# Ghana

## Ghana: Scenario comparisons

Enoch Randy Aikins

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Chart 29: GDP per capita in the Current Path and scenarios, 2019-2043



Legend:
- Synergistic effect
- Governance scenario
- AfCFTA scenario
- Large Infrastructure and Leapfrogging scenario
- Manufacturing scenario
- Financial Flows scenario
- Education scenario
- Agriculture scenario
- Demographics and Health scenario
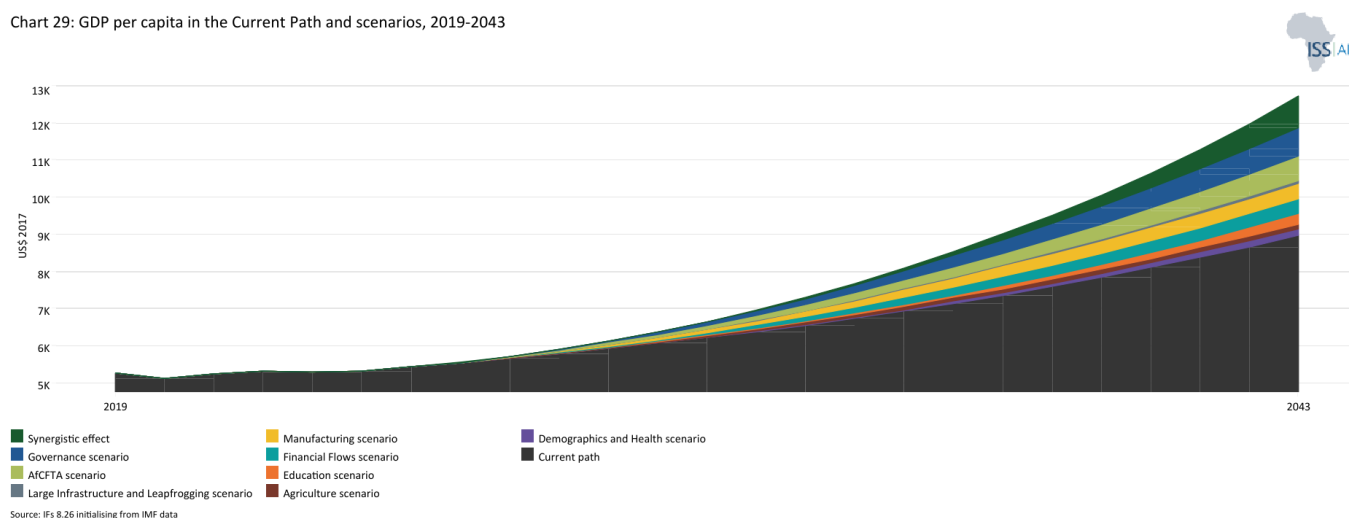- Current path

Source: IFs 8.26 initialising from IMF data

Chart 29 presents GDP per capita in purchasing power parity (PPP) in the Current Path and each of the eight sectoral scenarios, plus the synergistic effect and the Combined scenario. The data is from 2019 with a forecast to 2043.

The cumulative impact of better education, health, infrastructure, leapfrogging, etc. means an additional benefit that we refer to as the synergistic effect. The scenario with the greatest impact on GDP per capita in Ghana by 2043 is the Governance scenario, followed by the AfCFTA and the Manufacturing scenarios.

In the Governance scenario, GDP per capita for Ghana will rise to US$9 728 by 2043, representing an 8.6% increase over the Current Path for that year. It means that the Governance scenario can raise GDP per capita in Ghana by an additional US$768 by 2043. Good governance in the form of adherence to the rule of law, reduced corruption, improved transparency and accountability and political stability can undoubtedly inspire investor confidence in the economy and attract more FDI into Ghana which is currently low in Ghana, and can lead to growth.

In the AfCFTA scenario, Ghana's GDP per capita (PPP) will increase to US$9 619 by 2043, which represents an increase of US$659  (or 7.4%) compared to the Current Path in the same year. A regional free trade area such as the AfCFTA increases trade openness, accelerating technology diffusions in the country and thereby improving productivity and innovation activities. This ultimately leads to welfare gains as resources flow to their most productive uses and lower consumer prices. It could also increase Ghana's exports, as it provides access to a much larger market and improves the country's manufacturing sector through competition. Thus, the AfCFTA scenario could lead to more rapid economic growth, increased employment in key sectors and reduced poverty.

In the Manufacturing scenario, Ghana's GDP per capita will increase to US$9 392 by 2043. This is an increase of US$432 or 4.8% more than the Current Path. Manufacturing is generally a large engine of economic growth. Thus, a robust manufacturing sector is crucial for achieving sustained growth and significantly improving the population's living standard in Ghana.

