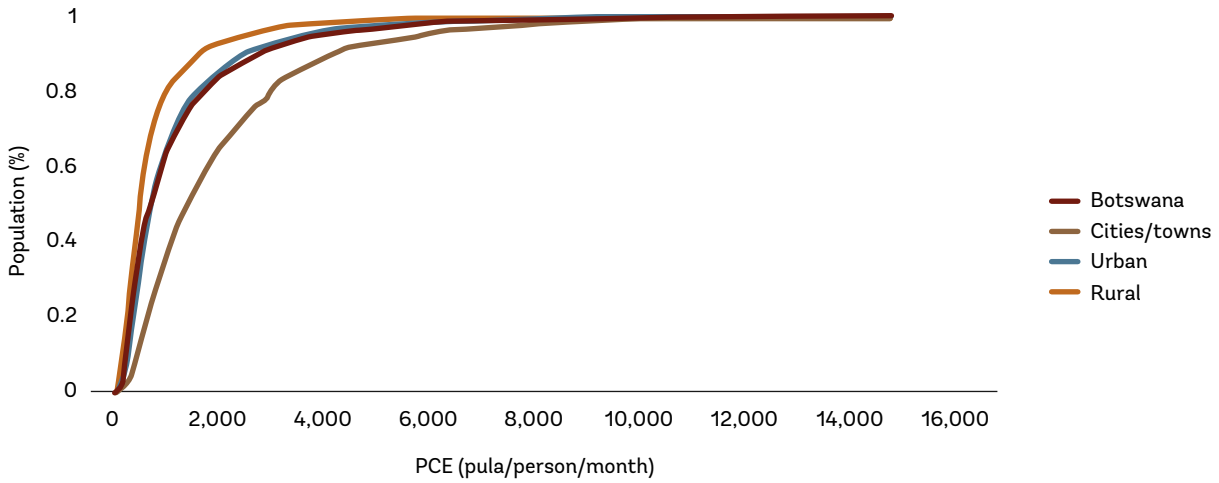
The nominal consumption aggregate is obtained by summing up the four building blocks constructed in sections 2.1-2.3. We calculate the nominal per capita expenditure (PCE) by dividing the nominal consumption aggregate by the total number of household members. The nominal PCE is expressed in Pula per month.

We check the cumulative distribution functions (CDFs) of the nominal PCE. The CDF F(x), for any given expenditure level x, gives the proportion of people who have expenditures below that level. If the expenditure level is taken to be the poverty line z, then F(z) would give the proportion of people who have expenditures below z, i.e. the proportion of poor people (the incidence of poverty). A second reason that makes CDFs an attractive tool is their use in dominance analysis. Suppose there are two different income distributions, A and

B, for instance two different years, and suppose that FA(x) < FB(x) for all values of x; if this is the case, then we say that the distribution A first-order-stochastically dominates (FOD) the distribution B. This implies that the distribution A's CDF lies everywhere below the distribution B's CDF, and therefore the incidence of poverty is always higher in B than in A, no matter where the poverty line is drawn (Atkinson 1987; Ravallion 1994).

Figure A8.3 shows the cumulative distribution functions (CDF) of nominal PCE, separately by stratum. The curves depict a ranking consistent with the descriptive statistics published in Table 3: the CDF for cities and towns first-order stochastically dominates the CDF for urban areas, which in turn first-order stochastically dominates the CDF for rural areas. This implies that 1) the incidence of poverty will always be higher in urban areas than in in cities and town, and 2) the incidence of poverty will always be higher in rural than in urban areas.

FIGURE A8.3 Cumulative Distribution Functions of Nominal PCE, by stratum



Source: our estimates.

3. From nominal to real consumption aggregate: spatial price variation

Geographical differences in price levels are of major concern for welfare comparisons. A higher level of the cost of living clearly decreases the real purchasing power of a given level of expenditure, thereby decreasing household welfare. The nominal consumption aggregate constructed in section 2 needs to be adjusted for spatial price differences. In this section we estimate a survey-based household-level spatial price index.

