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Mali

Geographic Futures

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This page starts with a short analysis of the **Current Path** forecast for Mali consisting of a short introduction, the current population distribution and structure, climate and topography. Mali does not currently have a development plan. The Current Path initialises from country-level data that is drawn from a range of data providers. We prioritise data from national sources.

The second section compares progress on the **Current Path** with **eight sectoral scenarios.** The eight sectoral scenarios are Demographics and Health; Agriculture; Education; Manufacturing; the African Continental Free Trade Area (AfCFTA); Large Infrastructure and Leapfrogging; Financial Flows; and Governance. Each scenario is benchmarked to present an ambitious but reasonable aspiration in that sector.

The third section **compares** the impact of each of the eight sectoral scenarios with one another and with a **Combined Agenda 2063 scenario** (the sum effect of all eight scenarios).

Progress is measured on various dimensions such as economic size (in market exchange rates), gross domestic product per capita (in purchasing power parity), extreme poverty, carbon emissions, the changes in the structure of the economy, and selected sectoral dimensions such as progress with mean years of education, life expectancy, the Gini coefficient or reductions in mortality rates.

A separate annexure lists the project data file adjustments (if any) and the scenario interventions for Mali.

We use 2019 as a standard reference year. The forecasts generally extend to 2043 to coincide with the end of the third ten-year implementation plan of the African Union's Agenda 2063 long-term development vision.

The information is presented graphically and supported by interpretive text.

All US$ numbers are in 2017 values.

Summary

- Introduction
  - Mali is a low-income country in north-west Africa. It is a member of the Economic Community of West African States (ECOWAS), the West African Economic and Monetary Union (WAEMU, or UEMOA in French) and the Community of Sahel–Saharan States (CEN-SAD). The country used to be a member of the G5 Sahel alliance until it withdrew in May 2022.

- Current Path
  - The population of Mali more than doubled between 1990 and 2019, increasing from 8.5 million people to 20.6 million. By 2043, the total population is projected to double again to 41.1 million on the Current Path.
  - Mali's GDP measured in market exchange rates (MER) almost quadrupled from US$5.2 billion in 1990 to US$20 billion in 2019. On the Current Path, the country's GDP is estimated to more than triple to US$65.6 billion by 2043.
  - The country's GDP per capita of US$2 217 in 2019 was 21% higher than the average of low-income countries in Africa. On the Current Path, its GDP per capita is projected to reach US$3 388 by 2043, which will be 3.1% higher than the average of US$3 494 for its income-group peers in Africa.
  - In 2019, 43.5% of Mali's population still lived below the extreme poverty line of US$1.90. This wasslightly below the average for low-income countries in Africa. However, by 2043, the poverty rate of 26.1% will be about 8 percentage points higher than the average of low-income countries in Africa.

- Scenarios
  - The eight sectoral scenarios are each explained in the various themes on the website and the impact on each is compared with the Current Path forecast and a Combined Agenda 2063 scenario.
  - The Demographics and Health scenario will reduce Mali's infant mortality rate from 60.2 deaths per 1 000 births in 2019 to 15 deaths by 2043, almost six deaths fewer than in the Current Path forecast. In addition, the scenario pushes the ratio of the working-age population to dependants to 1.5-to-1. This is closer to the desired target of 1.7-to-1 than the Current Path forecast of 1.4-to-1.
  - Annual crop production in Mali will rise by 26.4% over the Current Path to 31.8 million tons in the Agriculture scenario by 2043. As a result, net import of crops is projected to reach 15% in the scenario—half of the projected Current Path average of 34.2%.
  - In 2019, the mean years of education attained by adults between 15 and 24 years of age in Mali stood at 4.8 years. This was far below the average of 5.7 years for low-income countries on the continent. In the Education scenario, the mean years of adult education in Mali will increase by 1.1 years than the Current Path forecast to 7.6 years by 2043. The scenario further increases average test scores for primary and secondary school students.
  - Mali makes substantial progress in industrialisation in the Manufacturing scenario, such that, by 2043, the share of the manufacturing sector in GDP is about 31% (US$22.4 billion),which is about eight percentage points of GDP above the Current Path forecast.
  - In the African Continental Free Trade Area (AfCFTA) scenario, the sum of Mali's exports and imports as a percentage of GDP will reach 89.4% by 2043. This will be about 10 percentage points above the Current Path. By 2043, Mali's trade deficit in the Current Path will constitute about 9.9% of GDP, whereas, in the same year, the AfCFTA scenario will mitigate this situation leading to a slightly lower deficit of 9.4% of GDP.
  - Based on the Large Infrastructure and leapfrogging scenario, it is projected that 80% of Malians will have access to electricity by 2043, compared to 69.5% in the Current Path forecast. As a result, over half of households in Mali are expected to use modern fuel for cooking in the scenario compared to the Current Path forecast by 2043.
  - Government revenue is projected to rise to US$15.8 billion in 2043, representing 23.8% of GDP, in the Financial Flows scenario. Compared to the Current Path, this scenario can improve government revenue in

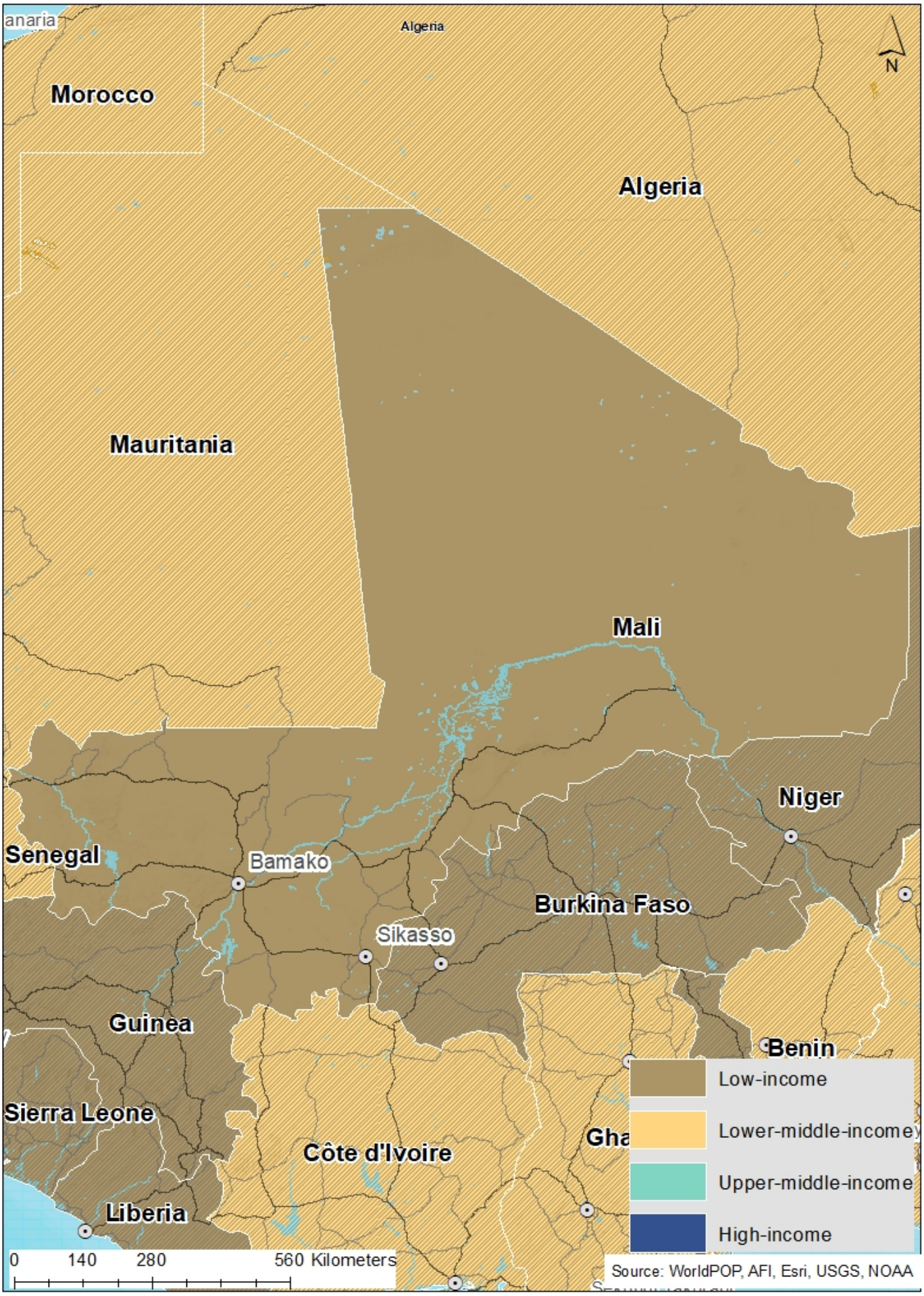
Mali by almost an extra US$1 billion by 2043.
    - In the Governance scenario, Mali's score on the governance security index will be about 6.2% above the Current Path. Furthermore, the country's capacity and inclusion scores will be a 14.4% and 19.4% improvement, respectively, above the Current Path forecast by 2043.

- Scenario comparisons
    - By 2043, Mali's GDP per capita will see significant improvements in various scenarios. The AfCFTA scenario will have the greatest impact on GDP per capita, showing the potential benefits of embracing African trade. The Infrastructure and Governance scenarios will also impact on GDP per capita as a result of enhanced trade openness, technological diffusion and competition that can drive economic growth and employment, and good governance, which can inspire investor confidence, attract foreign direct investment and spur economic growth in Mali. The Agriculture scenario has the greatest potential to reduce extreme poverty in Mali, followed by the Financial Flows and AfCFTA scenarios.

- Combined Agenda 2063 scenario
    - Mali's GDP is projected to rise to US$122.4 billion in the Combined Agenda 2063 scenario. This increase of 86.6% is equivalent an additional US$56.8 billion compared to the Current Path forecast. Similarly, in the Combined Agenda 2063 scenario, GDP per capita for Mali is estimated to increase to US$5 381 by 2043, which will be 59% higher than the forecast on the Current Path.
    - The structure of the Malian economy is expected to undergo significant transformation in the Combined Agenda 2063 scenario. By 2043, the service sector will still be the largest contributor to GDP at 49.5%, followed by the manufacturing sector with a share of 30.5%. The share of the agriculture sector will decline to 10.4% in the Combined Agenda 2063 scenario.
    - In the Combined Agenda 2063 scenario, both the number and proportion of poor people in Mali will significantly decline. By 2043, about 2.8 million people in the country will be living in extreme poverty, meaning 7.9 million more people could be lifted out of poverty by 2043 in this scenario.
    - Inequality in Mali will be slightly lower in the Combined Agenda 2063 scenario than in the Current Path forecast, with a Gini coefficient of 0.35 by 2043 instead of 0.36 in the Current Path.
    - Mali's total carbon emissions will rise to 9 million tons in the Combined Agenda 2063 scenario. This is 25% higher than what is estimated in the Current Path forecast in the same year.
    - The Combined Agenda 2063 scenario shows an increase in energy demand, creating a larger energy deficit, with renewable energy becoming the dominant energy source, surpassing oil and gas.

Mali: Introduction

Chart 1: Political map of Mali



Mali is a low-income country in north-west Africa. The country is a member of the Economic Community of West African States (ECOWAS) and the West African Economic and Monetary Union (WAEMU, or UEMOA in French). Mali is also a member of the Community of Sahel–Saharan States (CEN-SAD), which has had minimal activity following the turmoil in Libya, where its secretariat is based.

Mali used to be a member of the G5 Sahel, a group of five Sahelian countries that came together to create the G5 Sahel Joint Force in February 2014, with its secretariat in Nouakchott, Mauritania. The Convention on the Establishment of the G5, adopted by the heads of state of the five countries in December 2014, set out the main objectives of the G5 Sahel: 1. to guarantee conditions for development and security; 2. to offer a strategic framework for interventions to improve people's living conditions; 3. to align development with security, supported by democracy; and 4. to promote inclusive and sustainable regional development.[1] However, following a coup, Mali withdrew from the G5 Sahel alliance in May 2022.

The Sahel region has historically been highly porous. Ancient trans-Saharan trade routes facilitated cross-border trade and a transhumance lifestyle for hundreds of years, predating the French colonial period. This way of life is now under dire threat. Climate change is having a devastating impact on the Sahel countries. The Intergovernmental Panel on Climate Change (IPCC) notes that the Sahel has 'experienced the most substantial and sustained decline in rainfall recorded anywhere in the world within the period of instrumental measurements during the 1980s.'[2]

Environmental degradation and violent conflict have displaced millions of people and will continue to worsen the environmental crisis in the area.[3] Furthermore, the Sahel countries will experience some of the most severe climate change impacts globally as early as 2030. These impacts range from increasingly variable rainfall, rising temperatures and more frequent droughts to prolonged heatwaves.[4]

Mali gained independence in 1960 with President Modibo Keita as the first president of a socialist one-party state. However, the 1968 military coup led by Lieutenant Moussa Traore truncated Keita's presidency. A new constitution in 1979 paved the way for a fresh election, which was won by President Moussa Traore and ushered the country into its second republic. A military coup in 1991 ousted the Traore administration and replaced it with a transitional committee.[5] In March 2012, close to the April 2012 presidential elections, military officers overthrew President Toure's government, citing his inability to deal with the Tuareg rebellion. In April of the same year, the military handed over power to an interim civilian government with President Dioncounda Traore as leader.[6]

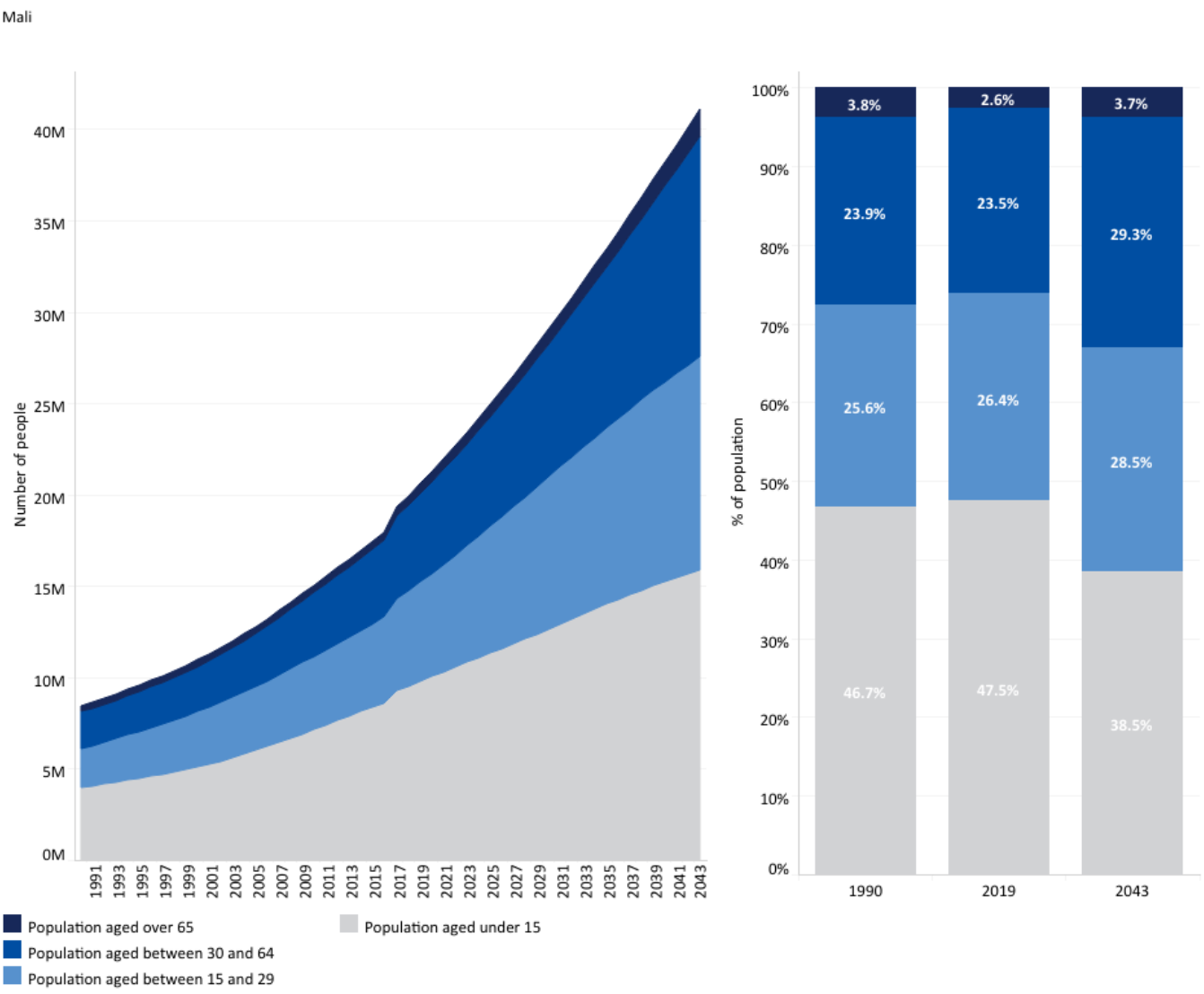
A peace agreement between the government and Tuareg nationalist rebels in June 2013 paved the way for new general elections. This led to the election of President Ibrahim Boubacar Keita after he defeated the leading contender, Moussa Mara. He was re-elected in June 2018 amidst rising violence and insecurity. The 2018 presidential and 2020 parliamentary elections were criticised for being poorly organised, deepening the country's political crisis. Two years later, in August 2020, President Keita was ousted in another coup after a series of protests demanding his resignation.[7]

A transitional government is now in place, with Colonel Assimi Goïta declared Head of State by the Constitutional Court in May 2021. Also, the National Transition Council replaced the National Assembly until the country returned to constitutional rule.[8] Since then, various efforts and consultations have occurred between the government, political parties and civil society organisations to return to constitutional rule. A new constitution, approved through a referendum in June 2023, paved the way for the announcement of general elections to restore constitutional rule.[9] National legislative elections were tentatively scheduled for October and November 2023, while presidential elections were scheduled for February 2024.[10] The elections were indefinately suspended by the military government in September 2023, citing technical

difficulties. After it was suspended by ECOWAS in response to the coup, Mali announced that it was leaving the Community and joining the Confederation of Sahel states with Niger and Burkina Faso whilst expanding the Alliance of Sahel States (AES) that was established at the end of 2023.