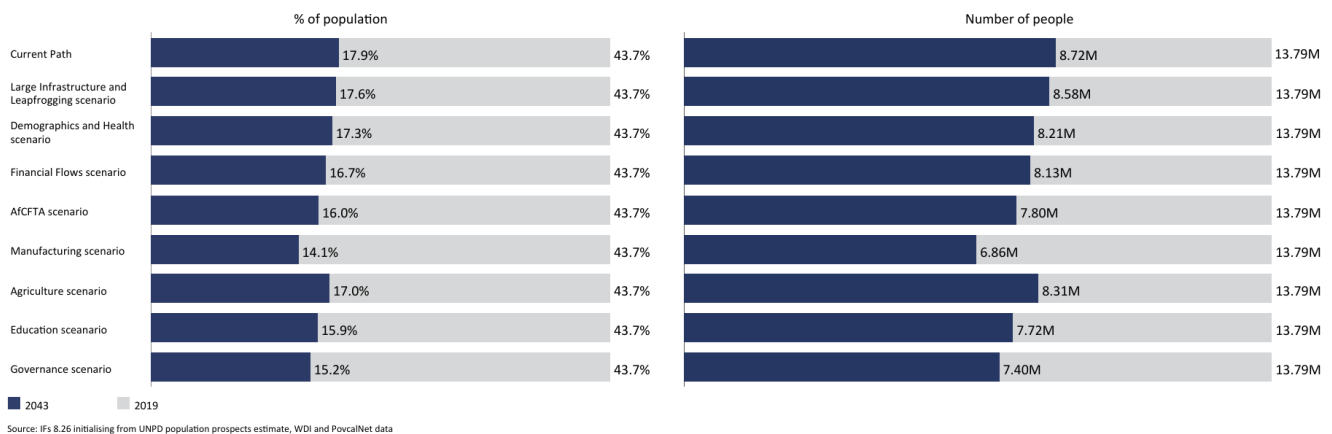Chart 30: Poverty in the Current Path and scenarios, 2019-2043

| | % of population | | | Number of people | |
|---|---|---|---|---|---|
| Current Path | 17.9% | 43.7% | | 8.72M | 13.79M |
| Large Infrastructure and Leapfrogging scenario | 17.6% | 43.7% | | 8.58M | 13.79M |
| Demographics and Health scenario | 17.3% | 43.7% | | 8.21M | 13.79M |
| Financial Flows scenario | 16.7% | 43.7% | | 8.13M | 13.79M |
| AfCFTA scenario | 16.0% | 43.7% | | 7.80M | 13.79M |
| Manufacturing scenario | 14.1% | 43.7% | | 6.86M | 13.79M |
| Agriculture scenario | 17.0% | 43.7% | | 8.31M | 13.79M |
| Education sceanario | 15.9% | 43.7% | | 7.72M | 13.79M |
| Governance scenario | 15.2% | 43.7% | | 7.40M | 13.79M |

■ 2043    ▨ 2019

Source: IFs 8.26 initialising from UNPD population prospects estimate, WDI and PovcalNet data

Chart 30 presents poverty in the Current Path and for each scenario, from 2019 to 2043. The user can select the number of extremely poor people or the percentage of the population.

In 2015, the World Bank adopted the measure of US$1.90 per person per day (in 2011 prices using GNI), also used to measure progress towards achieving SDG 1 of eradicating extreme poverty. In 2022, the World Bank updated the US$1.90 to US$2.15 in 2017 constant dollars. They are:

• US$3.20 for lower-middle-income countries, in 2017 values.

• US$5.50 for upper-middle-income countries, now US$6.85 in 2017 values.

• US$22.70 for high-income countries. The Bank has not yet announced the new poverty line in 2017 US$ prices for high-income countries.

The Manufacturing scenario has the greatest potential to reduce extreme poverty in Ghana. In this scenario, the number of poor people will decline to 6.8 million (equivalent to 14.1% of the population), compared to the Current Path of 8.7 million people (17.9%) by 2043. It means that an aggressive industrialisation that is supported by social protection measures such as welfare transfers has the potential to reduce extreme poverty in Ghana by an additional 1.9 million people.

The Governance scenario has the second-largest impact on poverty reduction in Ghana. In this scenario, 7.4 million people will live in extreme poverty by 2043, constituting 15.2% of the population. This will be 2 percentage points lower than the Current Path and equivalent to a reduction of about 1.3 million people living in extreme poverty. Certainly, better governance ensures that public resources are utilised in an efficient manner to address the needs of the people instead of being diverted into individual pockets, which will impact poverty reduction significantly.

The Education scenario has the third-largest impact on poverty reduction in Ghana. In this scenario, 7.8 million people (constituting 15.9% of the population) will live in extreme poverty by 2043. This will be 1.9 percentage points lower than the Current Path, and equivalent to a reduction of about 1 million people living in extreme poverty. Education is an important tool to reduce extreme poverty. Increasing access and quality of education equips people with the requisite skills to either start a business or acquire a job which increases their income and ultimately improves their living standards. A recent report by UNESCO confirms that if students in low-income countries have at least basic reading skills, 171 million people can escape extreme poverty.