The official estimates of poverty used by Statistics Botswana already account for spatial differences in the cost of living by using the Poverty Datum Lines (PDLs). The PDLs are household-specific poverty lines which embed an adjustment for differences in the purchasing power across Botswana. The fact that a spatial deflator is implicitly built-in the official PDL (World Bank 2015: 174) can be easily seen by noting that, for instance, the ratio between a *regional* poverty line and the national level poverty line can be interpreted as an implicit *spatial "true" cost-of-living index* (Deaton and Muellbauer, 1980). This is because the regional level poverty lines, keeping constant the standard of living, take into account the differences in the households' consumption pattern and the local market prices structure. A simple estimate of the spatial cost of living index SPI_r^t for the region *r* is given by:

$$SPI_r^t = \frac{PL_t^r}{E[PL_t^r]}$$

where PL_t^r is the poverty line for region *r* and year *t* and $E[PL_t^r]$ is the average national poverty line. Table A8.5 (col. 3 and 4) shows the estimate for the regional cost of living differences obtained applying the equation above.

TABLE A8.5 Implicit spatial price indices, 2009/10-2015/16

	PL^r_{t1} (pula/hh/month)	PL^r_{t2} (pula/hh/month)	SPI (BWA=100)	SPI (BWA=100)
	2009	**2016**	**2009**	**2016**
Gaborone	1,068	987	81	78
Francistown	1,133	1,363	86	108
Other Cities & Towns	1,094	1,157	83	92
Rural South-East	1,296	1,153	98	91
Rural North-East	1,428	1,116	108	88
Rural North-West	1,479	1,531	112	121
Rural South-West	1,388	1,534	105	121
Cities/Towns	1,091	1,160	82	84
Urban villages	1,532	1,216	116	118
Rural areas	1,269	1,352	96	98
Botswana	1,318	1,246	100	100

How to calculate *scalar* regional poverty lines consistent with the official estimates? The only way is through the following method, where we use the quantile function calculated at the official regional poverty rates:

$$PL^r_{\square} = F_r^{-1}(H_r)$$

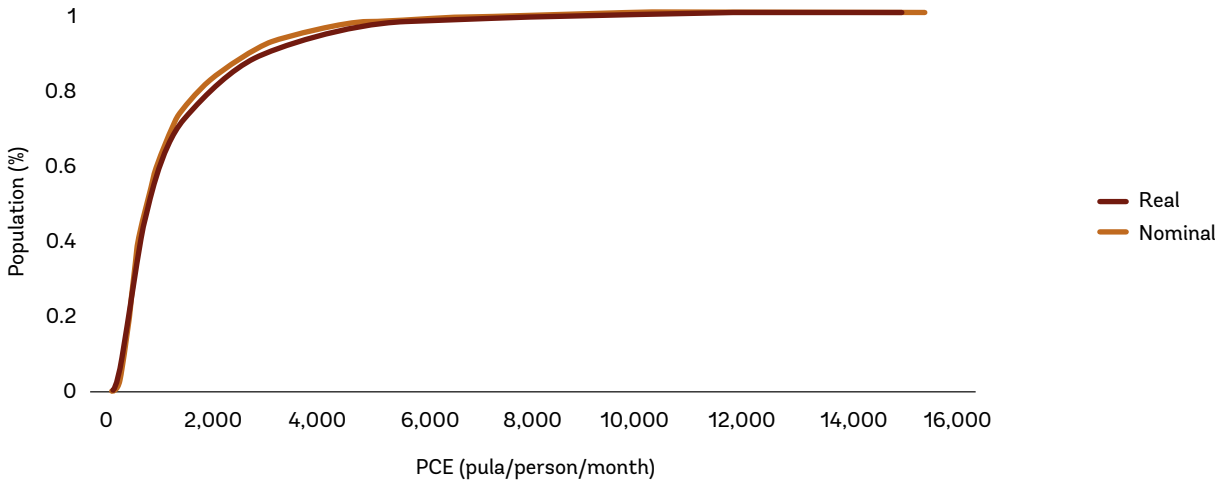
where F_r^{-1} is the inverse of the cumulative density function of the total households' expenditure and H_r is the official regional poverty headcount for the region *r*. Equation (2) was calculated separately and independently for 2009/10 and 2015/16, each set of estimates being based on the official household-level poverty lines (both at current prices), kindly shared by Statistics Botswana.

The spatial price deflators in Table 6 (last column) are the ones *implicitly* used by Statistics Botswana to obtain official poverty measures in 2009/10 and 2015/16.