Mali: Current Path

Chart 2: Population structure in Current Path, 1990-2043



Source: IFs 7.84 initialising from UNPD population prospects estimate and WDI population data

Chart 2 presents the population structure to 2043 in the Current Path forecast.

The population of Mali more than doubled between 1990 and 2019, increasing from 8.5 million people to 20.6 million in 2019. This places Mali as the fifth most populous country in West Africa and the 19th most populous in Africa. In 2019, the country had the seventh highest population growth rate in Africa at 3.3%—an increase from 2.6% in 1990.

Mali's high fertility rate has declined from 7.1 children per woman in 1987 to 6.3 in 2018 and to 5.5 children per woman in 2022, but is still the fourth highest rate in the world.[11] This is due to several factors such as the high prevalence of early childbearing, low levels of female education and empowerment, poverty, informal and subsistence lifestyles, low levels of urbanisation and extremely low contraception use.[12] In 2019, the total fertility rate among fertile women in Mali was the

second highest in Africa only below Niger. As a result, 45.2% of Malians were below the age of 15 years while 48% were in the age group 15–64 years (working age) and 2.3% were 65 years and older. Comparing this with the structure in 1990 reveals that Mali's population structure has not fundamentally changed over the past three decades.

The country's youth bulge (the ratio of its population aged between 15 and 29 to the total adult population) stood at about 50.6% in 2019—a rise from 48% in 1990 and above the average of 46% for Africa and 47% for West Africa. The median age for Mali in 2019 was 16.1 years—a slight decline from 16.5 years recorded in 1990 and lower than West Africa and Africa's median ages of 18 and 19.7 years, respectively. At 32%, youth unemployment in the capital city Bamako is very high and currently above the national average of 12%.[13] With over 300 000 young Malians entering the labour market annually, the security crisis could intensify if adequate jobs are not provided for them.[14]

In the forecast horizon, the structure of Mali's population will not change much. Although the country's population growth rate is expected to decline to 2.4% by 2043, the total population is projected to double to 41.1 million by 2043 on the Current Path. By then, the median age is expected to increase to 20.3 years, and the youth bulge will fall to 46.3%. The proportion of people under the age of 15 will slightly decline to 38.6%, while the share of the working-age population and the population aged 65 and older will increase to 57.8% and 3.7%, respectively, by 2043. Such rapid population growth constrains development and condemns Mali to very modest improvements in average incomes given the demands on the fiscus to cater for its rapidly expanding youthful population.

Chart 3: Population distribution map, 2022

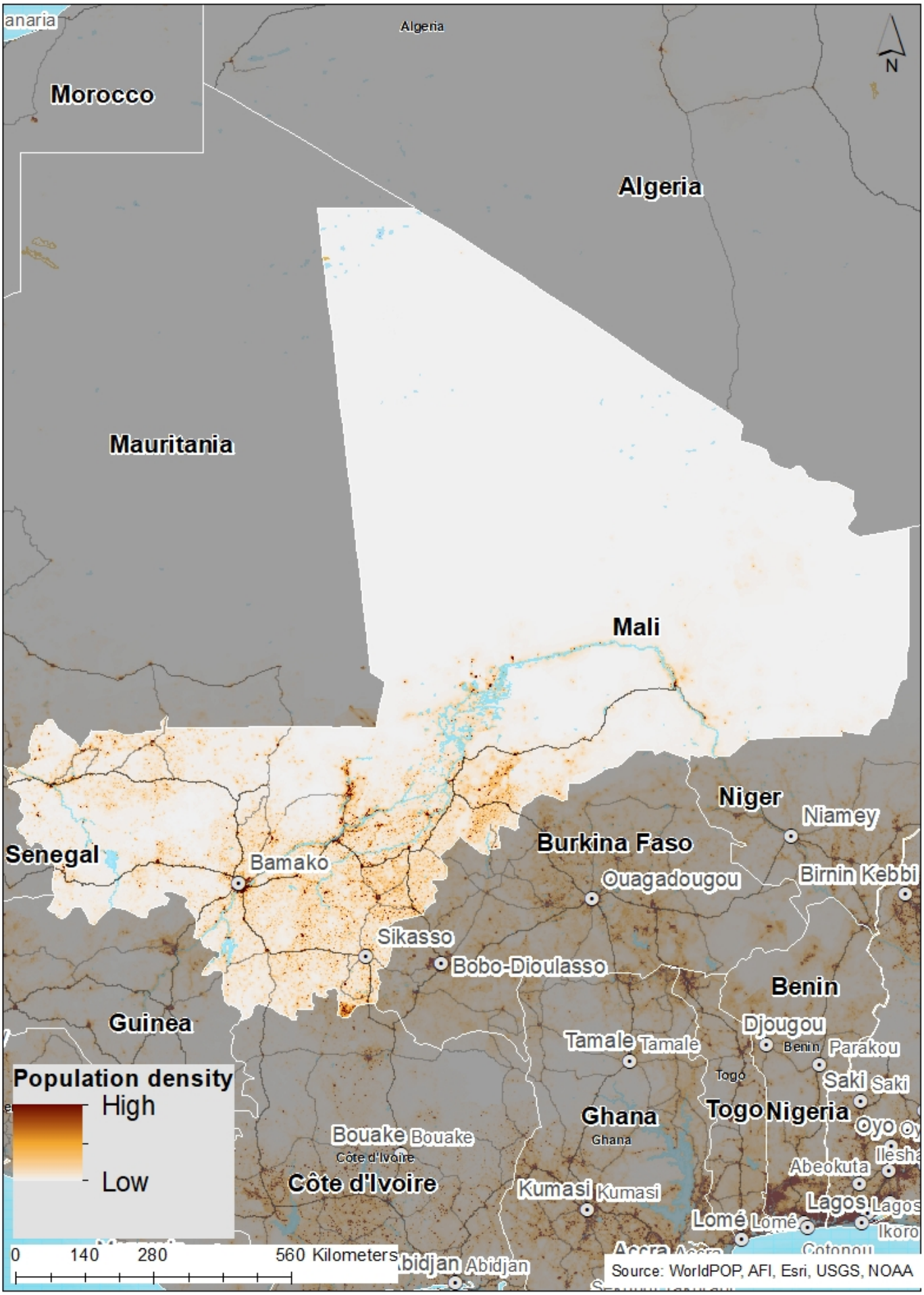
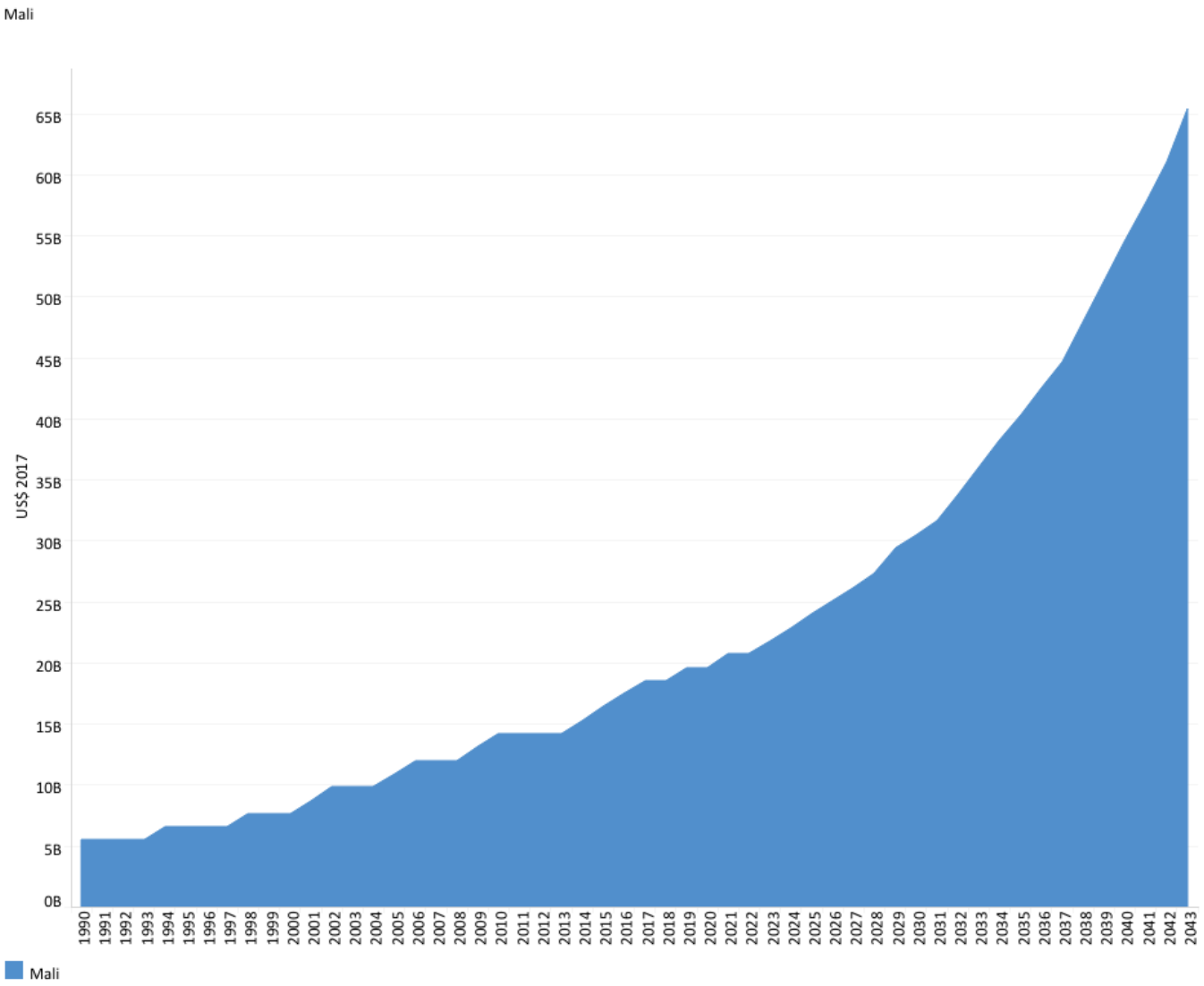


Chart 3 presents a population density map.

Spanning 1.24 million km^2, Mali is the eighth largest country in Africa, comparable to the sizes of Angola and South Africa. This, coupled with its small total population of 20.6 million, makes it technically one of the most sparsely populated countries in Africa. The majority of Malians live in the southern half of the country, which comprises only a third of its total land area. This southern half is more suitable for agriculture thanks to the Niger River and is home to nearly all of Mali's sizable cities, of which the capital city Bamako is the largest with over three million inhabitants. Bamako is also considered to be one of Africa's fastest growing cities.[15] Other large cities include Sikasso with over 445 000 people, Mopti with 200 000 people and Koutiala with over 160 000 people. Conversely, the north of the country has faced continuous depopulation fuelled by desertification, insecurity, instability and the attraction of urban life in the south.

The desert nation of Mali is characterised by its Sahelian climate—a transitional zone between the arid Sahara desert in the north of Africa and savannas to the south. The country is divided into three natural zones: the cultivated Sudanese zone in the south, the semi-arid Sahelian zone in the centre, and the arid Saharan zone in the north. The desert covers 30% of the country, and 59% of the country is classified as having annual rainfall of less than 400 mm. 'The country is characterised by drought, desertification, and the overexploitation of natural resources that are under the pressure of a rapidly growing population.'[16]

Chart 4: GDP in MER and growth in the Current Path forecast, 1990-2043



Source: IFs 7.84 intialising from IMF data

Chart 4 presents the size of Mali's economy from 1990 and includes a forecast to 2043, including the associated growth rate.

Mali's economy is essentially based on its agriculture and mining sectors. It is highly undiversified and depends mainly on its major export commodities of gold and cotton. In 2020, gold alone accounted for 82.9% and cotton accounted for 6.7% of exports.[17] This makes the economy vulnerable to international commodity price fluctuations and external shocks.[18] Currently, the Malian economy is the sixth largest in West Africa and the seventh largest among the 23 low-income countries in Africa. Mali's GDP measured in market exchange rates (MER) almost quadrupled from US$5.2 billion in 1990 to US$20.0 billion in 2019. Between 1990 and 2019, Mali's GDP grew at an average of 4.5% per annum, above the average of 3.9% for low-income countries in Africa. The country's strong economic growth in recent years, averaging about 5.7% from 2014 to 2019, has mainly been driven by its significant commodity exports of gold and agriculture (mainly cotton).