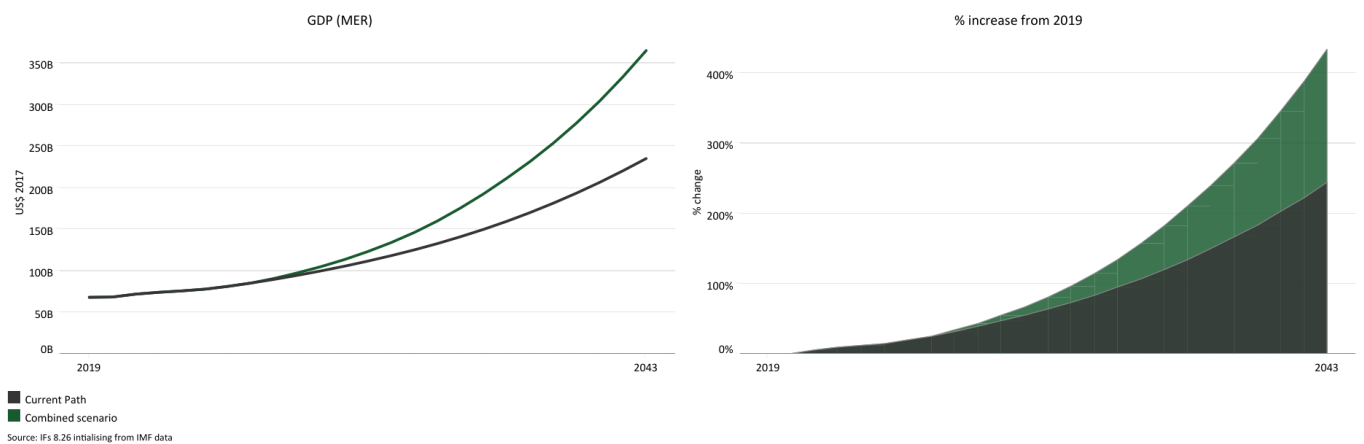Chart 31: GDP (MER) in the Current Path and Combined scenario, 2019-2043



GDP (MER)

% increase from 2019

Current Path
Combined scenario
Source: IFs 8.26 intialising from IMF data

Chart 31 presents GDP in the Current Path and in the Combined scenario, from 2019 to 2043. The data is in US$ 2017 and at market exchange rates (MER).

The Combined scenario consists of the combination of all eight sectoral scenarios, namely Governance, Demographics and Health, Education, Large Infrastructure and Leapfrogging, Agriculture, Manufacturing, AfCFTA and Financial Flows.

In the Combined scenario, Ghana's GDP will rise to US$365 billion. This will exceed the Current Path of US$235 billion, meaning that the Combined scenario will increase the size of the economy by an additional US$130 billion by 2043—an increase of about 55.3% compared to the Current Path.

Similarly, in the Combined scenario, GDP per capita for Ghana will increase to US$12 720 by 2043. This will be US$3 760 more than the US$8 960 on the Current Path, meaning that the materialisation of the Combined scenario could significantly improve the living standard of the Ghanaian population. GDP per capita in this scenario will be about 64% more than the Current Path average of US$7 757 for lower-middle-income countries in Africa by 2043. The massive economic growth in the Combined scenario indicates that an integrated development push across development sectors is the best way to achieve sustained inclusive growth and development in Ghana.

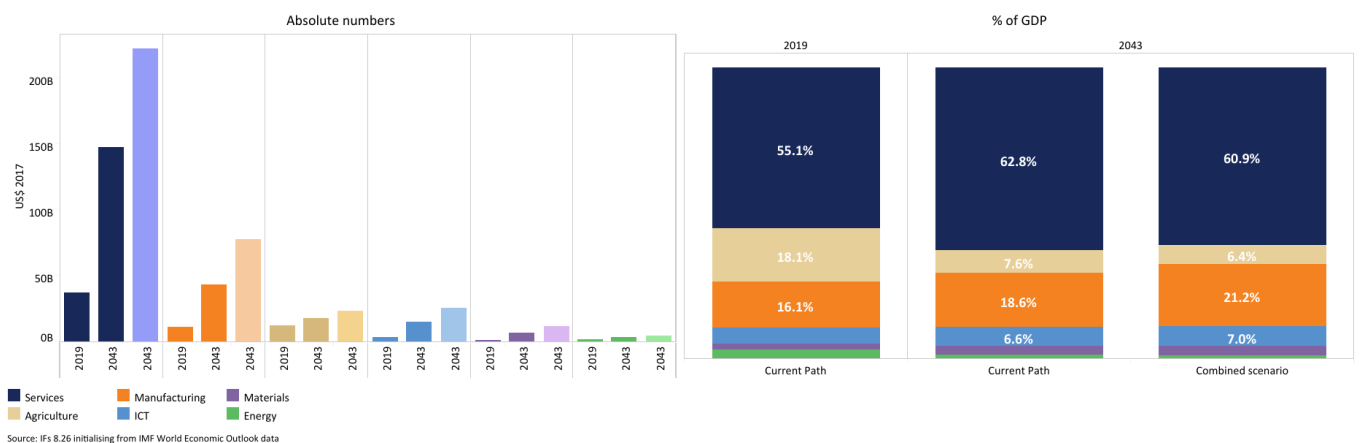Chart 32: Value added by sector in the Current Path and Combined scenario, 2019-2043



Absolute numbers

% of GDP

Services
Agriculture
Manufacturing
ICT
Materials
Energy
Source: IFs 8.26 initialising from IMF World Economic Outlook data

Chart 32 presents the value added by sector in the Current Path and in the Combined scenario, from 2019 to 2043. The

data is in US$ 2017 and as a percentage of GDP.