The availability of spatial deflators allows us to adjust the nominal PCE calculated in section 2.4, and calculate the real consumption aggregate, that is a measure that accounts for the differences in the cost of living across the country, and is therefore comparable to official poverty estimates. The latter, produced using household-level PDLs, are implicitly adjusting for spatial differences in prices.

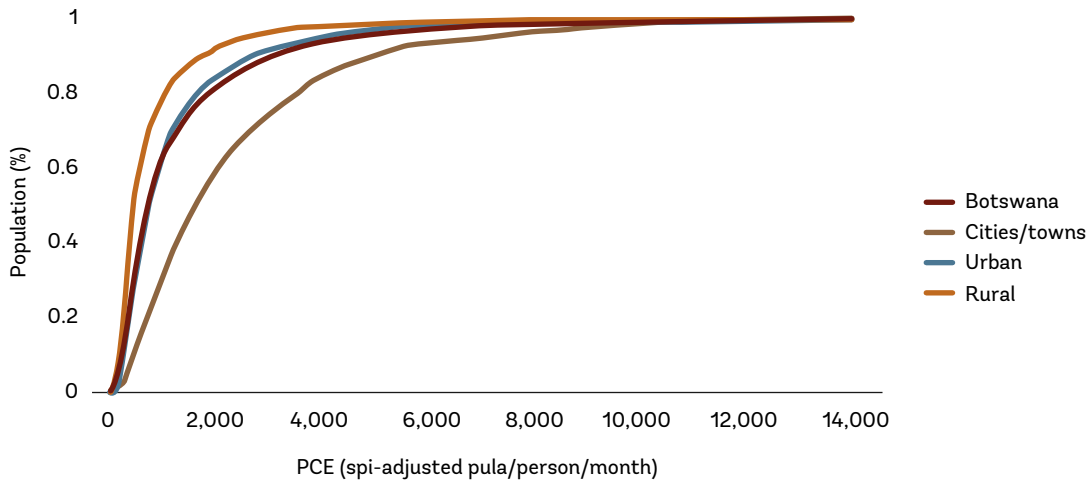
Figure A8.4 shows that the adjustment for spatial differences in prices is not negligible but does not change the shape of the CDFs significantly. Figure A8.5 shows that the ranking in Figure A8.3 (cumulative distribution functions of *nominal* PCE) is preserved when using *real* PCE. It implies that based on real PCE: 1) the incidence of poverty will always be higher in urban areas than in in cities and town, and 2) the incidence of poverty will always be higher in rural than in urban areas.

FIGURE A8.4 Cumulative Distribution Functions of Nominal vs Real PCE



Source: our estimates.

FIGURE A8.5 Cumulative Distribution Functions of Real PCE, by stratum



Source: our estimates.

4. A harmonized poverty line

After constructing a consumption aggregate for 2015/16 comparable to that used in 2009/10, this subsection defines a poverty line consistent with the one used in the past. The difficulty here is with the fact that official poverty lines in Botswana are calculated at the household level. We find 3,803 unique poverty lines for the 2009/10 survey and 3,403 poverty lines for 2015/16.

The official poverty line is referred to as the "poverty datum line" (PDL). For household h in region *r* it is defined as follows:

$$\text{(A1)} \quad PDL_{h,r} = \underbrace{\sum_{p=1}^{11} (\boldsymbol{p}_r^F \boldsymbol{q}_p^F) n_{p,h}}_{(1)} + \underbrace{\sum_{p=1}^{7} (\boldsymbol{p}_r^C \boldsymbol{q}_p^C) n_{p,h}}_{(2)} + \underbrace{\sum_{p=1}^{5} (p_r^{PI} q_p^{PI}) n_{p,h}}_{(3)} + \underbrace{H_r}_{(4)} + \underbrace{S_{u,r}}_{(5)}$$

The first component is the minimum food expenditure, calculated as the product of $\boldsymbol{q}_p^F$, a vector of food commodities that identifies a "basic need" food basket, (in our notation p identifies age-gender groups), and $\boldsymbol{p}_r^F$, the corresponding minimum prices vector. The term $n_{p,h}$ denotes the number of members in household *h* belonging to the age-gender class *p*. The second and third components (clothing and personal items) are defined in a similar way. The last two components of the PDL are the cost of household's goods in region *r* (H_r), and the cost of housing for household type u in region *r* ($S_{u,r}$).