However, like many economies, Mali's economic growth was disrupted by the COVID-19 pandemic in 2020. The restrictive

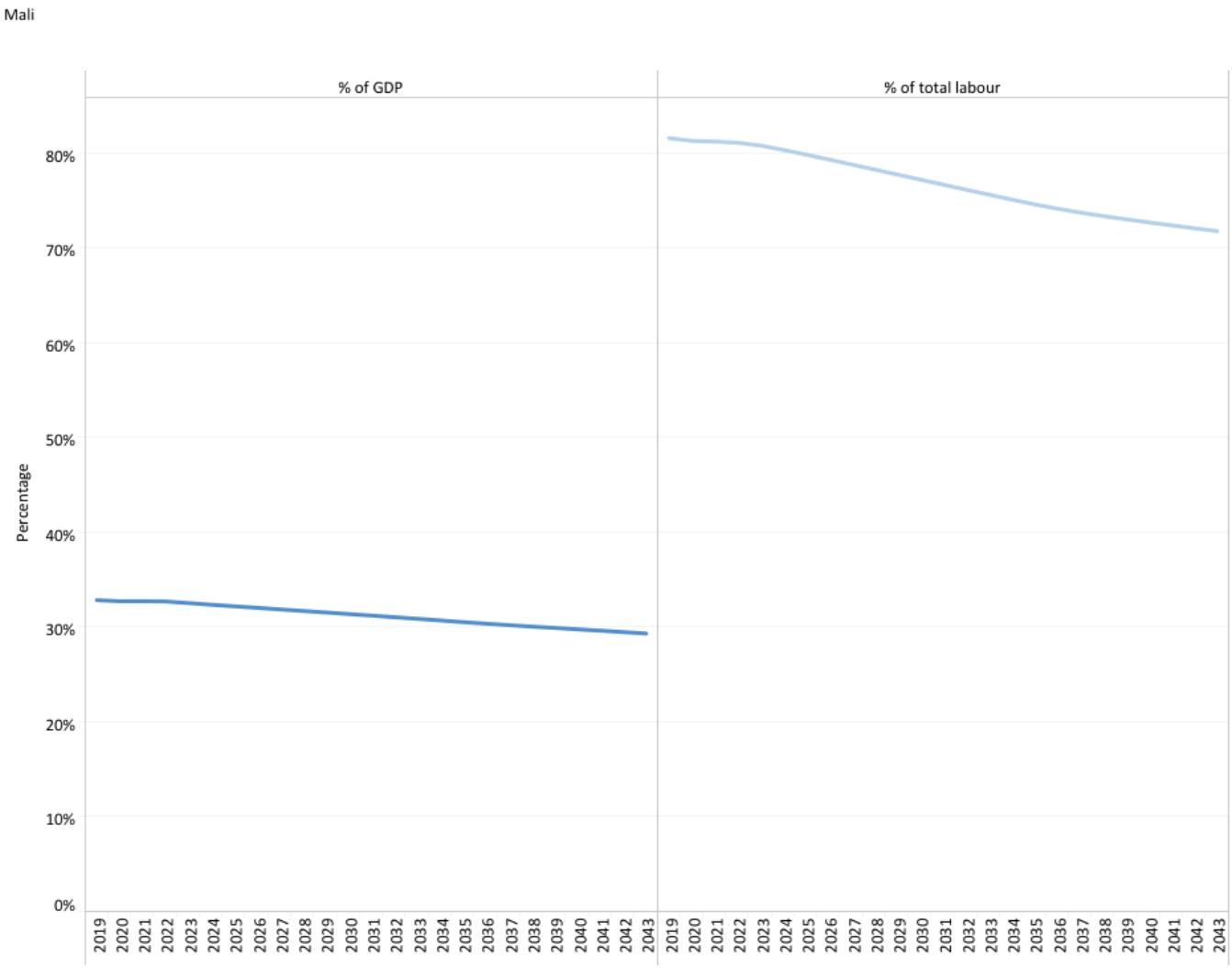
measures and protocols instituted to control the virus curtailed economic activities, resulting in the GDP shrinking by 1.2% in 2020—the largest drop since 1992. The economic contraction was accentuated by political instability in the country arising from the 2020 coup. However, the GDP recovered and grew by 3.1% in 2021, mainly due to the recovery of the service and agriculture sectors. GDP growth dropped to 1.8% in 2022 as a result of the combined effect of ECOWAS sanctions, high food inflation and parasite infestations affecting cotton production as well as the negative impact of the Russian invasion of Ukraine on commodity prices.[19]

Regardless, the country faces an optimistic future with economic growth projected to rebound to 4% in 2023. In the medium term, insecurity and the political transition pose a risk to the economy as the military is yet to hand over power to civilian rule and return the country to multiparty democracy and constitutional rule. In the long term, the country's huge natural resource deposits, together with its agricultural and renewable energy potential, are opportunities that can be used to grow and transform the economy.[20] The structural problems facing the Malian economy include its undiversified exports basket dominated by gold and cotton, which exposes the economy to commodity price and climatic shocks, rising foreign debt and a large informal sector. Also, over-reliance on the agriculture sector, in addition to its low-productivity informal service sector and a limited manufacturing sector concentrated in agro-industries and cotton ginning, remains a structural weakness in the economy.[21]

Annual inflation reached an all-time high of 13.9% in August 2022,[22] mainly driven by high food inflation. This is due to the displacement of farmers arising from the persistent insecurity, ECOWAS sanctions and increased global food prices.[23] Huge public spending is also resulting in a large fiscal deficit and public debt largely financed by external borrowing. From 2010 to 2019, the country's debt-to-GDP ratio increased from 25.3% to 40.7%, which rose to 47.3% in 2020 due to COVID-19 expenditure, high wage bills and security spending. Public debt stood at about 55.2% of GDP by the end of 2022. External debt constituted about 28.5% of total debt in 2022.[24]

With the easing of COVID-19 restrictions, and with donor support, the economy is expected to bounce back as Mali still has strong growth potential. The government now faces the difficult job of reviving its economic growth record and translating such gains into poverty and inequality reductions as well as addressing long-term development needs. On the Current Path, Mali's GDP is estimated to more than triple to US$65.6 billion by 2043. The increase in GDP reflects the higher rate of economic growth expected to occur within the next 20 years, although its high population growth can impede such progress.

Chart 5: Size of the informal economy, as per cent of GDP and per cent of total labour, 2019-2043



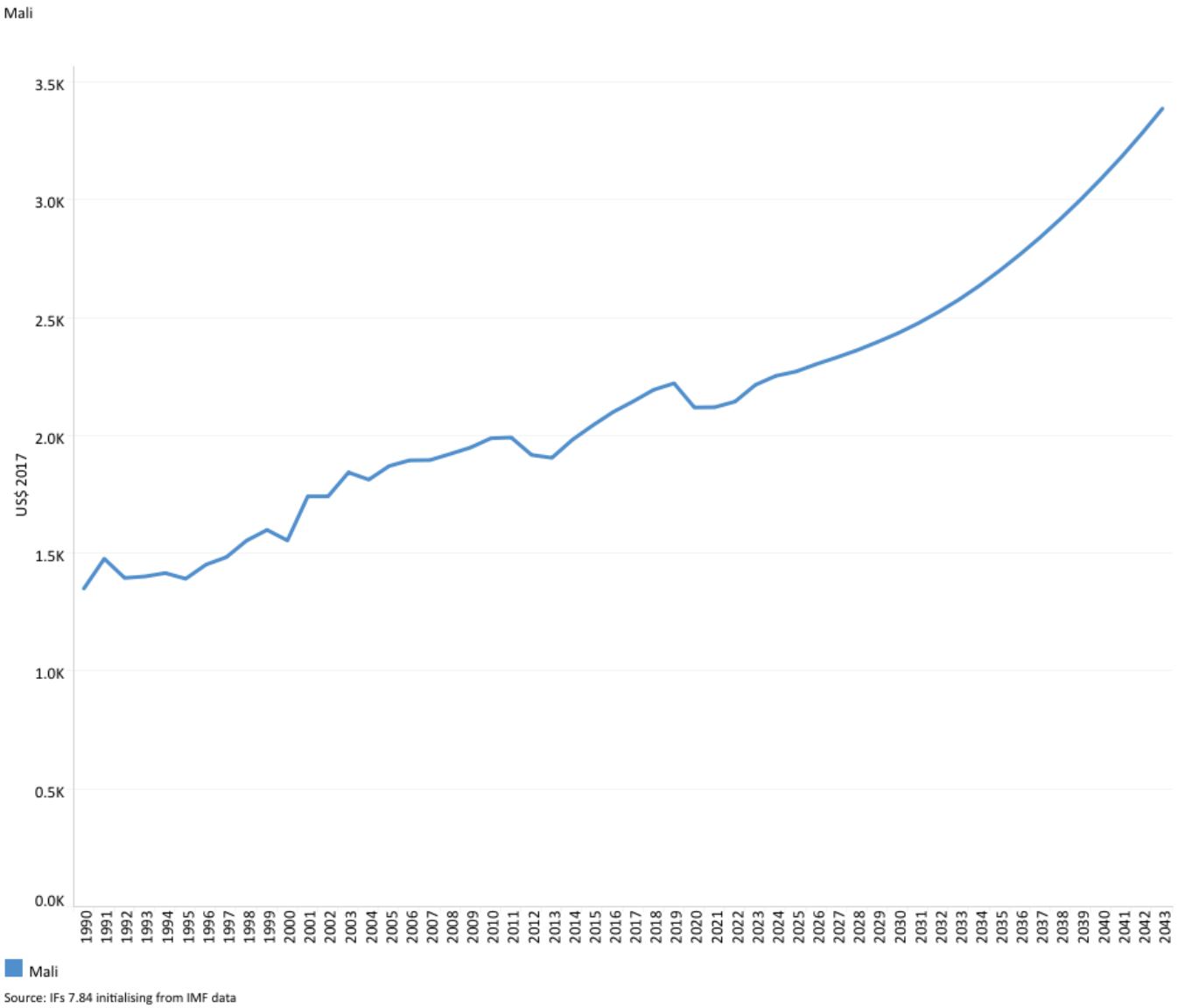
Source: IFs 7.84 initialising from Elgin and Oztunali (2008), and Schneider and Enste (2012) data

Chart 5 presents the size of the informal economy as a per cent of GDP and in absolute terms, as well as the per cent of total labour involved in the informal economy.

The informal sector in Mali, like many African countries, is large, serving as a source of livelihood for the majority of the population, especially young people who largely depend on the sector for survival. Over the years, the share of the informal sector has grown rapidly compared to the formal sector. The contribution of the informal sector to total value added by the service sector increased from less than 40% in 1980 to over 60% in 2015. It currently contributes about 98% of all value added in the primary sector, mainly agriculture.[25] According to the International Labour Organization, 73% of the economically active population in the country works in the informal sector, with about one-third of these workers being young people between the ages of 15 and 35 years.[26] IFs estimates that 83% of total labour in Mali works in the informal sector making it the fifth largest among the 23 low-income countries in Africa. A significant proportion of informal workers are employed in the agriculture sector.[27]

In 2019, IFs estimated the size of the informal sector in Mali was approximately 33% of GDP. Among Africa's 23 low-income countries, it has the ninth smallest informal sector, suggesting that Mali has performed better in formalising its economy compared to the average of other African countries within its income group. The size of the informal sector is expected to decline slightly to 29.3% of GDP by 2043, constituting a 3.7 percentage point decrease over the 24-year period. Over the forecast horizon, Mali will perform relatively poorly compared to its low-income-group peers: by 2043, the country will have the eighth largest informal sector among low-income countries in Africa.

Chart 6: GDP per capita in Current Path forecast, 1990-2043



Source: IFs 7.84 initialising from IMF data

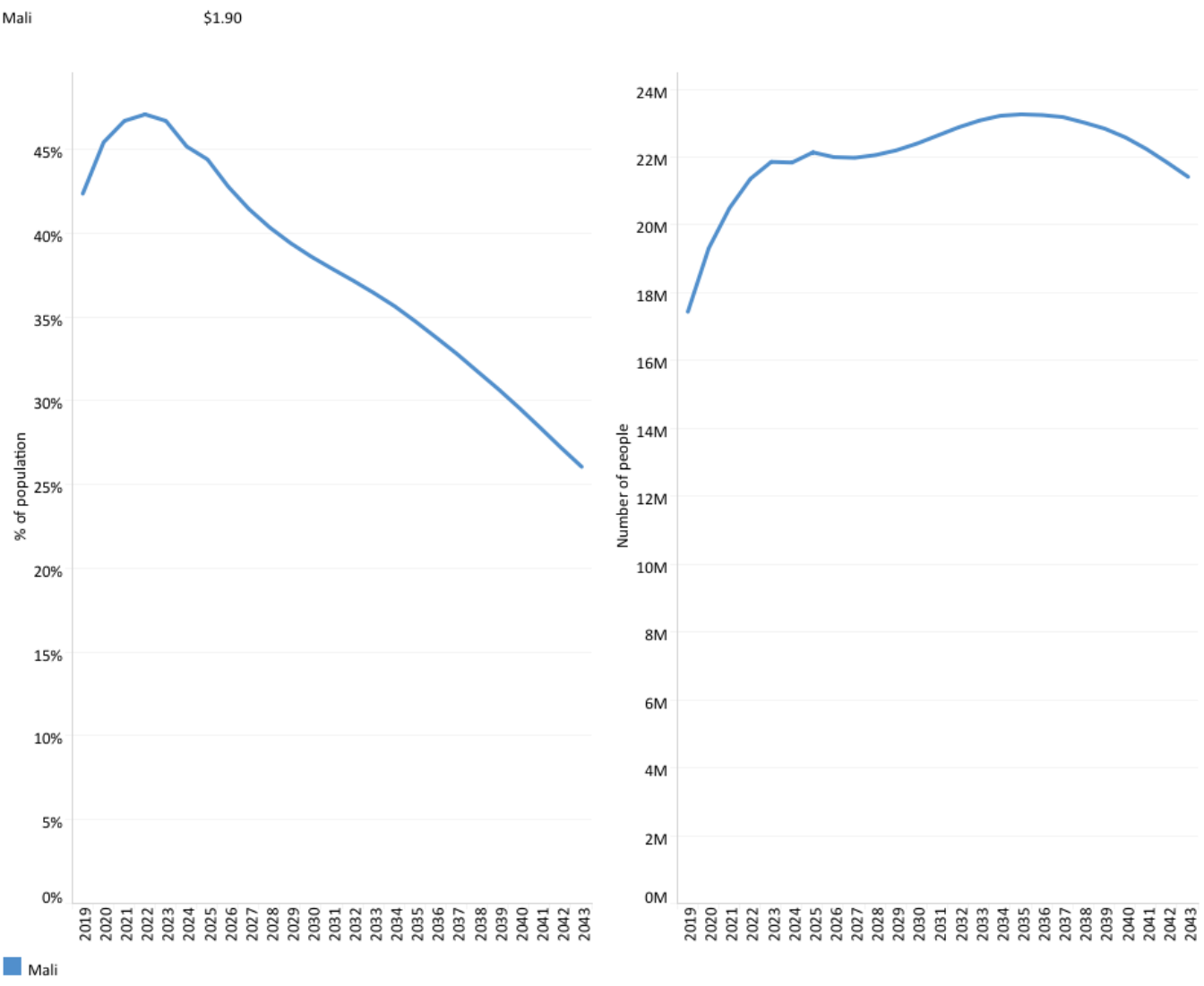
Chart 6 presents average GDP per capita from 1990 and includes the Current Path forecast to 2043.

Despite its limitations, GDP per capita is generally used to measure the standard of living and is the most widely used and accepted indicator to compare welfare among countries. Using the purchasing power parity (PPP) measure for this analysis, Mali's GDP per capita of US$2 217 in 2019 is the sixth highest GDP per capita among the 23 low-income countries in Africa, and it is 21% higher than the group average of US$1 832 for low-income countries in Africa. This figure represents

a tremendous improvement of about 64% from the US$1 351 it recorded in 1990, which made it the eighth highest among the low-income countries group in Africa.

Between 2009 and 2019, GDP per capita grew at an average of 1.6%, slightly below the average of low-income countries in Africa. The slow growth in its GDP per capita is largely due to high population growth, which limits progress in poverty reduction and human development indicators. On the Current Path, Mali will lose ground on its income-group peers as GDP per capita is projected to reach US$3 388 by 2043, placing it eleventh among low-income African countries, five places below its 2019 ranking. At this rate, the country's GDP per capita will be only 3.1% higher than the average of US$3 494 for its income-group peers in Africa.

Chart 7: Extreme poverty in Current Path as % of population and numbers, 2019-2043



Source: IFs 7.84 initialising from UNPD population prospects estimate, WDI and PovcalNet data

Chart 7 presents the number of people living in extreme poverty, also expressed as a per cent of the population.

There are numerous methodologies for and approaches to defining poverty. We measure income poverty and use GDP

per capita as a proxy. In 2015, the World Bank adopted the measure of US$1.90 per person per day (in 2011 international prices), also used to measure progress towards achieving Sustainable Development Goal (SDG) 1 of eradicating extreme poverty. To account for extreme poverty in richer countries at slightly higher levels of income than in poor countries, the World Bank introduced three additional poverty lines in 2017:

- US$3.20 for lower-middle-income countries
- US$5.50 for upper-middle-income countries
- US$22.70 for high-income countries

As a low-income country, Mali uses the US$1.90 benchmark for extreme poverty and it is one of the poorest countries in the world. Its Human Development Index (HDI) score of 0.434 in 2019 ranks 184 out of 189 countries globally. Poverty and inequality are widespread, especially in the rural areas, with about 68% of Malians considered to be multidimensionally poor.[28] In 1990, 7.3 million Malians, representing 86.3% of the population, lived below the poverty line of US$1.90, far above the average of 69.2% for low-income countries in Africa. Over the past three decades, the country's effort at poverty eradication has yielded some results as the poverty rate declined to 43.5% in 2019—slightly below the average for low-income countries in Africa. Despite this progress in poverty reduction, 8.7 million Malians still lived below the poverty line of US$1.90 in 2019.