Our modelling provides forecasts in six economic sectors, agriculture, energy, materials (including mining), manufactures, services and ICT.

By 2043, the service sector will still be the largest contributor to GDP at 60.5% (valued at US$215.9 billion), almost US$68 billion more than the Current Path of US$147.9 billion (representing 62.8%). The manufacturing sector will be the second-largest contributor to GDP in the scenario by 2043 with a share of 21% (equivalent to US$74.8 billion)—higher than the Current Path of 18.6% (US$200 billion). The manufacturing sector will benefit most, providing an additional US$30.9 billion. Although the share of the agriculture sector will decline to 7.2%, it will increase in size to US$25.7 billion in the Combined scenario compared to 7.7% (valued at US$18.0 billion) in the Current Path in 2043. In the Combined scenario, the share of ICT and energy will rise above the Current Path to constitute 7.0%, and 1.2% of GDP, respectively, while the share of materials at 3.2% of GDP will be below the Current Path. However, in absolute terms, each sector will experience an increase in size.

Chart 33: Informal sector in the Current Path and Combined scenario, 2019-2043



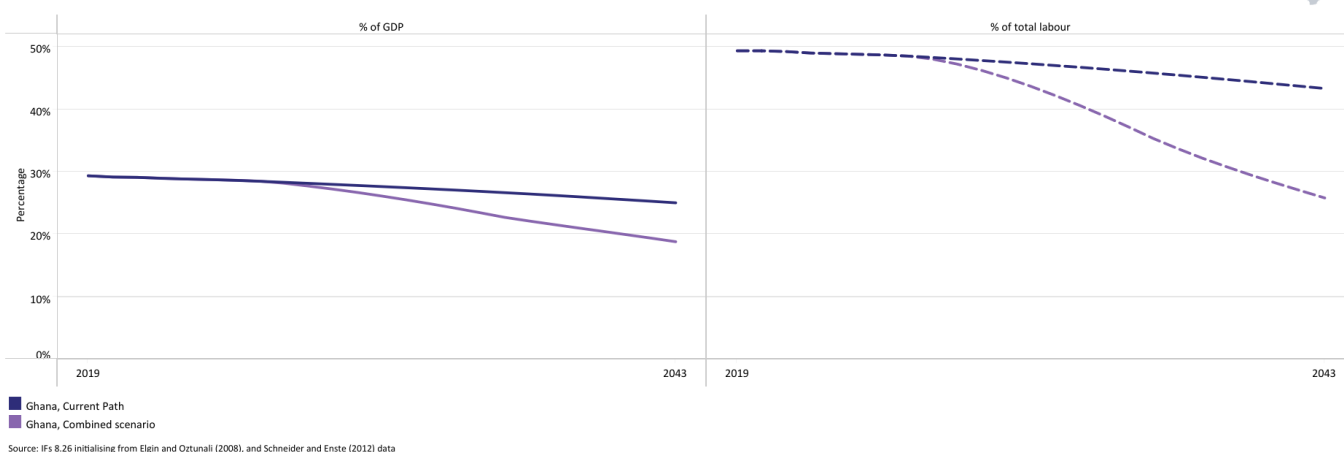Source: IFs 8.26 initialising from Elgin and Oztunali (2008), and Schneider and Enste (2012) data

Chart 33 presents the size of the informal sector as a percentage of the total economy in the Current Path and in the Combined scenario, from 2019 to 2043.

Data on the contribution of the informal sector is often estimated and should be treated with care.

By 2043, the size of the informal sector in Ghana will decline to 18.8% of GDP valued at US$68.8 billion. At this rate, the contribution of the informal economy will be lower than the Current Path at 25.1% (valued at US$59.0 billion) and significantly below the average for lower-middle-income countries in Africa at 26.2%. Likewise, the size of the informal labour force in Ghana will decline rapidly in the scenario. By 2043, the size of the informal labour sector will be about 3.7 million. This constitutes 25.8% of the total labour force instead of 43.4% in the Current Path, reflecting the steady formalisation of the Ghanaian economy that will also improve state capacity to generate more tax revenue.

Ghana, Current Path
Ghana, Combined scenario
Source: IFs 8.26 initialising from IHME data

Chart 34 compares life expectancy in the Current Path with the Combined scenario from 2019 to 2043.