The strategy used in this report consists in anchoring poverty measurement to the standard of living identified by the 2009/10 PDLs. Analytically, this amounts to identifying a (scalar) poverty line consistent with the official poverty rate in 2009/10, and then adjusting its purchasing value for inflation.[6] By so doing, we obtain a new poverty line, expressed in 2015/16 Pula, that we can use in combination with the 2015/16 consumption aggregate constructed in section 3. We shall refer to this line as to the harmonized poverty line.

A scalar poverty line for 2009/10 is obtained by inverting the 2009/10 quantile function at the percentile corresponding to the official poverty rate (0.193, according to Table 1 in World Bank, 2018: 4). Thus:

$$233.5 = F^{-1}_{2009/10}(19.3\%)$$

If we use 233.5 Pula/month/person on the 2009/10 data, we obtain an estimated headcount poverty rate equal to 19.3 percent, that is, we obtain the official estimate of the incidence of poverty in 2009/10.

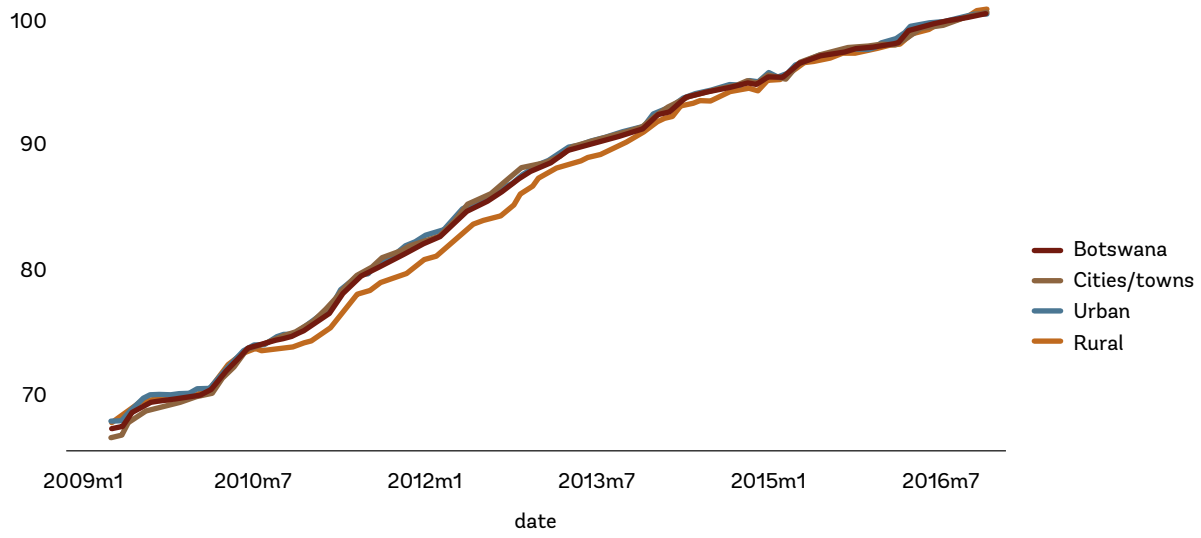
The task to update this poverty line to 2015/16 is conceptually simple. In order to anchor the new poverty line to the same (minimum) standard of living set for 2009/10, one needs to adjust the monetary value of the latter (that is, the 2009/10 poverty line) for changes in purchasing power (that is, for inflation). This method – the old line updated for inflation over the period using the best available price index – is to be preferred to the alternative of re-estimating a new line. The reason is that "repeating the calculations used in the base period [2009/10, in our context] may well introduce some differences in the real value of the poverty line associated with shifts in the Engel curve, such as shifts due to changes in relative prices or tastes" (Ravallion, 2016: 203). In practice, we need a (monthly) time series for the consumer price index (CPI) between 2009/10 and 2015/16. This is what we need to adjust for inflation the 2009/10 poverty line. Statistics Botswana provided us with official estimates of the CPI.

Given the importance of the CPI in the rest of the analysis, it is worth exploring its dynamics. Figure A8.6 shows the monthly CPI between 2009 and 2016, comprising all survey months, separately by strata. Overall, the dynamics of inflation is similar in all strata. According to the official CPI, the cumulative inflation adjustment factor between April 2009 and October 2016 equals 1.433. The corresponding factors for cities/towns, urban and rural areas equal 1.442, 1.426, and 1.425, respectively.