The cause of poverty in Mali is multifaceted. The main causes include lack of education, poor governance, malnutrition and widespread conflict due to terrorism and political instability.[29] Also, the large family size (average household size in 2019 was 8.2 people), coupled with increased drought, food shocks and primitive agricultural practices, has severely raised the cost of living in the country.[30] In recent years, the effect of the COVID-19 pandemic in addition to the security crisis has increased poverty levels particularly from 2020 to 2022. About 90% of the poor people in the country are concentrated in the densely populated areas of the southern part of Mali.[31]

On the Current Path, Mali's progress in reducing poverty rates will be slower compared to the average of its income-group peers in Africa such that by 2043, the poverty rate of 26.1% (equivalent to 10.7 million Malians) will be about 8 percentage points higher than the average for low-income countries in Africa.

Mali: Scenarios

Relationship between scenarios

Chart 8: Current Path and scenarios

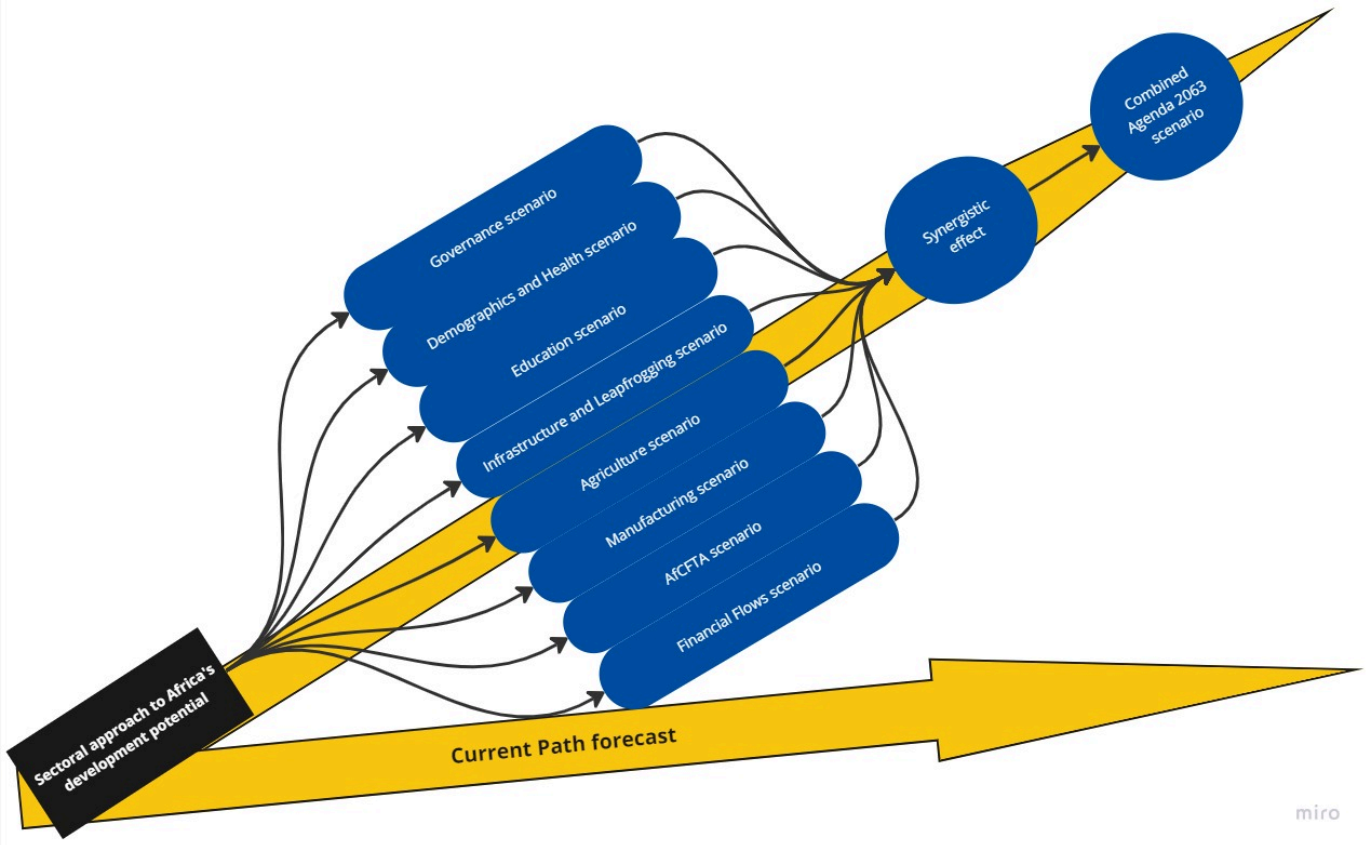


Chart 8 depicts the relationship between the Current Path forecast, the various sectoral scenarios and the Combined Agenda 2063 scenario.

The Current Path forecast is a dynamic scenario in the International Futures forecasting platform that imitates continuing current policies and environmental conditions.

The eight sectoral scenarios are each explained in the various themes on the website and the impact on each is compared with the Current Path forecast and a Combined Agenda 2063 scenario. The eight scenarios are:

- A more rapid demographic transition and investments in better health and water, sanitation and hygiene (WaSH) infrastructure.
- Better and more education (looking at quantity, quality and relevance).
- Large infrastructure and leapfrogging (the impact of renewables, ICT and the more rapid formalisation of the informal sector).
- Food security and an agricultural
- A low-end manufacturing
- The full implementation of the African Continental Free Trade Area (AfCFTA).
- More inward financial flows (consisting of aid, foreign direct investment, remittances and illicit financial flows).
- Better governance (consisting of stability, capacity and inclusion).

The Combined Agenda 2063 scenario is a combination of all eight sectoral scenarios.

The impact of these scenarios on jobs/employment and greenhouse gas emissions and energy are presented in separate themes.

A final theme models the effect of alternative global scenarios on Africa's development potential.

The interventions within IFs are detailed in an annexure at the end of this page.

Demographics and Health scenario

Chart 9: Demographics and Health scenario

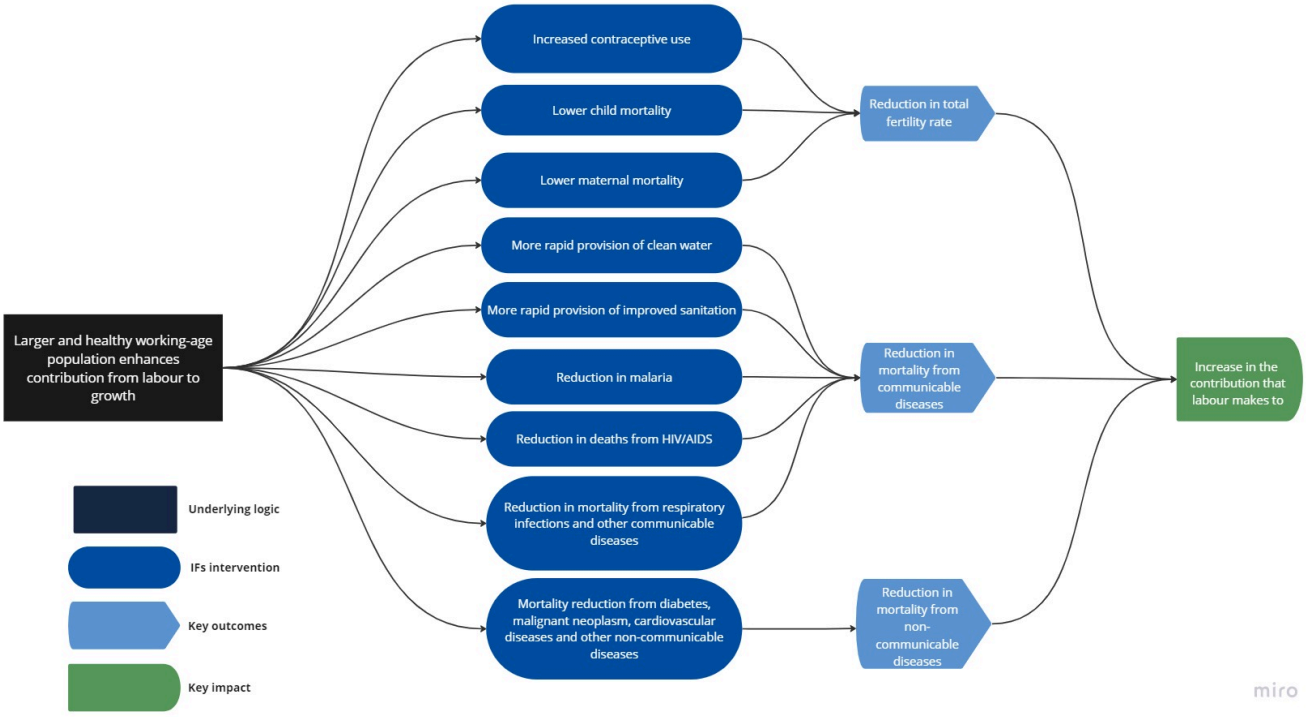


Chart 9 presents the structure of the Demographics and Health scenario as modelled in IFs that advances the demographic dividend and improves health.

The Demographic and Health scenario consists of reasonable but ambitious reductions in child and maternal mortality ratio, increased access to modern contraception and reductions in the mortality rates associated with both communicable diseases (e.g. AIDS, diarrhoea, malaria and respiratory infections) and non-communicable diseases (e.g. diabetes), as well as improvements in access to safe water and better sanitation.

Visit the themes on Demographics and Health/WaSH for more detail on the scenario structure and interventions.

Mali's health sector has made significant progress in recent years, although several challenges remain. For instance, expanding the healthcare infrastructure and placing medical personnel in rural regions have increased access to high-quality healthcare services in Mali.[32] The Malian National Statistics Office (INSTAT) and ICF (2019) report notes improvements in maternal and child health outcomes, including decreased maternal mortality rates and increased vaccine coverage.[33] A 2020 World Health Organization study showed a strong emphasis on the necessity of enhancing disease surveillance and response systems to effectively manage and prevent outbreaks. They also emphasised the significance of improving healthcare infrastructure and expanding access to hygienic conditions and clean water to stop the spread of contagious diseases.

The country faces various health challenges due to its inadequate healthcare infrastructure.[34] Malnutrition, exacerbated by the security crisis, is widespread, particularly among children, with around 21% of children under five years old classified as underweight.[35] Mali's infant, child and maternal mortality rates continue to be among the highest in sub-Saharan Africa. This is mainly due to the poor availability and uptake of family planning in the country, early

childbearing, high rates of female genital mutilation, infrequent use of skilled birth attendants and a paucity of emergency obstetrical and neonatal care.[36] Furthermore, the country also has one of the lowest densities of healthcare workers, especially in the rural areas, which has led to a limited capacity to deliver essential health services.[37]

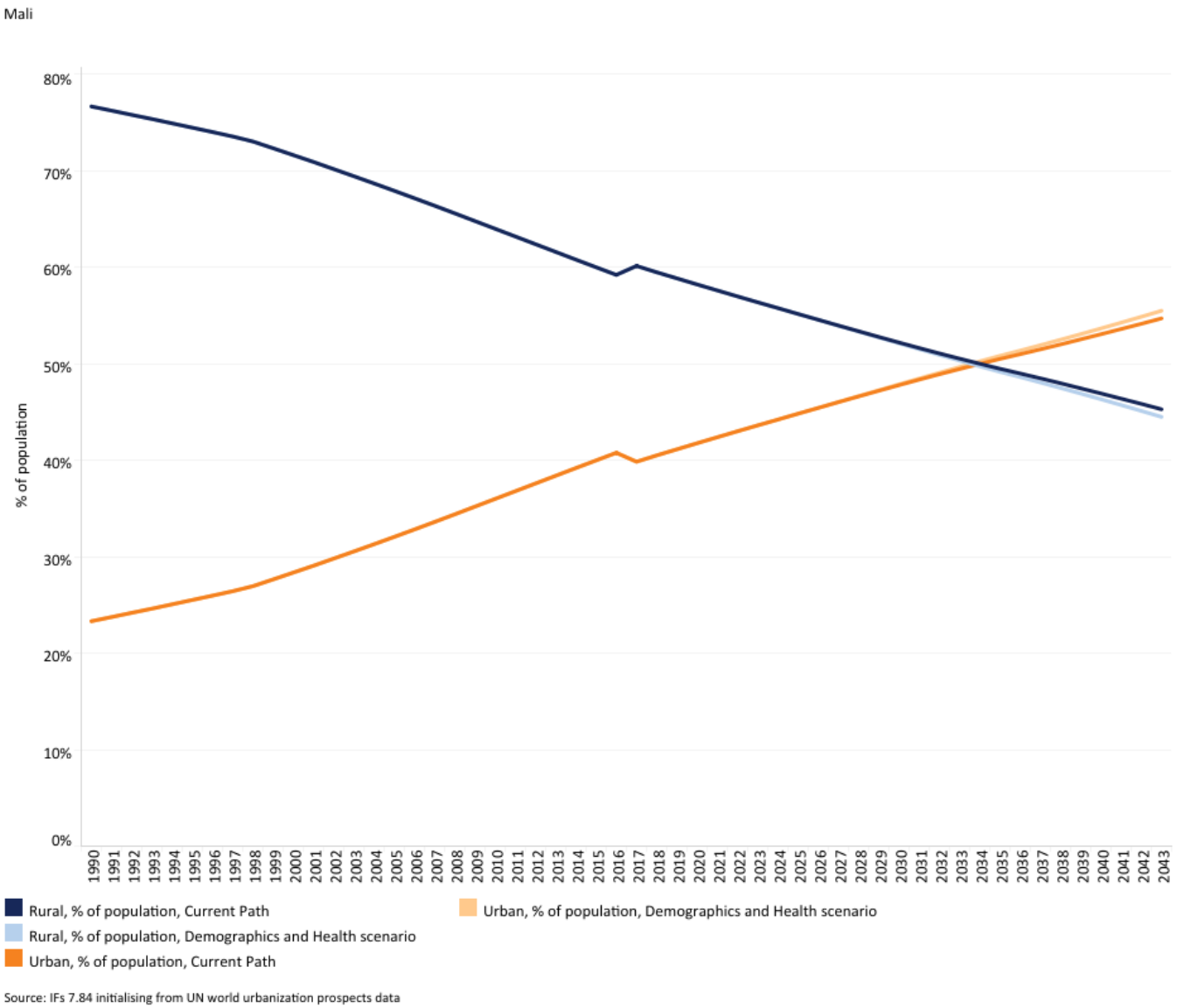
Historically, like many African countries, Mali has had high rates of mortality caused by communicable diseases. Persistently high rates of maternal and child mortality, the highest adolescent fertility rate in the world, low levels of basic child immunisation and malnutrition are still challenges confronting the country. Also, Mali continues to battle with a comparatively high burden of infectious diseases, particularly tuberculosis, malaria and diarrhoea, as well as a rising burden of non-communicable diseases.[38]

IFs uses the International Classification of Disease (ICD) to differentiate between three broad categories of diseases: communicable, non-communicable and injuries, as well as 15 subcategories of mortality and morbidity. In 1990, communicable diseases caused about 118 000 deaths—representing about 72% of total deaths in that year. This was followed by non-communicable diseases that caused 37 000 deaths (22.5% of total deaths) and injuries that caused 9 000 deaths (5.6% of total deaths). By 2019, deaths from communicable diseases had steadily declined to 108 000, although this was still 62% of all deaths. Malaria alone caused about 30 000 deaths in 2019. Deaths from non-communicable diseases and injuries rose to 53 000 (equivalent to 30.5% of all deaths) and 13 000 (equivalent to 7.5% of all death), respectively.

On the Current Path, Mali is projected to achieve its epidemiological transition in 2031. This is the point where deaths from non-communicable diseases outweigh deaths from communicable diseases. By 2043, non-communicable diseases will be the highest cause of death in Mali causing 105 000 deaths in the country (about 58.6% of all deaths). The transition to deaths from non-communicable diseases as the main cause of mortality will inevitably increase health sector costs as they are more expensive to treat. By then, deaths from communicable diseases will rapidly decline to 50 000, constituting 27.9% of all deaths, while deaths from injuries will constitute the remaining 13.6%.