Life expectancy measures the average lifespan of individuals in a country. In 2023, the average life expectancy at birth in Ghana was 67.3 years, which was about 0.3 years lower than the average for the country's income-group peers in Africa. This stemmed from the increase in non-communicable diseases such as cardio-vascular-related illnesses, stroke, HIV-AIDS, kidney disease, road accidents and respiratory infections as well as communicable diseases like tuberculosis and malaria. As is the trend globally, women in Ghana generally live 5.8 years longer (70.1 years) than men (64.5 years). On the Current Path, life expectancy will increase to 73.0 years by 2043, which will be slightly higher than the average of 72.3 years for lower-middle-income African countries. In the Combined scenario, life expectancy will increase to about 76.5 years by 2043, which will be 3.5 years more than the country's Current Path in the same year. In both the Combined scenario and the Current Path, women will live about 6 years longer than men by 2043.

Chart 35: Extreme poverty in Current Path and Combined scenario, 2019-2043



Ghana, Current Path
Ghana, Combined scenario
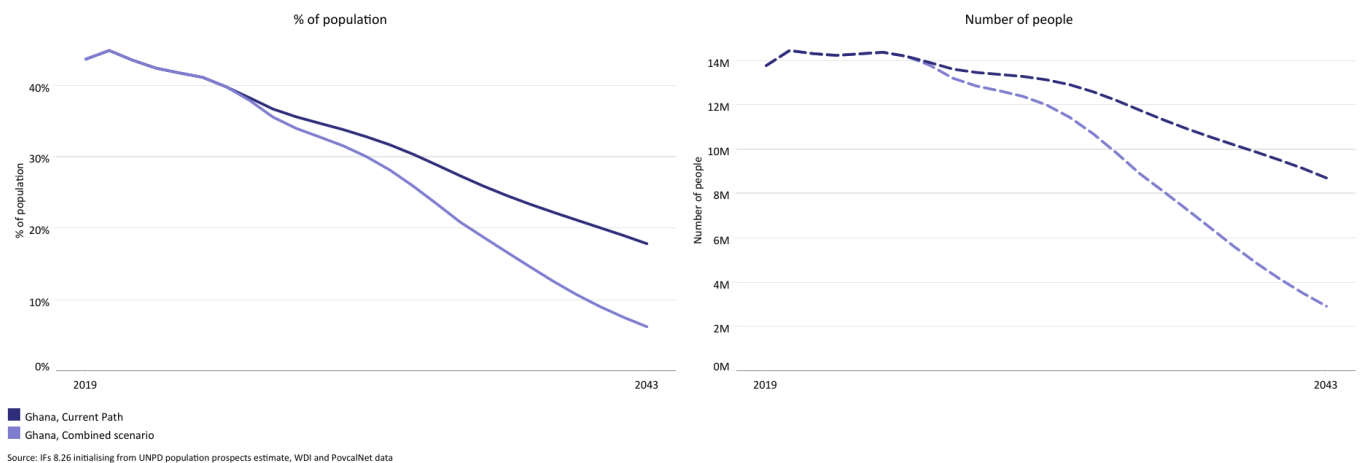Source: IFs 8.26 initialising from UNPD population prospects estimate, WDI and PovcalNet data

Chart 35 compares poverty in the Current Path with the Combined scenario from 2019 to 2043.

In the Combined scenario, both the number and the proportion of poor people in Ghana will significantly decline. By 2043, about 2.9 million people in the country (6.3% of the population) will be living in extreme poverty. This means that, compared to the Current Path, 5.8 million more people could be lifted out of poverty by 2043 in this scenario—a decline of

11.6 percentage points compared to the Current Path of 17.8% in 2043. In addition, the proportion of poor people in Ghana in the Combined scenario will be far lower (27.8 percentage points lower) than the average of 34.1% of lower-middle-income African countries by 2043.

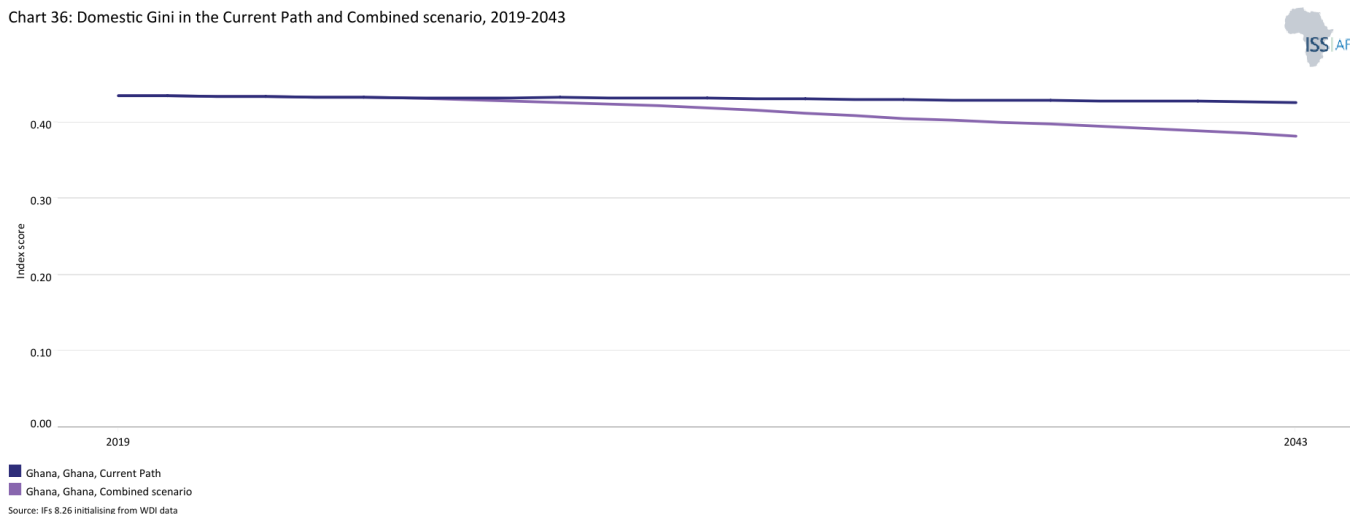Chart 36: Domestic Gini in the Current Path and Combined scenario, 2019-2043