In our context, we decided to take advantage of the new information available from the 2015/16 to rebase the official CPI using the new budget shares from the 2015/16 survey, as a way of better capturing the changes in the consumption pattern between 2009/10 and 2015/16. In Table A8.6 we compare the budget shares underlying the official CPI (column 2) with the budget shares calculated on the 2015/16 BMTHS (column 3), separately by major categories of goods and services.

6 As argued in World Bank (2015: Annex B, p. 179), the only way to replicate the official estimates using aggregated poverty lines is that of imposing ex-ante, i.e. by construction, the consistency between official poverty estimates and the aggregated poverty lines.

FIGURE A8.6 Official CPI, by stratum



Source: our elaboration on official estimates.

TABLE A8.6 Budget shares for the consumer price indices

Categories	Official CPI	Based on 2015/16 BMTHS
Food	0.15269	0.22375
Alcohol and Tobacco	0.07820	0.03970
Clothing and Footwear	0.06637	0.05240
Housing Costs	0.04559	0.18786
H/hold Goods and Services	0.01348	0.04297
Medical/Health care	0.00796	0.02931
Transport	0.07041	0.19259
Communication	0.25230	0.06107
Recreation and Culture	0.07242	0.02590
Education	0.03901	0.03951
Restaurants and Hotels	0.02283	0.03364
Miscellaneous	0.17872	0.07131
Total	**1.00000**	**1.00000**

According to the official CPI, the cumulative inflation adjustment factor between April 2009 and October 2016 equals 1.433. By applying the adjustment for inflation to the poverty line:

$$PL_{2015-16} = PL_{2009-10} \times CPI_{2009-10,2015-16}$$

we obtain 334.6 (=233.51.433).

The poverty line used in the rest of this report is therefore **334.6 Pula/person/month**, which is our best estimate of the amount required in 2015/16 for achieving the same standard of living set by the official PDL for 2009/10. This way of calculating the poverty line ensures the consistency of poverty comparisons (Ravallion, 2016), and entirely relies on Statistics Botswana official methodology.

5. Poverty estimates for 2015/16

The main results are reported in Table A8.7, based on the real consumption aggregate discussed in section 3 and the harmonized poverty line discussed in section 4. The first column reports the point estimates for each poverty measure; the second column is the estimated standard error, after accounting for the complex survey design; the last two columns report the lower and upper bound of the estimates using a 95 percent confidence interval. A clear picture is confirmed: poverty level, poverty gap, and poverty severity are consistently highest in rural areas.

TABLE A8.7 Poverty estimates in 2015/16, by stratum

Incidence of poverty (headcount poverty index)				
Stratum	**Estimate**	**Std. error**	**lower b.**	**upper b.**
Cities/Towns	3.3	0.7	2.0	4.7
Urban Villages	13.7	1.4	10.9	16.4
Rural areas	26.8	2.1	22.7	30.9
Botswana	16.1	1.0	14.1	18.0
Depth of poverty (poverty gap index)				
	Estimate	**Std. error**	**lower b.**	**upper b.**
Cities/Towns	1.3	0.3	0.7	1.9
Urban Villages	3.4	0.5	2.5	4.4
Rural areas	8.0	0.9	6.3	9.7
Botswana	4.6	0.4	3.8	5.3
Severity of poverty (poverty gap squared index)				
	Estimate	**Std. error**	**lower b.**	**upper b.**
Cities/Towns	0.7	0.2	0.3	1.1
Urban Villages	1.3	0.2	0.8	1.8
Rural areas	3.4	0.5	2.5	4.3
Botswana	1.9	0.2	1.5	2.3

6. Inequality estimates

Table A8.8 shows selected estimates of inequality based on the 2015/16 BMTHS using the expenditure-based consumption aggregate both in real terms (that is adjusted for spatial variation of prices) and in nominal terms. Overall, the estimates are robust and spatial deflation has a modest impact on the estimates. A formal t-test was carried out to test whether the difference between the Gini indices in 2009/10 and 2015/16 equals 0, and the null hypothesis was not rejected. Statistically, the spatial deflation has no significant impact on the Gini index. Similar results apply to other inequality measures.