Access to improved, safe, treated water, such as piped water, is an important means of preventing the spread of communicable diseases. In 2019, 17.5 million Malians (constituting 84.9% of the population) had access to improved water supply. Out of this, 9.9 million people (about 48.1% of the population) had access to piped water supply in the country. By 2043, it is projected that access to improved water will increase to about 91.5%, of which piped water will constitute almost 62% connections. Also, about nine million Malians (44% of the population) had access to improved sanitation in 2019, almost twice the average for its income-group peers in Africa. At 17.5%, the share of the population with access to shared sanitation is slightly above the average of Africa's low-income group of 14.7%. On the Current Path, the proportion of the population with improved access to sanitation is estimated to rise to 68.3% by 2043.

Chart 10: Urban and rural population in Current Path and Demographics and Health scenario, 1990-2043



Source: IFs 7.84 initialising from UN world urbanization prospects data

Chart 10 compares urban and rural populations in the Current Path and the Demographics and Health scenario.

Mali's population is predominantly rural. In 1990, over two-thirds of Malians lived in rural areas—slightly below the average for low-income countries in Africa. However, Mali has urbanised more rapidly than its income peer group in Africa over the years. As a result, by 2019, 12.1 million Malians, equivalent to 58.8% of the population, lived in rural areas. This was below the 69% average of low-income countries in Africa. Consequently, the urban population stood at 41.2% in 2019, making Mali the ninth most urbanised country among low-income African countries instead of the 13th, as it was in 1990.

Rural–urban migration is one of the factors contributing to Mali's urbanisation. Many rural residents are relocating to urban regions in search of better employment prospects, better housing options and access to essential services like healthcare and education. As a result, Mali's urban population has been continuously growing over time.[39] Other factors influencing urbanisation in Mali include agricultural commercialisation and transformation. There is an increasing need for labour in metropolitan areas such as Koulikoro, particularly in agro-industries and processing plants, as the economy

transitions from subsistence farming to commercial agriculture, thereby necessitating large numbers of rural residents to move to urban areas.[40]

On the Current Path, Mali will achieve parity in urban–rural settlement by 2034; and by 2043, 22.5 million Malians, constituting almost 54.7% of the population, will live in urban areas. This will be far above the average of 41% projected for low-income countries in Africa. In the Demographics and Health scenario, the proportion of Malians projected to reside in urban areas will slightly increase to 55.5% by 2043.

Chart 11: Infant mortality rate in Current Path and Demographics and Health scenario, 2019-2043

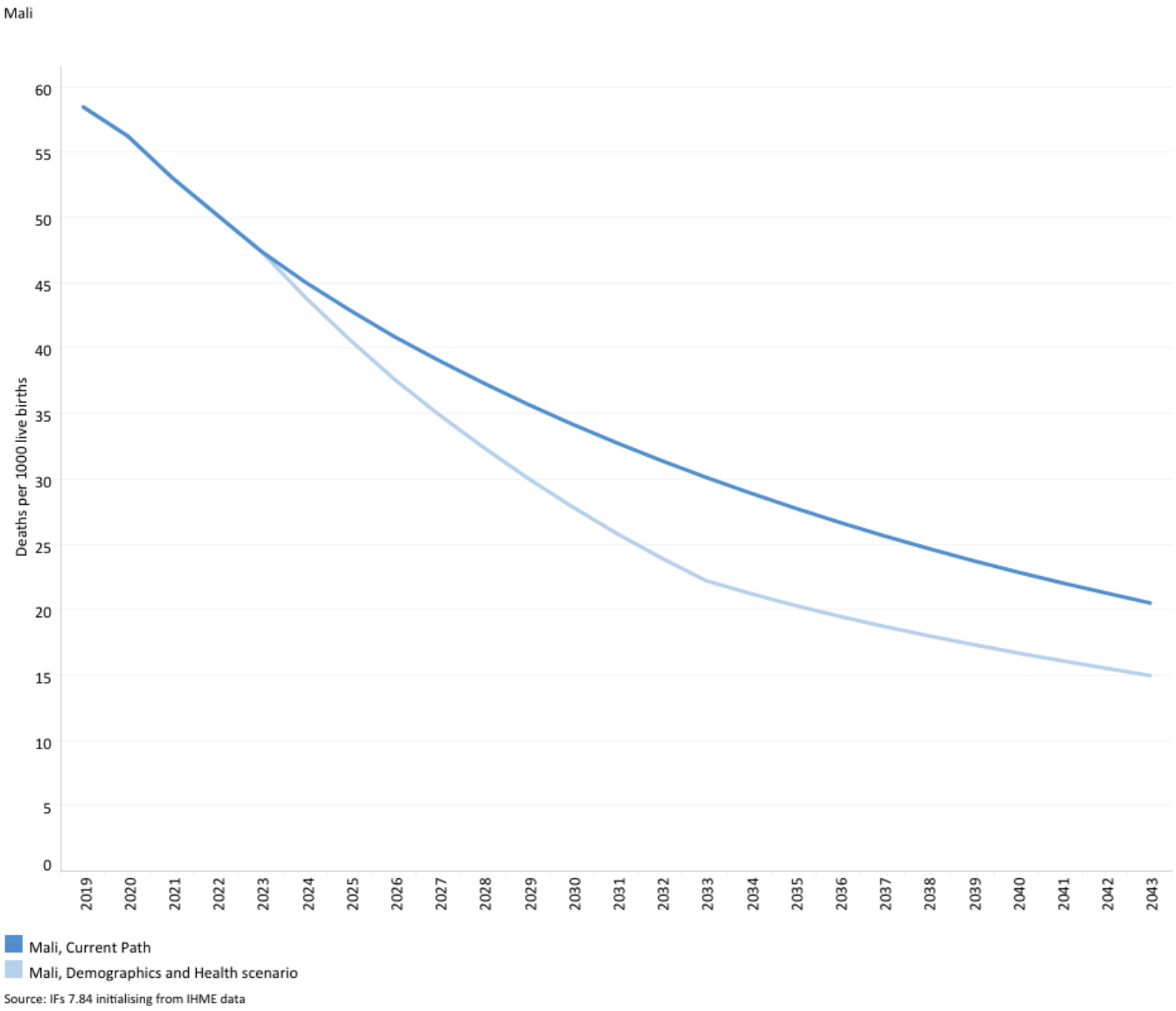


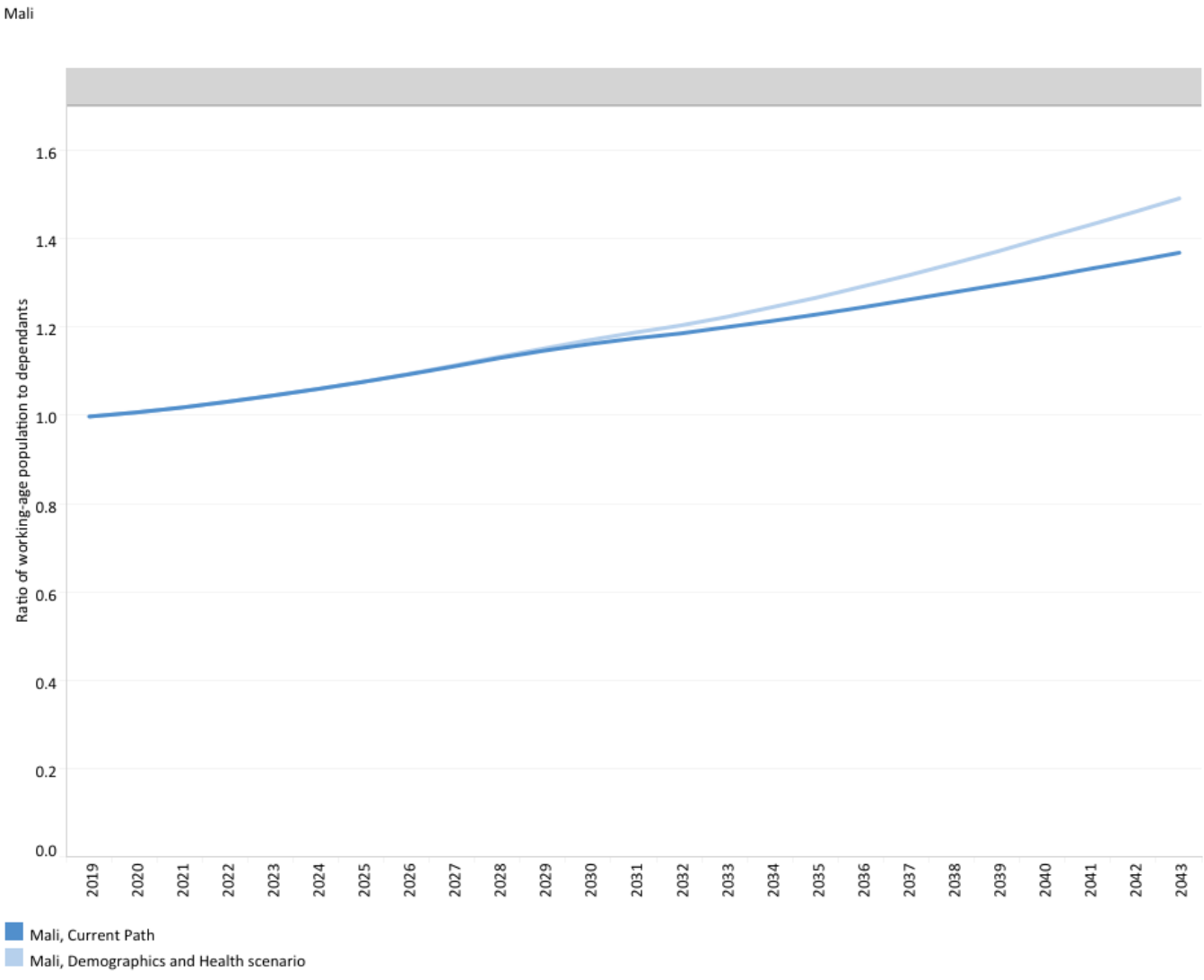
Chart 11 presents the infant mortality rate in the Current Path and the Demographics and Health scenario.

The infant mortality rate is an important marker of the overall quality of a country's health system. In 2019, the infant mortality rate in Mali was 60.2 deaths per 1 000 live births—a drop by half of the rate in 1990. This was 27% higher than the average of 47.4 deaths for low-income countries in Africa. On the Current Path, the infant mortality rate is expected to

decline further, reaching 21.8 deaths per 1 000 live births by 2043, which is almost on par with the average for low-income countries in Africa.

The Demographics and Health scenario will reduce Mali's infant mortality rate to 15 deaths per 1 000 births by 2043. This will push the infant mortality rate in Mali close to the SDG target of 12 deaths per 1 000 live births by 2030. This is almost six deaths fewer than in the Current Path forecast and seven fewer deaths than the Current Path average of low-income countries in Africa.

Chart 12: Demographic dividend in the Current Path forecast and the Demographics and Health scenario, 1990-2043



Source: IFs 7.84 initialising from UNPD Population Prospects data

Chart 12 presents the demographic dividend in the Current Path and in the Demographics and Health scenario.

Demographers typically differentiate between a first, second and even a third demographic dividend. Given Mali's youthful population structure, and the strides made in the past two decades, the study focuses on the first dividend. There are different ways to conceptualise the first demographic dividend. For example, studies have shown that a promising

demographic window occurs when less than 30% of the population falls within the ages 0–14 years (children) while those above the age of 65 years and above (elderly) make up less than 15%.[41] Alternatively, a demographic dividend opens when a country attains an average median age of between 26 and 41 years.[42] The study uses the ratio of working-age persons to dependants, i.e. the size of the labour force (between 15 and 64 years of age) relative to dependants (children and elderly people).

The demographic dividend is the economic growth generated by change in the population structure. It generally materialises when the ratio of the working-age population to dependants is at least 1.7-to-1, meaning that for every dependant, there are 1.7 workers. When there are fewer dependants to take care of, it frees up resources for investment in both physical and human capital formation. Studies have shown that about one-third of economic growth during the East Asia economic 'miracle' can be attributed to the large worker bulge and a relatively small number of dependants.[43] However, the growth in the working-age population relative to dependants does not automatically translate into rapid economic growth unless the labour force acquires the needed skills and is absorbed by the labour market. Without sufficient education and employment generation to successfully harness their productive power, the growing labour force (especially those in urban areas) could increasingly become frustrated with the lack of job opportunities leading to social tension and even the emergence of civil instability.

In 2019, the ratio of the working-age population to dependants in Mali was 1-to-1, which means that on average, for every dependant in Mali, there was only one person of working age (15–64 years of age). This is lower than the 1.2-to-1 average for low-income countries in Africa. The high dependency rate in Mali can be attributed to the high fertility rate. On the Current Path, Mali will likely not achieve the minimum ratio of 1.7 working age persons for each dependent required for the materialisation of the demographic dividend, or demographic gift, by 2043. Indeed, based on the Current Path, Mali is likely only to achieve this minimum ratio by 2058.

The Demographics and Health scenario pushes the country close to this target such that by 2043, the ratio of the working-age population to dependants is projected to be 1.5-to-1 in the scenario instead of the 1.4-to-1 as in the Current Path (on par with the average for its income-group peers in Africa by 2043).

Agriculture scenario

Chart 13: Agriculture scenario

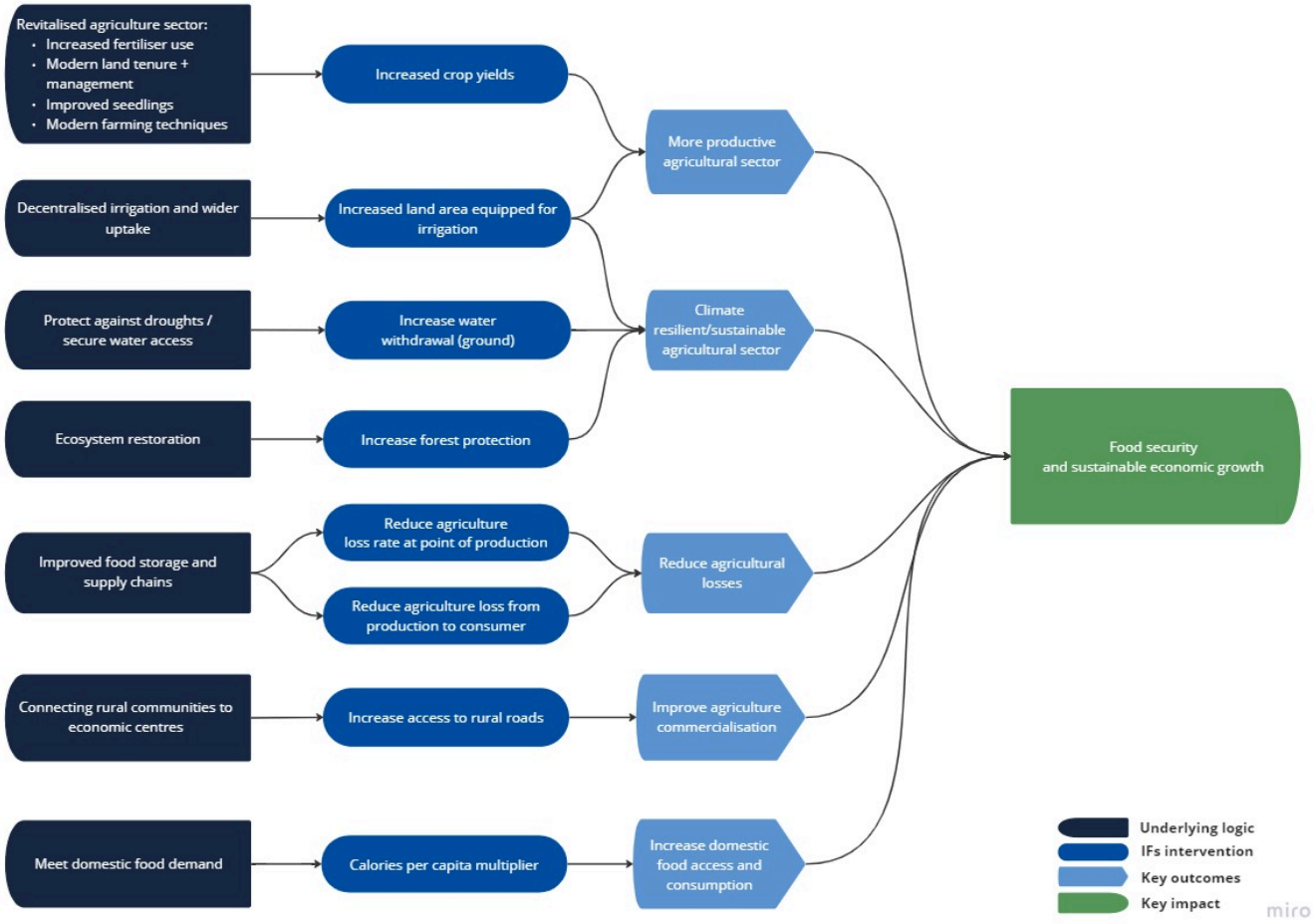


Chart 13 sets out the composition of the Agriculture scenario to advance food security.