Source: IFs 8.26 initialising from WDI data

Chart 36 compares the Gini coefficient in the Current Path with the Combined scenario from 2019 to 2043.

In 2023, Ghana's Gini coefficient was 0.43 compared to the average of 0.38 of the lower-middle-income country in Africa. There is a growing inequality in the country such that poverty is prevalent among people who reside in rural areas and the northern part of the country. For instance, about 36.7% of people living in rural Ghana are considered to be multidimensionally poor compared to only 14.6% of people in urban areas. On the Current Path, income inequality in Ghana will remain stagnant with a Gini coefficient of 0.43 by 2043. In the Combined scenario, inequality in Ghana will be slightly lower than the Current Path with a Gini coefficient of 0.38 by 2043. This means that economic growth in the Combined scenario will be broadly shared. The Manufacturing scenario has the greatest potential to reduce income inequality in Ghana followed by the Education and Agriculture scenarios.

Chart 37: Carbon emissions in the Current Path and Combined scenario, 2019-2043
Million tons of carbon (note, not CO2 equivalent)



Source: IFs 8.26 initialising from Carbon Dioxide Information Analysis Center data
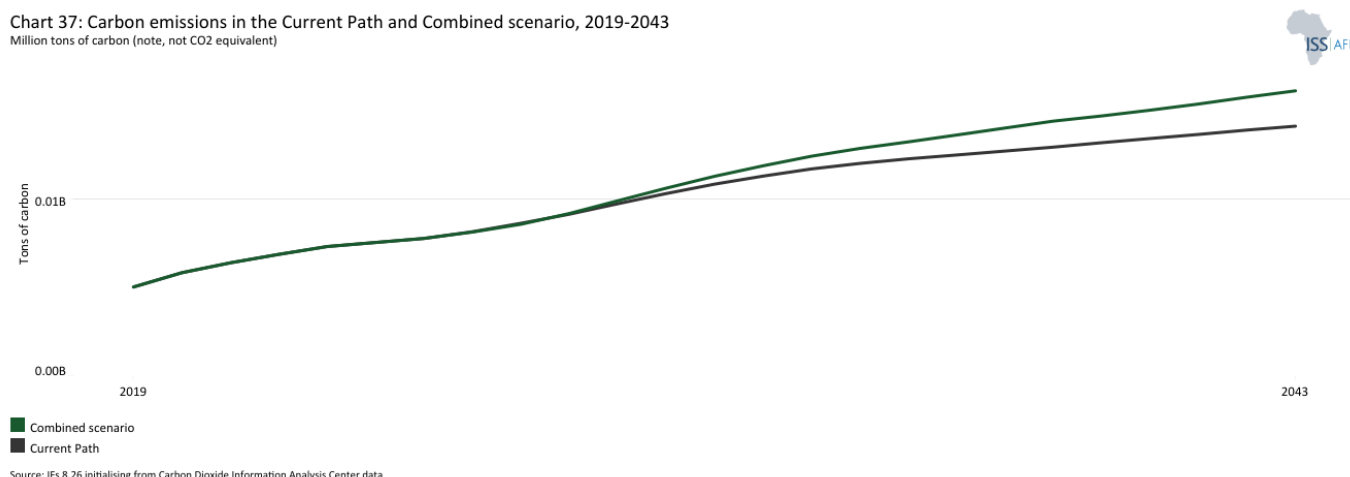
Chart 37 compares carbon emissions in the Current Path with the Combined scenario from 2019 to 2043. Note that the data is in million tons of carbon, not $CO_2$ equivalent.

Since carbon dioxide ($CO_2$), carbon monoxide (CO) and methane ($CH_4$) have different molecular weights, we use carbon.

Many other sites and calculations use $CO_2$ equivalent.