TABLE A8.8 Inequality estimates for 2015/16

	nominal CA	std. error	95% confidence interval		real CA	std. error	95% confidence interval	
Gini	53.3	1.1	51.2	55.4	54.9	1.1	52.8	57.1
Cities/Towns	47.1	1.1	44.9	49.2	48.7	1.2	46.4	51.1
Urban Villages	50.6	1.8	47.1	54.0	51.1	1.8	47.5	54.6
Rural areas	52.6	3.1	46.5	58.7	53.3	3.2	47.0	59.7
Generalized Entropy Indices								
MLD	49.7	2.2	45.3	54.1	53.2	2.4	48.5	58.0
Theil	59.9	6.1	47.9	72.0	63.6	6.2	51.4	75.8
Atkinson index								
e = 1	39.2	1.4	36.5	41.9	41.3	1.4	38.5	44.1
e = 2	58.0	1.3	55.5	60.5	60.5	1.3	57.8	63.1
e = 3	68.6	1.2	66.2	71.1	71.0	1.2	68.5	73.4
Percentile and share ratios								
p90/p10	10.6	0.5	9.7	11.5	11.5	0.6	10.3	12.7
p90/p50	4.0	0.1	3.7	4.2	4.1	0.2	3.8	4.4
s80/s20	8.3	0.4	7.5	9.1	9.1	0.5	8.1	10.0

Source: our estimates.

APPENDIX 9
BOTSWANA SWIFT POVERTY PROJECTIONS FOR 2019-2022[7]

Like most countries in Sub-Saharan Africa, Botswana does not conduct frequent surveys to track poverty trends. In fact, in the last 20 years, only three such surveys were conducted: the 2002/03 Household Income and Expenditure Survey (HIES), the 2009/10 Botswana Core Welfare Indicators Survey (BCWIS), and the 2015/16 Botswana Multi-Topic Household Survey (BMTHS).[8]

However, in 2019 Botswana began to field the Quarterly Multi-Topic Survey (QMTS), a labor force survey with additional modules, which had been collected six times by 2022.[9] On its own, the QMTS cannot provide information on monetary poverty and inequality. To help fill the poverty data gaps, the World Bank and Statistics Botswana applied survey-to-survey imputations to the QMTS, using a methodology called Survey of Well-being via Instant and Frequent Tracking (SWIFT).[10] The SWIFT methodology combines machine learning and multiple imputations techniques to project household expenditure and impute poverty statistics in surveys without such data.

The BMTHS 2015/16, a year-long survey with data for all four quarters, was used in its entirety as the training data for the SWIFT models. The variable set used for the modeling was limited to what could be harmonized between the BMTHS 2015/16 and the six QMTS datasets, such as household demographics, dwelling characteristics, sources of household income, education, and labor market information.

Overall, four types of models or methodologies were used to project poverty up to 2022:

1. *Limited model (quarterly).* The limited model applied the SWIFT survey-to-survey imputation methodology, using the base year BMTHS 2015/16 survey, to all six available QMTS datasets. The name of this model reflects the limited set of variables common to all quarters of the QMTS and the 2015/16 BMTHS, such as demographics, education, and labor market variables.
2. *Full model (quarterly).* The QMTS for the third and fourth quarters of 2019, the first quarter of 2020, and the fourth quarter of 2022 collected two additional modules with questions on household dwelling conditions and sources of household income, which could also be harmonized to the BMTHS 2015/16 survey. The name of the model reflects this larger set of variables, which strengthened the projection model. However, it could only be applied to four quarters.
3. *Full+FIES model (quarterly).* The QMTS for the fourth quarter of 2022 collected the same information as the 2019 surveys but added a set of food security questions to estimate Food Insecurity Experience Scale (FIES) indicators. These variables represent quickly changing poverty correlates that usually strengthen poverty projection models. The results, however, were not very different.
4. *Elasticity (annual).* A simple, non-SWIFT methodology was also used to estimate annual poverty projections for 2017–22 using a growth-poverty elasticity. The elasticity estimate is based on the official poverty estimates and GDP growth data for 2009 and 2016 and is applied to later years using actual or projected GDP data, assuming a passthrough rate of 0.87.