The Agriculture scenario represents reasonable but ambitious increases in yields per hectare (reflecting better management and seed and fertiliser technology), increased land equipped and under irrigation and reductions in food loss and waste. We use increased calorie consumption as a proxy for food self-sufficiency above food exports as a desirable policy objective. The increase in forest protection reflects sustainable land use practices.

Visit the theme on Agriculture for our conceptualisation and details on the scenario structure and interventions.

Mali has ideal circumstances for agricultural development as it has a sizable area of arable land and an abundance of water supplies from the Niger and Senegal rivers. Agriculture and agro-pastoralism are the main economic pillars of Mali: nearly 80% of Malians work in the agriculture sector. According to the International Trade Administration (ITA), the Malian government dedicates about 12% of its national budget to the agricultural sector and subsidises cotton. Cotton is one of Mali's essential agricultural products, accounting for a significant portion of its exports.[44] Other agricultural commodities, such as rice, corn, millet, sorghum and wheat, make up the majority of Mali's agricultural output.

In 1990, Mali’s average crop yield of 1.7 metric tons per hectare was 36% higher than the average of 1.2 tons for its

income-group peers in Africa. However, by 1996, the average yield per hectare in Mali had fallen below its income-group peers in Africa. The dip in yield within this period can be attributed to changing weather patterns, especially since agriculture production in the country is rainfed and, thus, susceptible to climate change. This trend continued until 2015, when Mali overtook its income-group peers in Africa. By 2019, the average crop yield per hectare of 3.1 metric tons in Mali was 11.1% higher than the average of low-income countries in Africa. This ranks Mali 13th in the low-income group, but equates to less than half the yield per hectare in Rwanda and Malawi. On the Current Path, yield per hectare will rise to 4 metric tons per hectare by 2043—on par with the average of low-income African countries.

Over the years, the government has made efforts to improve agricultural productivity by encouraging foreign and national private investors to undertake agricultural activities in the lands of the Office du Niger (an irrigation scheme).[45] In addition, the government has been investing in irrigation infrastructure, aiming to enhance water accessibility and to minimise the impact of climate change.[46] Government and NGO training programmes and extension services connect farmers to contemporary agricultural methods, enhanced seed varieties, effective water management strategies and financial access. Also, through funding, rural infrastructure and fostering integration with regional and global markets, efforts are being undertaken to increase market access.[47]

Nonetheless, the sector is confronted with numerous challenges. Although the country has important and underexploited agricultural potential, especially in the southern and central regions, climate change and vulnerability to droughts and desertification pose significant threats to agricultural productivity and food security.[48] The sector's potential for growth is also hampered by a lack of infrastructure, including storage facilities, irrigation systems and transportation, making it difficult for farmers to access markets and avoid post-harvest losses. Furthermore, traditional farming practices and a lack of access to modern technology and high-quality inputs like seeds and fertiliser continue to result in low output.[49]

Total agriculture production[50] in 1990 stood at about 4 million metric tons. Of this, 3.3 million metric tons, representing 82.5%, were crops, with the remainder constituting meat production. By 2019, total agricultural production had grown to 18.2 million metric tons. Of this, crop production constituted 91%, equivalent to 16.5 million metric tons, meat production 8.2%, and fish production constituted the remainder of the total production. Mali faces huge agriculture loss and waste estimated at 26.2% of total production. This is largely due to post-harvest losses for crops, estimated at 10.3% of production, and transmission losses for crops, at 12.7%. Such losses can be a result of pest and disease infections, spoilage and the lack of adequate and effective storage facilities.

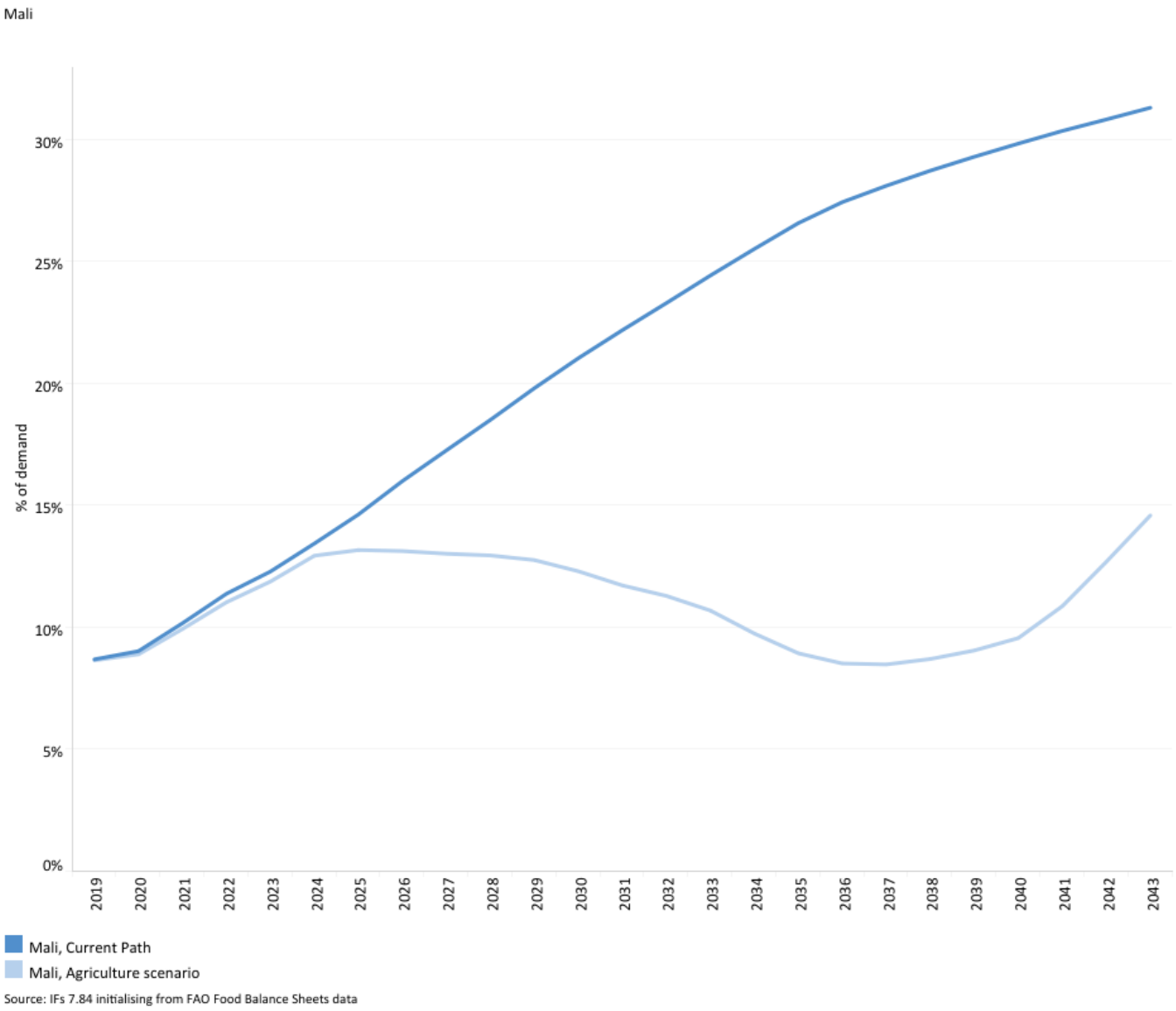
In terms of demand, the total demand for agricultural products in Mali has always been more than the total production. Total demand stood at about 4.5 million metric tons in 1990, of which 3.7 million metric tons, equivalent to 83% of total demand, were for crops. The remaining demand was for meat (685 000 tons) and for fish (73 000 tons). Comparing this to the total production (about 4 million metric tons) in the same year reveals that Mali had excess demand for agricultural products in that year of about 493 000 metric tons. Since then, domestic demand has rapidly outgrown production, and by 2019, agricultural demand exceeded domestic production by 1.7 million metric tons, despite the increase in production. Of the total demand of 19.9 million tons, 92.1% is for crops (18.3 million tons). The remaining demand is mainly for meat (1.5 million tons), and the lowest demand is for fish (205 000 tons).

Despite the projected increase in domestic production, reaching 29.6 million metric tons in 2043, it will not be enough to meet domestic demand that will rapidly grow to 37.6 million metric tons. As a result, excess demand for agricultural products will reach 8.2 million by 2043. This indicates that Mali faces the risk of food shortages in the future if drastic measures are not taken to revamp the agriculture sector to increase domestic production. With total agricultural demand outgrowing domestic production, Mali is likely to rely on imports to meet its domestic demand. In 2019, Mali's net import of crops stood at 5.4% of total crop demand, which was less than the average of 6.6% for low-income countries in Africa. Also, net import of fish stood at 39% of total fish demand, while net import of meat was estimated at just 1% of total meat

demand. In the Current Path forecast, net crop imports will grow rapidly in Mali to 34.2% of total crop demand by 2043. This suggests a growing level of national food insecurity; however, it can also be as a result of changes in dietary preferences.

Despite the expected rising food insecurity, many agricultural subsectors, including biofuels, shea butter, mangoes, peanuts and cashews, are still entirely untapped and present a unique opportunity for investors. Modernising Mali's poultry and cattle production and transformation industries also serve as potential avenues for improvement and growth.[51]

Chart 14: Import dependence in the Current Path and Agriculture scenario, 2019-2043



Source: IFs 7.84 initialising from FAO Food Balance Sheets data

Chart 14 presents import dependence in the Current Path forecast and the Agriculture scenario.

In the Agriculture scenario, yield per hectare will increase to 5.4 metric tons by 2043—a 35% improvement compared to the projections of the Current Path and the average of low-income countries in Africa. The improvement in yields is

expected to lead to an improvement in total agricultural production.

By 2043, in the Agriculture scenario, total agricultural production will increase to 36.4 million tons, almost 6.8 million metric tons, or 22.8%, more than the Current Path forecast by 2043. Annual crop production in Mali will rise by 26.4% over the Current Path to 31.8 million tons in the Agriculture scenario by 2043. Furthermore, meat production in the scenario will increase by additional 116 000 tons over the Current Path to 4.7 million tons in 2043. The projected increases in crop production in the Agriculture scenario reduces the import dependency of crops in the country compared to the Current Path. By 2043, net import of crops is projected to reach 15% in the Agriculture scenario—half of the projected Current Path average of 34.2% but almost twice the projection for the average for its income-group peers in Africa.

Education scenario

Chart 15: Education scenario

Chart 15 presents the structure of the Education scenario as modelled in IFs. The scenario improves the quantity and quality of education as well as its relevance to job requirements.

The Education scenario represents reasonable but ambitious improved intake, transition and graduation rates from primary to tertiary levels and better quality of education at primary and secondary levels. It also models substantive progress towards gender parity at all levels, additional vocational training at the secondary school level and increases in the share of science and engineering graduates.

Visit the theme on Education for our conceptualisation and details on the scenario structure and interventions.

Mali has a 6-3-3 education system, which consists of six years of elementary education, three years of lower secondary school and three years of upper secondary education.[52] The education system in Mali is confronted with enormous challenges regarding access and the quality of education. For instance, thousands of school-age children in pastoral communities in northern Mali lack access to education.[53] Also, threats from armed groups against schools and the destruction of school infrastructure and equipment has led to a shortage of teachers in affected areas and a breakdown in the pedagogical support system due to massive population displacements.[54]

As a result, families in affected areas are experiencing significant problems, which decreases the overall level of enrolment. The government directive aimed at schools in the south to indiscriminately accept relocated students has resulted in overcrowding and diminished educational quality.[55] In some schools, a single classroom can often accommodate up to 300 children due to the lack of infrastructure. In such circumstances, it is impossible for school-age children and students to be interested in learning.[56] In addition, Mali's lack of skilled teachers, inadequate textbooks and poor learning conditions all negatively impact learning outcomes for the children who attend school. As a result, most fifth graders struggle to acquire fundamental reading and mathematics skills, for example.[57] Emergency education in crisis zones is also highly underfunded and unsafe. Mali has had 1 in 10 of its schools remain closed since 2022 because of a shortage of facilities and instructional supplies attributed to insecurity and a funding crisis.[58]

The country, like most African countries, spends large amounts of its income on education, but the outcome is often poor due to corruption and mismanagement that cause inefficiencies in the education system. The Malian government's spending on education is boosted by support from non-governmental and international organisations. For example, the Global Partnership for Education provides the country with financial assistance and technical support to improve its education system.[59]

In 2019, Mali spent US$818.6 million on its education system—this amount is equivalent to 4.1% of the country's GDP. At this rate, Mali's spending on education was on par with the average of low-income countries in Africa. On the Current Path, Mali's total expenditure on education is projected to reach US$3.3 billion, constituting 5.5% of GDP, by 2043. Given the large annual influx of students, a whopping 46% of spending on education in Mali is on the primary level, 23.6% on the upper secondary level, 23% on the tertiary level and the remainder on the lower secondary. On average, it costs US$1 586 to educate a student at tertiary level. This is almost 3.4 times what was spent on upper secondary students, 23 times the cost of educating a child at the lower secondary level and 13 times more than what it costs to educate a primary level student.

The education system can be viewed as a long funnel where children enter at the primary level and exit after completing tertiary-level education. However, the education funnel in Mali, like many sub-Saharan African countries, is leaky with various cracks along the way. Many children enter the system at the mouth of the funnel, but few complete the entire journey—from primary to secondary school and then university—to eventually graduate with a tertiary or equivalent education at the other end. In 2019, the gross enrolment rate for primary school students in Mali was 85.2%, a remarkable increase from 27.3% in 1990 but still far lower than the average of 105% of low-income countries in Africa. Comparing this to the net enrolment rate of 59% in the same period leads to two important conclusions. First, a significant number of children in Mali who are of school-going age are not in school. Secondly, many classrooms in Mali are likely to be crowded by older students. With a net enrolment of 59%, the country has the fifth lowest net enrolment rate among the 23 low-income countries in Africa. On the Current Path, Mali's gross and net enrolment rates are projected to reach 104.4% and 75.3%, respectively, by 2043. At this rate of progress, the country will still lag behind the average of its income-group peers in Africa.

The gross primary completion rate stood at almost 67% in 2019, indicating that a sizable number of children who enrolled did not complete the last grade of primary school in Mali. Although this rate is low, it is above the average of the country's African income-group peers at 53%. On the Current Path, Mali's progress in ensuring more children complete primary school will be slower compared to its income-group peers in Africa, as the former will catch up. By 2043, the primary completion rate in Mali is expected to rise to 86.6%—this is almost on par with the average of African low-income countries at 84.3%. Of those who complete primary level education, it is expected that some will transition immediately to the lower secondary level, some will enrol in the lower secondary level after some years out of school and some will never enter the lower secondary level, and so on through the upper secondary and tertiary levels.