As is the case with most African countries, carbon emissions are very low in Ghana, paling in comparison to large emitters such as South Africa, Egypt and Nigeria. This is partly due to the country's underdeveloped manufacturing sector. In 2023, Ghana released about 7 million tons of carbon from fossil fuel use, reflecting the low levels of carbon emissions in the country. This makes it the 6th largest emitter of carbon among the lower-middle-income African countries.

The major source of carbon emission in Ghana is land-use change and forestry which contributes about 53% of total emissions in the country mainly due to changes in forest cover.  A major cause for the depletion of forest reserves is the activities of illegal mining. According to the Ghana Forestry Commission, 34 out of the 288 forest reserves in the country have been affected by illegal mining, in the process destroying 4 726 hectares of forest land. Major reserves such as Offin Shelterbelt and Asenanyo Forest, Nueng South and Bonsa River forest reserves, Atewa Range Extension and Atewa Range forest reserves, Denyau Forest Reserve, Supoma Forest Reserve, Apamprama Forest, Subin Shelterbelt Reserve and Oda River Forest Reserve have been destroyed by illegal mining activities. Another source of carbon emission is energy production which accounts for 25% of total emission in the country. Out of this, 39% is driven by transportation, 29% due to other fuel combustion and 19% due to electricity and heat. Agriculture activities also account for 15% of total emissions largely driven by burning savanna which accounts for 45%.

On the Current Path, carbon emissions from fossil fuels will increase rapidly to 14 million tons by 2043. Due to these rising emissions, Ghana's Nationally Determined Contribution aims to reduce Green House Gas (GHG) emissions by 15% by 2030. This is to be achieved through several actions in the energy, transportation, agriculture, forestry, land use and industry sectors. Key among them include a  20% improvement in energy efficiency of industrial facilities, afforestation and reforestation of 10 000 degraded land annually, and replacement of light crude oil with natural gas in electricity generation.

The Manufacturing and AfCFTA scenarios are the most carbon-intensive as they involve aggressive production of low-end manufacturing goods that will imply more fossil fuel use. On the other hand, the Demographics and Health and Large Infrastructure scenarios are the least carbon-intensive scenarios in Ghana. In the Combined scenario, Ghana's total carbon emissions will rise to 16 million tons—14.3% higher than what is estimated in the Current Path in the same year. The materialisation of the Combined scenario and achieving sustainable economic development will come at the cost of more carbon emissions in Ghana. Therefore, pursuing rapid economic growth in Ghana can lead to more environmental pollution in the long run. However, the country can rely on its huge renewable energy potential to pursue a more green development pathway.

Chart 38: Energy demand and production by type in the Current Path and Combined scenario, 2019-2043



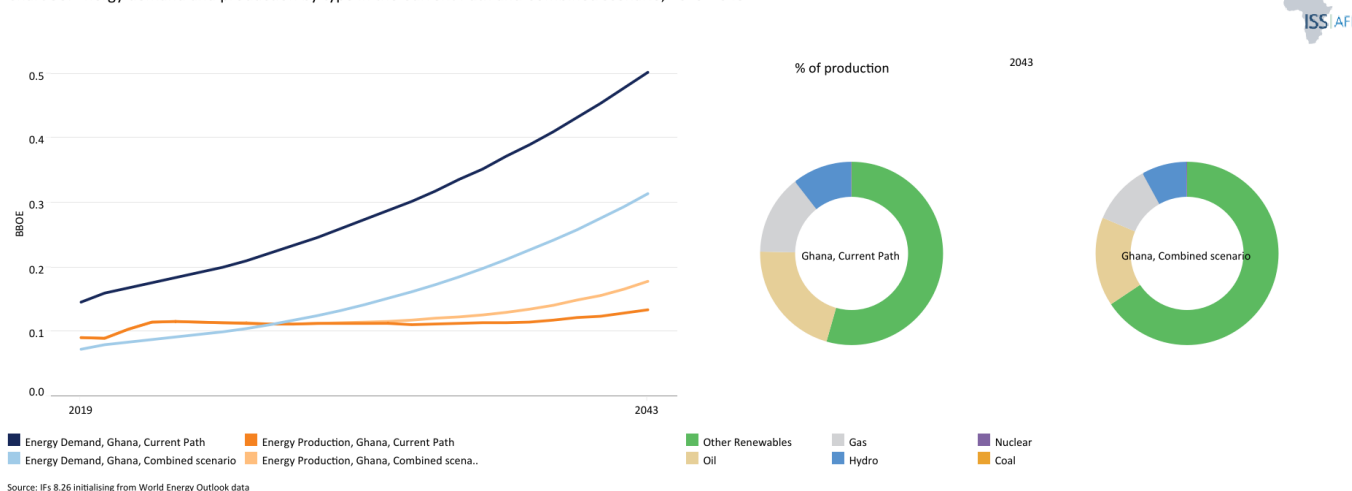Source: IFs 8.26 initialising from World Energy Outlook data

Chart 38 compares energy demand and production in the Current Path with the Combined scenario from 2019 to 2043. Production is done in six types, namely oil, gas, coal, hydro, nuclear and other renewables. The data is converted into billion barrels of oil equivalent (BOE) to allow for comparisons. Note that energy production could be for domestic use or for export.