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7 The results presented in this appendix are based on a collaboration between the World Bank and Statistics Botswana. The World Bank team included Carolina Diaz-Bonilla and Danielle Aron, with inputs from Nobuo Yoshida. For details on the SWIFT guidelines see: Yoshida, N., R. Munoz, A. Skinner, C. Kyung-eun Lee, M. Brataj, and D. Sharma. 2015. SWIFT Data Collection Guidelines version 2. The World Bank.

8 The dates of these surveys were as follows: 2002/03 HIES: June 2002–August 2003 (Central Statistics Office 2004), 2009/10 BCWIS: April 2009–March 2010 (Statistics Botswana 2013), and the 2015/16 BMTHS: November 2015–December 2016 (Statistics Botswana 2018). As noted, for ease of reference, the rest of document uses the year in which a survey covered the most months as its date; hence, the 2003 HIES, the 2009 BCWIS, and the 2016 BMTHS.

9 The six QMTS dates were Quarters 3 and 4 of 2019, Quarters 1 and 4 of 2020, Quarter 4 of 2021, and Quarter 4 of 2022 (Statistics Botswana 2019a, 2019b; 2020a, 2020b; 2021; 2022c).

10 For background on SWIFT, see Yoshida and others (2015).

All the models show a similar slowdown in poverty reduction since 2016.

1. What is SWIFT?

Survey of Well-being via Instant and Frequent Tracking
The SWIFT program was created in 2014 to produce poverty statistics in a cost-effective and timely manner. The SWIFT methodology uses multiple imputation and machine learning techniques to train poverty projection models and produce poverty rate estimates.

2. How does SWIFT work?

A model to estimate household expenditure/income is created from dataset A, which contains both expenditure/income data AND poverty correlate variables. Dataset A is referred to as the baseline or training dataset. The model is applied to dataset B, referred to as the imputation dataset, which contains ONLY poverty correlate data, to estimate household expenditure/income. Estimated household expenditure/income is compared to the poverty line to get estimated poverty rate.

3. SWIFT MODELING & VARIABLE SELECTION

SWIFT models assume a linear relationship between household expenditure/income and poverty correlates, with an error term:

$$\tilde{y} = x\tilde{b} + \tilde{e}$$

where ($\tilde{b}$, $\tilde{e}$) are drawn from OLS regression coefficients and error terms

A Cross-Validation exercise is run ensure that the SWIFT model can perform well outside the training dataset, preventing the "over-fitting" problem. A stepwise OLS regression is applied to all available SWIFT variables and produces a model containing only significant variables. Multiple Imputation is used to test how well the model can project household expenditure/income within the training dataset.

4. Variables available for selection for Botswana SWIFT model

The variable set used for the modeling was limited to what could be harmonized between BMTHS 2015/16 and QMTS, taking into consideration question phrasing, respondent answer options, and recall periods. This included household demographics, dwelling characteristics, sources of household income, and education and employment information. However, the harmonized variable set was further limited when considering QMTS 2020 Q4 and QMTS 2021 Q4. These two-quarter surveys did not collect information on household dwelling conditions or sources of household income. Additionally, food security information comparable to BMTHS 2015/16 was collected in 2022 Q4.

5. Botswana's SWIFT model and results

Due to the available data and the differences in poverty levels in different areas of Botswana, nine different SWIFT models were created for this analysis. Three models were created for each region: cities and towns, urban villages, and rural villages. Full, limited, and full + FIESmodels were created for each region. The full model utilizes the larger variable set that was harmonized between BMTHS 2015/16 and QMTS, including dwelling conditions and sources of household income. The limited model utilizes the smaller harmonized variable set, excluding dwelling conditions and sources of household income, so that poverty projections could be produced for QMTS 2020 Q4 and QMTS 2021 Q4. And finally, the full + FIES model utilizes the full variable set with the addition of a food security variable; the full + FIES model is only used to produce estimates for 2022 Q4.