In Mali, more students transition from primary level to lower secondary level than they do from lower secondary level to upper secondary level. In both cases, the rates are higher than Mali's income-group peers in Africa: gross enrolment for

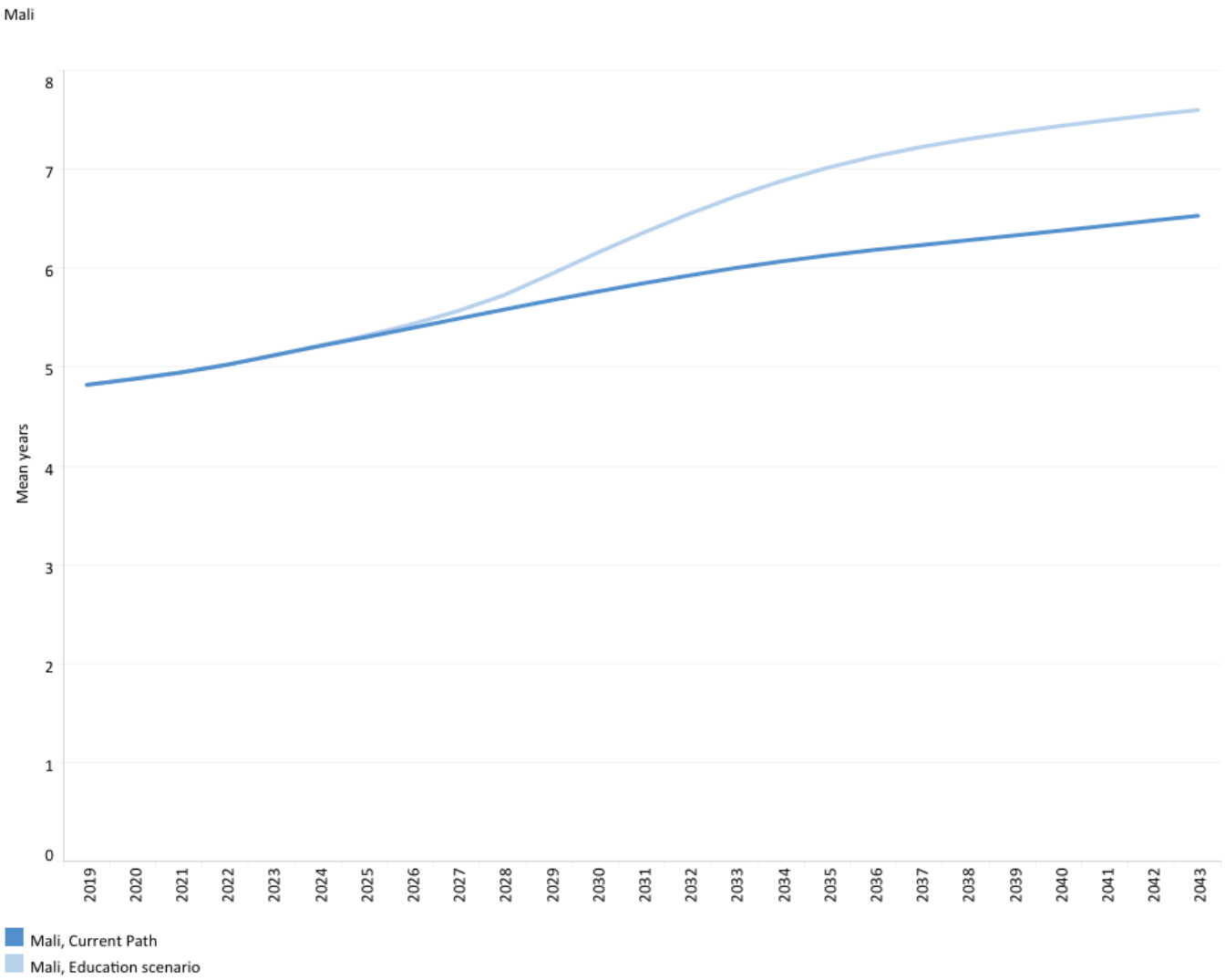
lower and upper secondary levels in the country stood at 56.4% and 30.7%, respectively, in 2019, compared to 50.2% and 27.1%. By 2043, gross enrolment for the lower secondary level is projected to rise to 80%, while that of the upper secondary level will rise to 48.3%. Completion rates drop acutely from 31.2% in the lower secondary level to a mere 18.9% in the upper secondary level, indicative of a rapid contraction in the educational funnel in Mali. Even by 2043, only 48.2% of students are expected to complete their lower secondary education compared to 36.2% in upper secondary level.

At tertiary level, the situation is even worse. In 2019, only 6.4% of people within the age group were enrolled in tertiary institutions in Mali, and this will only improve to about 18.3% by 2043 on the Current Path. Worryingly, only 1.2% of the relevant age group in Mali graduated from a tertiary institution with at least a first degree in 2019. This will steadily rise to 4% by 2043, although it will still be lower than the rates in other low-income African countries. Enrolments in vocational training and science and engineering education, which are considered crucial to the future of work, are quite encouraging. In 2019, about 41% of upper secondary school students were enrolled in vocational training programmes in Mali. This is more than three times the average for low-income countries in Africa and the second highest in the group, only below the rates in Ethiopia. At tertiary level, in 2019, 17% of tertiary graduates in Mali enrolled in science and engineering programmes. Although this rate is the fourth highest among low-income countries in Africa, it is far below the rates in Eritrea and Sudan, estimated at close to 30%.

The gender gap is still very large. Although there are efforts by women at the local level to increase female enrolment, schools are not challenging stereotypes about girls.[60] In 2019, 90 females were enrolled in primary school for every 100 males in Mali compared to the 98 females to 100 males average of low-income countries. At secondary level, there were only 89 females enrolled in lower secondary schools for every 100 males in Mali, as opposed to the average of 87 females for every 100 males in low-income Africa. The ratio worsens notably at higher levels of education. At the upper secondary level, there were only 72 females for every 100 males in Mali compared to the 80 females to 100 males average of low-income African countries in 2019. At tertiary level, there were 51 female students for every 100 male students, compared to the average of 67 female students for every 100 male students for Mali's income-group peers on the continent.

Beyond the limited access to education in the country, there are also problems with the quality of education. In 2019, the average test score for primary and secondary students in Mali stood at 29.2 and 32.6 out of 100, respectively. The primary test score for Mali was slightly below the average of 27.2 for its income-group peers in Africa, the secondary score was below the average of 35.8 for its income-group peers on the continent. Thus, although Mali has tried to improve its education system, significant challenges still need to be addressed. These challenges include limited access to education, particularly for girls and those in rural areas, and low-quality and inadequate resources. The ongoing security situation further exacerbates these challenges, which, if not addressed, can reduce the human capital stock in the country and affect the productivity of labour in the country.

Chart 16: Mean years of education in Current Path and Education scenario, 2019-2043
15 to 24 year age group



Source: IFs 7.84 initialising from Barro-Lee data

Chart 16 presents mean years of education in the Current Path forecast and the Education scenario for the 15 to 24 age group.

The average years of education in the adult population (aged 15 years and older) is a good first indicator of the stock of knowledge in society. However, since that measure changes very slowly, Chart 16 presents the mean for the 15 to 24 age cohort.

In 2019, the mean years of education attained by adults between 15 and 24 years in Mali stood at 4.8 years—far below the average of 5.7 years for low-income countries on the continent. On average, females received 0.8 years more schooling than males. In the Current Path forecast, the average Malian between the ages of 15 and 24 years is expected to have received 6.5 years of education by 2043. This will be 1.1 years fewer schooling compared to the average for the country's

income-group peers in Africa. In the Education scenario, the mean years of adult education in Mali will rise to 7.6 by 2043, on par with the average of low-income countries in Africa and 1.1 years more than in the Current Path forecast. The interventions in the Education scenario also reduce the gender gap in educational attainment in Mali significantly.

The Education scenario further increases average test scores for primary students in the Education scenario to 39.2 in 2043, which is 17% more than in the Current Path forecast and 32% above the projected average of low-income countries in Africa in the same year. By 2043, the average test scores for secondary students in Mali will rise to 44.5%—this is 18% higher than the Current Path forecast and the average of low-income countries in Africa. It means that the Education scenario has the potential to improve the quality of education (reflected in the test scores) in Mali above that of its income-group peers in Africa.

Manufacturing scenario

Chart 17: Manufacturing scenario

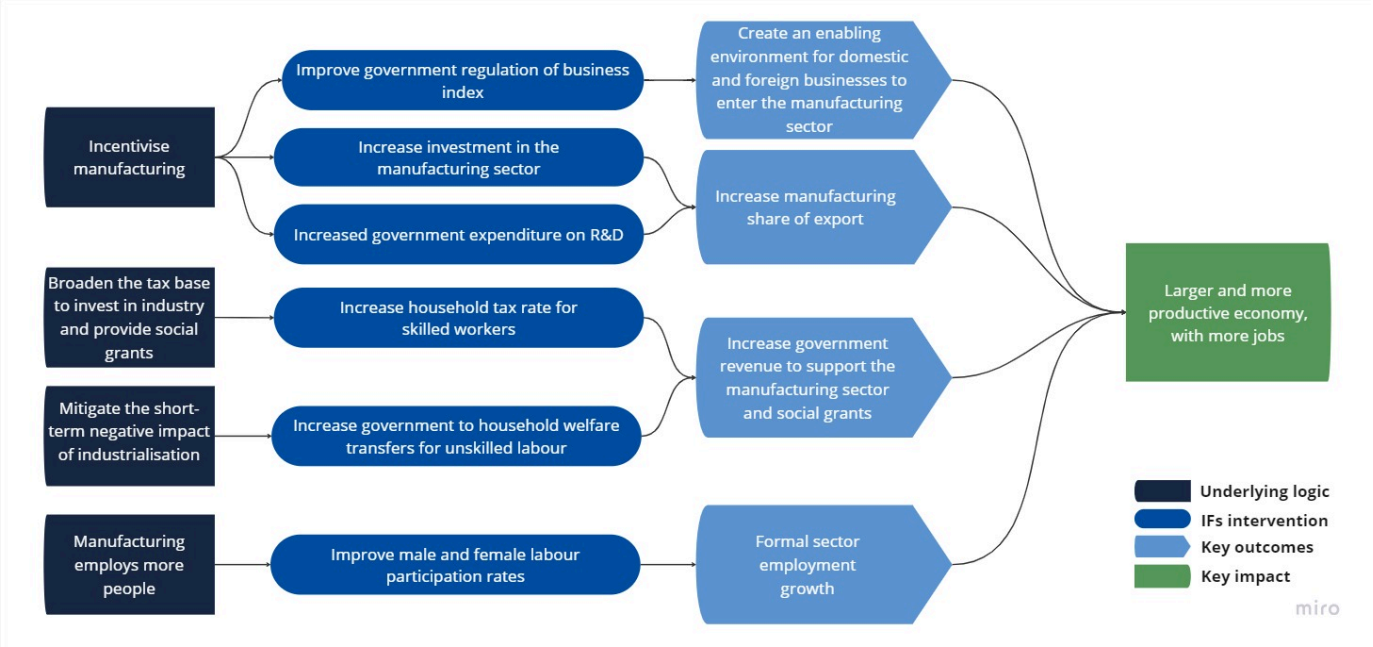


Chart 17 presents the structure of the Manufacturing scenario as modelled in IFs.

The Manufacturing scenario represents reasonable but ambitious manufacturing growth through greater investment in the manufacturing sector, in research and development (R&D) as well as improvement in government regulation of businesses. It increases total labour participation rates with a larger increase in female participation rates where appropriate. It is accompanied by increased welfare transfers (social grants) to unskilled workers to moderate the initial increases in inequality typically associated with a manufacturing transition.

Visit the theme on Manufacturing for our conceptualisation and details on the scenario structure and interventions. Chart 20 presents a summary chart that sets out the composition of the scenario.

The manufacturing sector is crucial for the productive transformation of a country's economy towards sustained high growth, employment creation and improved prosperity. It has backwards and forwards linkages with other sectors, such as the agriculture and the service sectors.

The manufacturing sector in Mali accounts for a relatively small share of its GDP. However, it plays a significant role in employment generation. According to the International Labour Organization's estimates, the industrial sector in Mali accounted for about 10% of total employment in 2021.[61] The manufacturing subsector in Mali includes textiles, agricultural tools, cosmetics, batteries, paint, plastics, processed foods, cement, cigarettes and beverages.[62]

The sector faces several difficulties that limit its development and productivity, including inadequate transportation networks, unstable power supplies and limited access to financing. The sector also lacks access to modern technology and innovative practices, which hurt its ability to compete in the global market. Finally, because of a lack of financial resources, outdated equipment and unskilled labour, productivity levels in the manufacturing sector have remained relatively low.[63]

Initiatives are underway to encourage the expansion and development of Mali's manufacturing industry. The Malian government has put in place several programmes and policies to entice investment in the industrial sector. These include tax breaks, financial aid and the construction of industrial parks to support manufacturing operations. Furthermore, commercial and industrial cooperation within the area has been made possible because of Mali's membership in regional economic organisations like the ECOWAS. Additionally, through training initiatives, access to financing and technology transfer projects, the government and foreign organisations are supporting small and medium-sized enterprises in the manufacturing sector.[64]

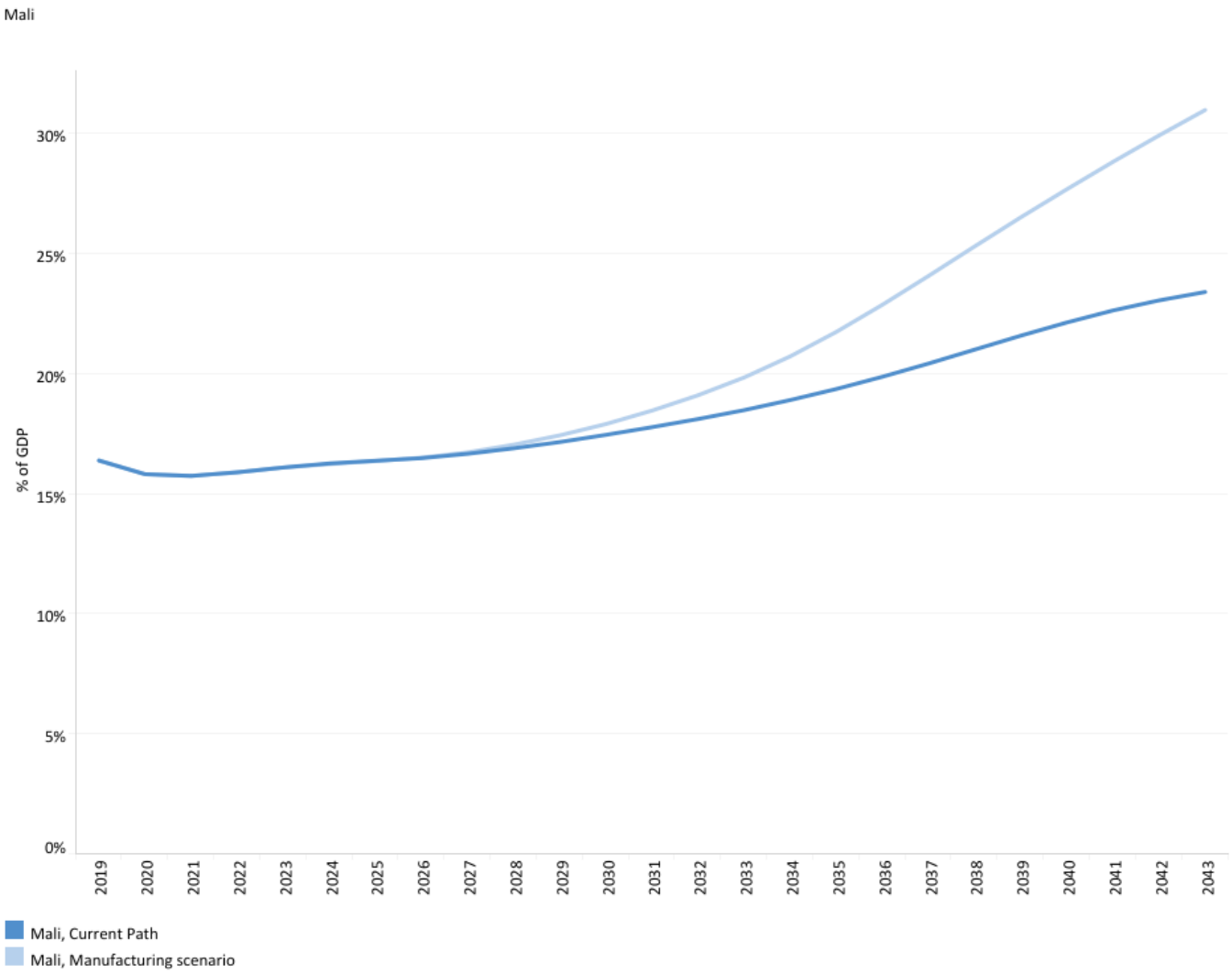
The three largest contributors to GDP in Mali are the service, agriculture and manufacturing sectors. In 2019, the service sector in Mali contributed US$8.7 billion to the economy, equivalent to 43.6% of GDP. This is followed by the contribution of the agriculture sector valued at US$6.4 billion, equivalent to about 32% of GDP. The manufacturing sector, contributed US$13.3 billion, representing 16.4% of GDP in 2019. In the same period, the information and communications (ICT) sector contributed US$768.5 million, constituting 3.8% of GDP, while the contributions of the energy and materials sectors were valued at US$607.1 million (3% of GDP) and US$238.7 million (1.2% of GDP), respectively.