The total energy produced in Ghana in 2023 was equivalent to 116 million BOE. In the same period, total energy demand was 92 million BOE leading to an excess energy supply of 42 million BOE. This excess energy is partly due to the numerous power purchase agreements that were signed in 2014/2015 at the peak of its energy crisis as discussed in the preceding Large Infrastructure and Leapfrogging section. However, on the Current Path, total energy demand will outgrow production so that by 2043, excess energy demand will be equivalent to 117 million BOE.

Between 1990 and 2009, hydro was the sole energy produced by the country. With Ghana discovering oil in commercial quantities and starting to commercialise production, oil became the second-largest energy source. By 2011, oil had become the dominant energy produced in the country, accounting for 80% of the total energy produced in the country, which is equivalent to 0.24 million BOE. As a result of its oil production, it also started producing gas in 2015. Currently, the main sources of energy produced in Ghana are oil, gas, hydro and some negligible amount of other renewable energy. In 2023, the total amount of oil produced in the country amounted to 94 million BOE constituting 80% of total production. Ghana's crude oil production is sourced from three main fields: Jubilee which commenced production in December 2010, TEN in August 2016 and Sankofa Gye-Nyame (SGN) in May 2017. In 2023, the Jubilee field produced 63% of total crude oil production while SGN and TEN accounted for 23% and 14% of total crude oil production, respectively.

This is followed by gas production which accounts for 11.2% of total production and is estimated to be 13 million BOE. Ghana's gas production is sourced from the Atuabo Gas processing plant which produces natural gas and processes it into liquefied petroleum gas for domestic use. Prior to this, all domestic gas in Ghana was imported from Nigeria through the West African Gas Pipeline. Hydro production is estimated at 8 million BOE, translating into 6.7% of total production while other renewable energy produced is just about 1 million BOE. The major source of hydro production in Ghana is the Akosombo dam which was constructed in 1965 to generate 1020MW. Other hydro sources of power include the Kpong Hydro Plant established in 1982 which generates 160MW. The Bui Dam which was also constructed from 2007 and completed in 2013 generates 400MW of hydro power for the country, similar to Kpong.

On the Current Path, by 2043, oil contribution to total energy production will decline to 21.1%, equivalent to 28 million BOE. Gas production will also constitute 14.2% of total production by 2043. This reflects the depletion of oil and gas deposits in the country over time and the global switch to renewable energy. However, Ghana boosts more than 17 oil and gas projects scheduled for development by 2027 which could improve its oil and gas production. These major projects include the Jubilee South East Project – developed by oil and gas company Tullow Oil; the Pecan Conventional Oilfield – developed by global energy firm Aker Energy, the Ghana National Petroleum Company (GNPC), Russian multinational oil and gas company Lukoil and maritime engineering and energy company Bulk Ship & Trade; and the Ntomme Far West Development. In addition, ongoing hydro projects such as the Akosombo Hydrokinetic (95MW), Juale (90MW), Lanka (95MW) Ntereso (64MW) and Hemang (60MW) will boast the country's hydro capacity.

Other renewable energies, such as solar and wind, will be the dominant energy types produced in the country by 2043, with an estimated quantity of 73 million BOE, representing 54.2% while hydro production will contribute 10.4% of the total production, equivalent to 14 million BOE. This will stem from several renewable energy projects including Meinergy Ghana Solar PV Park, Bole Solar PV Park and Tianjin Power Ghana Solar PV Park. Ghana seeks to increase the proportion of renewable energy in the national energy generation mix from 42.5 MW in 2015 to 1 363.63 MW by 2030. Ghana also aims to integrate 1GW of nuclear power into its electricity mix by 2034.

In the Combined scenario, energy demand in Ghana will jump to 309 million BOE, which will be 58 million BOE more than the Current Path. Although the total energy production of 176 million BOE in the Combined scenario will be 42 million BOE

more than the Current Path, it will fall significantly short of the total demand. Indeed, by 2043, the excess energy demand of 133 million BOE in the Combined scenario will be 13.7% higher than the Current Path.

The share of other renewable energy in total energy production in the country will rise significantly to constitute 66% of total energy production to become the leading contributor. This will be 11.5 percentage points more than its contribution to total energy production in the Current Path. The share of oil, gas and hydro in total production in the scenario will also be slightly above its contribution to total energy production in the Current Path by 2043.

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## About the authors

**Mr Enoch Randy Aikins** joined the AFI in May 2021. Before that, Enoch was a research and programmes officer at the Institute for Democratic Governance in Accra. He also worked as a research assistant (economic division) with the Institute for Statistical Social and Economic Research at the University of Ghana. Enoch's interests include African politics and governance, economic development, public sector reform, poverty and inequality. He has an MPhil in economics from the University of Ghana, Legon.

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