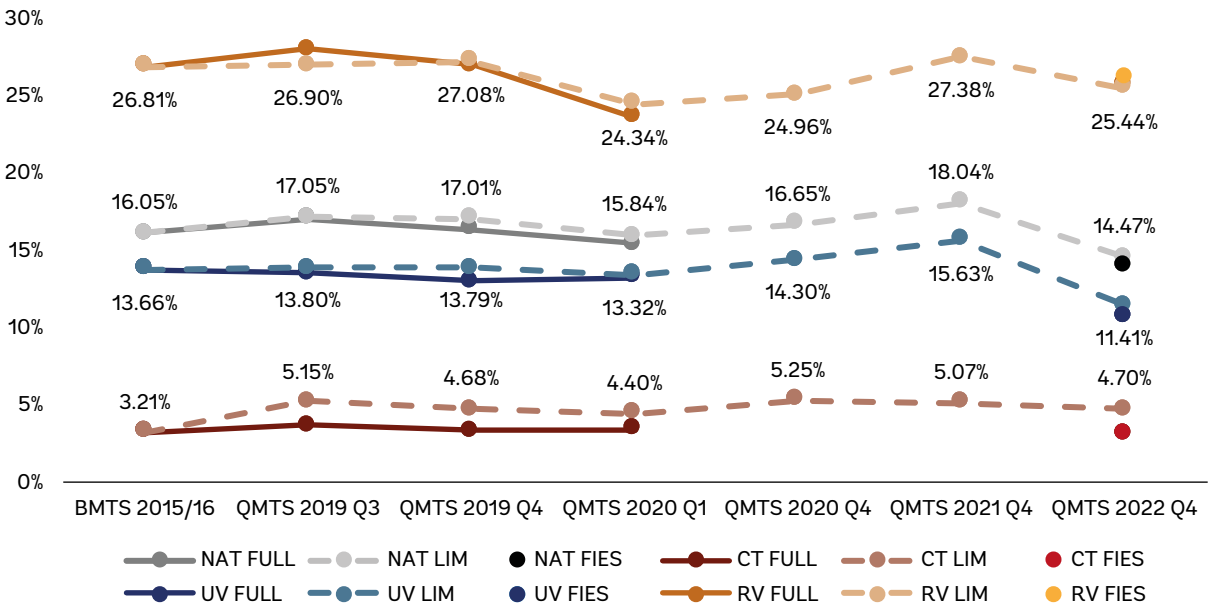
For quarterly monitoring of poverty, it would be more appropriate to incorporate fast-changing poverty correlates, such as food and non-food consumption or food security indicators, into the models. However, because QMTS is focused primarily on labor conditions, there are no available consumption variables to

harmonize. For food security, the reference period on the FIES questions varies between BMTHS 2015/16 and QMTS 2019 Q3 – 2022 Q4, making the data not comparable. However, after feedback and cooperation with Statistics Botswana, a comparable reference period on the food security questions was added to QMTS 2022 Q4, allowing for creating new models to include this data.

For QMTS 2019 Q3 through 2020 Q1, where both the full and limited models could be applied, the imputed poverty rates are very similar, differing by less than two percentage points and most differing by less than one percentage point. The full + FIES models also show near identical results to the regular full model in QMTS 2022 Q4. This supports the accuracy of both the limited and full models, but it should still be noted that the full + FIES model still has a significantly lower proportion of fast-changing poverty correlates (the food security indicator) compared to slow-changing poverty correlates.

Results show that poverty at the national level has remained relatively stagnant, with a slight increase in 2021 Q4 and then a decrease in 2022 Q4 (Figure A9.1). The trend in urban areas closely follows that of the national level. In cities and towns, the poverty rate has remained the same over the entire period, while in rural areas, we see fluctuation. Rural areas saw a decline in poverty in 2020 Q1, an increase through 2021 Q4, and another decrease in 2022 Q4.

FIGURE A9.1 Poverty Projections for Botswana



Source: Prepared by authors using BMTHS 2015/16 and QMTS 2019-Q3, 2019-Q4, 2020-Q1, 2020-Q4, 2021-Q4, 2022-Q4.
Note: The data labels in the figure are only for the limited models.

This work is one of the first attempts in Africa to monitor official, comparable poverty statistics quarterly. Furthermore, the SWIFT team at the World Bank has worked closely with Statistics Botswana during this project, paving the way for future efforts to improve the models and projections. As a result of this collaboration, Statistics Botswana has already made some amendments to the QMTS (starting for 2022 Q4) that will allow for comparability on some indicators of household food security. Including these types of fast-changing indicators will allow the models to be better suited to capturing more sudden changes in economic conditions. Further efforts like this will be important steps towards routinely producing reliable poverty estimates for Botswana.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