On the Current Path, the service sector will extend its dominance in the economy with its contribution to GDP expected to more than quadruple in size to US$35.6 billion by 2043 (54.2% of GDP). By 2043, the manufacturing sector will overtake the agriculture sector as the second largest contributor and will be valued at US$15.3 billion (23.4% of GDP). At this rate, the contribution of manufacturing to GDP will be about 10.3 percentage points larger than agriculture at US$8.6 billion, reflecting the structural transformation of Mali’s economy, and, through more rapid growth, would lead to job creation. By 2043, the ICT sector in Mali will still be the fourth largest contributor to GDP with a share of 4.9% of GDP, valued at US$3.2 billion. The energy and material sectors’ contributions will be valued at US$1.5 billion and US$1.3 billion, corresponding to 2.2% and 2.1% of GDP, respectively.

Typically when countries embark on a manufacturing transition, inequality and poverty may initially increase. This is because resources and investments are diverted to more capital and knowledge-intensive sectors, which leads to an initial crunch in consumption. However, in the long term, these efforts stimulate inclusive growth with a greater impact on poverty and inequality reduction. Policies aimed at industrialisation, therefore, need to be accompanied by measures to mitigate these initial adverse effects. These could include efforts to directly support extremely poor families through social programmes or welfare spending to cushion vulnerable people.

Welfare transfers in Mali are very low compared to its income-group peers on the continent. In 2019, the total welfare transfers to households in Mali amounted to 0.6% of GDP, which was just about a quarter of the average rates in low-income African countries. On the Current Path, government welfare transfers to households will increase to about 1.6% of GDP. Despite this increase, it will still be far below the projected average of 6% of GDP for Mali’s income-group peers in Africa.

Chart 18: Value-add by the manufacturing sector in Current Path and Manufacturing scenario, 2019-2043



Source: IFs 7.84 initialising from IMF World Economic Outlook data

Chart 18 presents the contribution of the manufacturing sector to GDP in the Current Path forecast and in the Manufacturing scenario. The IFs platform uses data from the Global Trade and Analysis Project (GTAP) to classify economic activity into six sectors: agriculture, energy, materials (including mining), manufacturing, services and information and communication technologies (ICT). Most other sources use a threefold distinction between only agriculture, industry and services, with the result that data may differ.

In the Manufacturing scenario, Mali makes substantial progress in industrialisation such that, by 2043, the share of the manufacturing sector in GDP is about 31% (US$22.4 billion)—about eight percentage points of GDP above the Current Path forecast.

However, industrialisation is a difficult and long-term process. It requires constructive relationships between the state, which provides encouragement and support, and the private sector. Firms need a state with strong capabilities in setting an overall economic vision and strategy, efficiently providing supportive infrastructure and services, and maintaining a

regulatory environment conducive to entrepreneurial activity. Additionally, firms need a state that makes it easier to acquire new technology and enter new economic activities and markets.

AfCFTA scenario

Chart 19: AfCFTA scenario

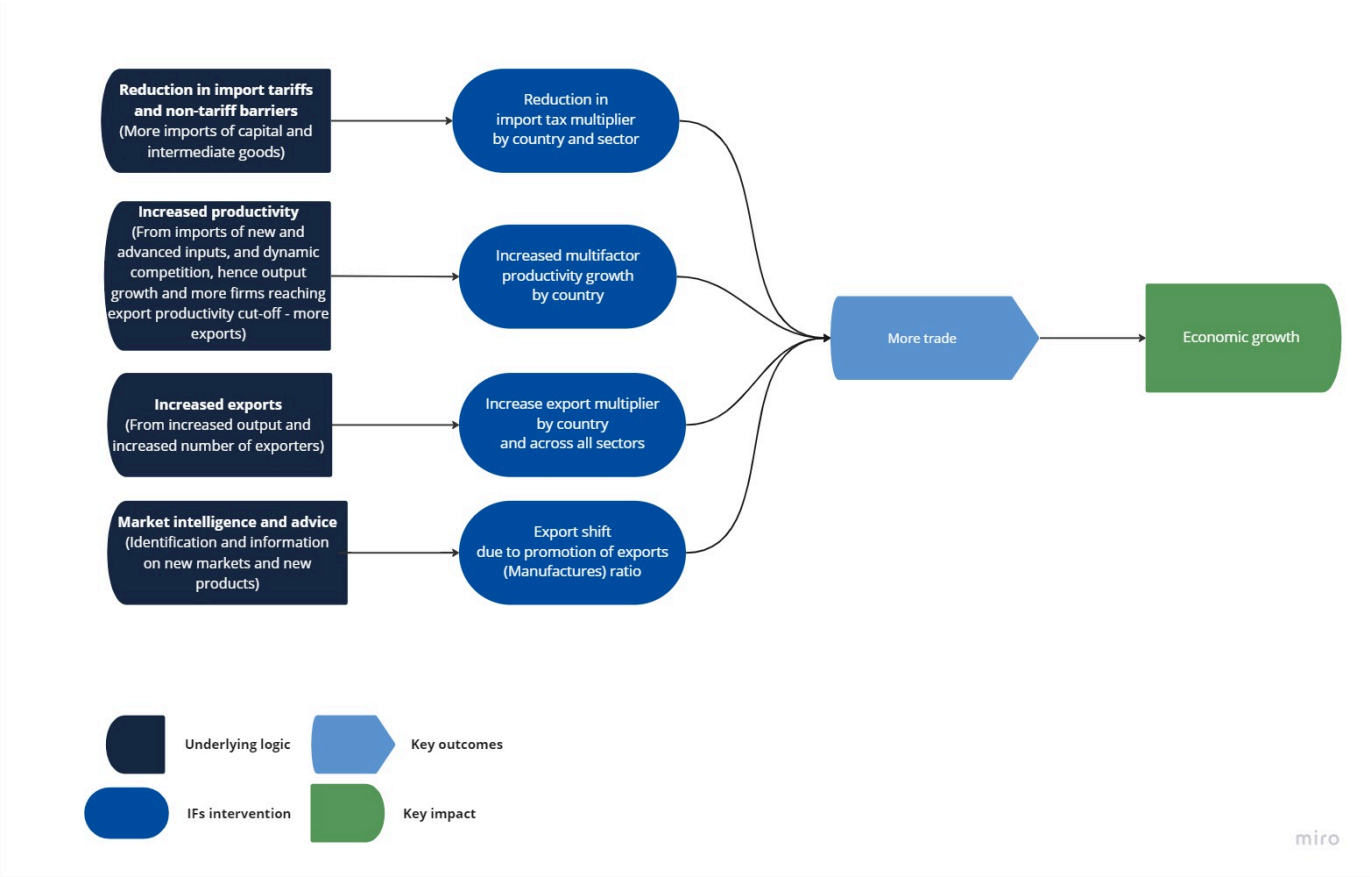


Chart 19 presents the structure of the AfCFTA scenario as modelled in IFs.

The AfCFTA scenario represents the impact of fully implementing the African Continental Free Trade Agreement by 2034. The scenario increases exports in manufacturing, agriculture, services, ICT, materials and energy. It also includes an improvement in productivity as a result of competition and technology diffusion emanating from trade liberalisation.

Visit the theme on AfCFTA for our conceptualisation and details on the scenario structure and interventions.

Historically, Mali's economy is more open[65] to trade compared to its income-group peers in Africa. In 1990, the sum of Mali's exports and imports stood at 46% of GDP, which was above the average of 37.7% for low-income countries in Africa. By 2019, trade openness in Mali had jumped to 63.7% of GDP—far above the 47.1% average for low-income countries.

Over the years, efforts have been made to improve the country's trade. Mali is a member of the WAEMU, whose purpose is to reduce trade barriers by creating a common market. It has a customs union with a common external tariff. As a result, it benefits from the Trade and Investment Framework Agreement (TIFA), which offers the framework and principles for trade and investment negotiations between the WAEMU and the US. Mali is a member of the World Trade Organization and also signed the African Continental Free Trade Area Agreement (AfCFTA) in March 2018 to promote intra-African trade.[66] Mali has also eliminated export duties and taxes on many products and established free zones to boost exports. In addition, the country has relatively low customs duties averaging around 10%, with few legal and regulatory trade barriers.[67]

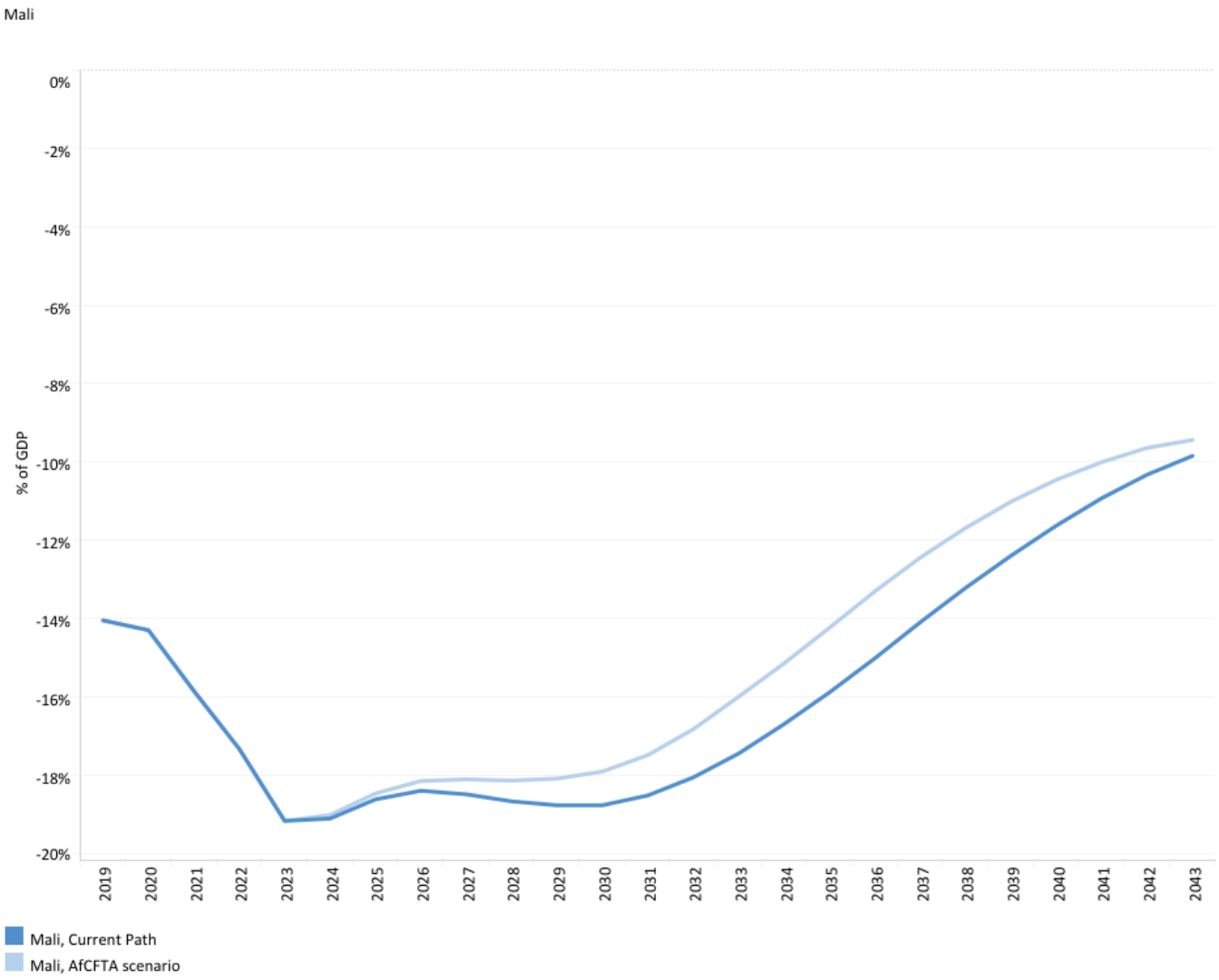
However, there are still factors that constrain trade. Inadequate infrastructure, such as roads, remains a constraint to economic integration in the country as well as the high costs of energy and telecommunications, which act as a disincentive to trade in the country.[68] Despite enjoying the preferential treatment granted to developing countries, the country exports only a small number of products, which are usually raw materials that are generally subject to zero or very low most-favoured-nation import duties in the importing countries. Also, Mali's manufacturing sector remains undeveloped. Although the country has substantial potential in the textile and agri-food industries, the damaging escalation of import duties does not favour the development of this sector.[69] In recent years, economic sanctions, such as the trade and financial embargo and border closure imposed on the country in early 2022 by ECOWAS and UEMOA, have negatively affected trade in Mali.

In 1990, the total export volume in Mali stood at US$819.7 million, constituting 15.7% of GDP, slightly below the average of 16.9% for its income-group peers. Since then, exports from Mali have grown rapidly. By 2019, Mali's exports stood at US$5.1 billion, equivalent to 29.2% of GDP, overtaking the average of 18.4% for low-income African countries. Gold is a major export of Mali accounting for almost 73% of total exports in 2019. This is followed by cotton, which accounted for 12% of total export in the same year, making it the largest exporter of cotton in Africa. Other significant exports include oily seeds, rough wood and refined petroleum.[70] Mali also trades in transportation, financial, insurance and cultural and recreational services.[71] Although the country aims to become self-sufficient in cereal production and a leading cereal exporter in the West African region, it is yet to achieve this vision, despite significant progress.[72] About 37% of total exports are destined for South Africa, 35.6% to Switzerland, 7.1% to Bangladesh, 4.2% to Ivory Coast and 2.8% to Burkina Faso.[73] Other notable export destinations include the United Arab Emirates, Switzerland, Australia, China and Turkey.[74] On the Current Path, total exports in Mali are projected to reach 34.8% of GDP, equivalent to US$22.8 billion, in 2043, exceeding the 27% average of its income-group peers in Africa.

In terms of imports, Mali's total imports grew from US$1.6 billion, equivalent to 30.9% of GDP in 1990 to US$7.6 billion, representing 35.6% of GDP, in 2019. At that rate, Mali's total imports as a proportion of GDP were higher than the estimated average of 28.7% for low-income African countries in the same year. The country imports large volumes of refined petroleum (representing 27% of total imports).[75] Other top imports of Mali are broadcasting equipment, packaged medicaments and cement.[76] Imports from Senegal account for 22.5% of total imports into the country. This is followed by imports from China (accounting for 15.8% of total imports), Côte d'Ivoire (10.6% of total imports) and France (7.9% of total imports). Mali also receives significant imports from India and the United Arab Emirates.

There is also a chronic deficit in Mali's trade balance, and exports only cover about half of imports, reflecting a large trade deficit. Like most African countries, it imports large volumes of mostly finished or processed goods. Its export quantities are small, and most of it is raw materials, with little or no value addition occurring within the country. This results in low export revenues and higher import expenditures. Mali's trade deficit in 2019 constituted 12.3% of GDP, which was above the average of 10.3% for low-income African countries.

Chart 20: Trade balance in Current Path and AfCFTA scenario, 2019-2043



Source: IFs 7.84 initialising from WDI data

Chart 20 compares the trade balance in the Current Path forecast with the AfCFTA scenario.

In the AfCFTA scenario, the sum of Mali's exports and imports as a percentage of GDP will reach 89.4% by 2043. This will be about 10 percentage points above the Current Path. Throughout the forecast period, the AfCFTA scenario leads to a faster improvement in Mali's trade balance than the Current Path forecast. By 2043, Mali's trade deficit in the Current Path will constitute about 9.9% of GDP, whereas, in the same year, the AfCFTA scenario will mitigate this situation leading to a slightly lower deficit of 9.4% of GDP. This is almost at the same level with the average for its income-group peers in Africa. These figures suggest that Mali stands to benefit from the full implementation of the AfCFTA, which will improve competitiveness, particularly in growing the country's manufacturing sector.

Large Infrastructure and Leapfrogging scenario

Chart 21: Large Infrastructure and Leapfrogging scenario

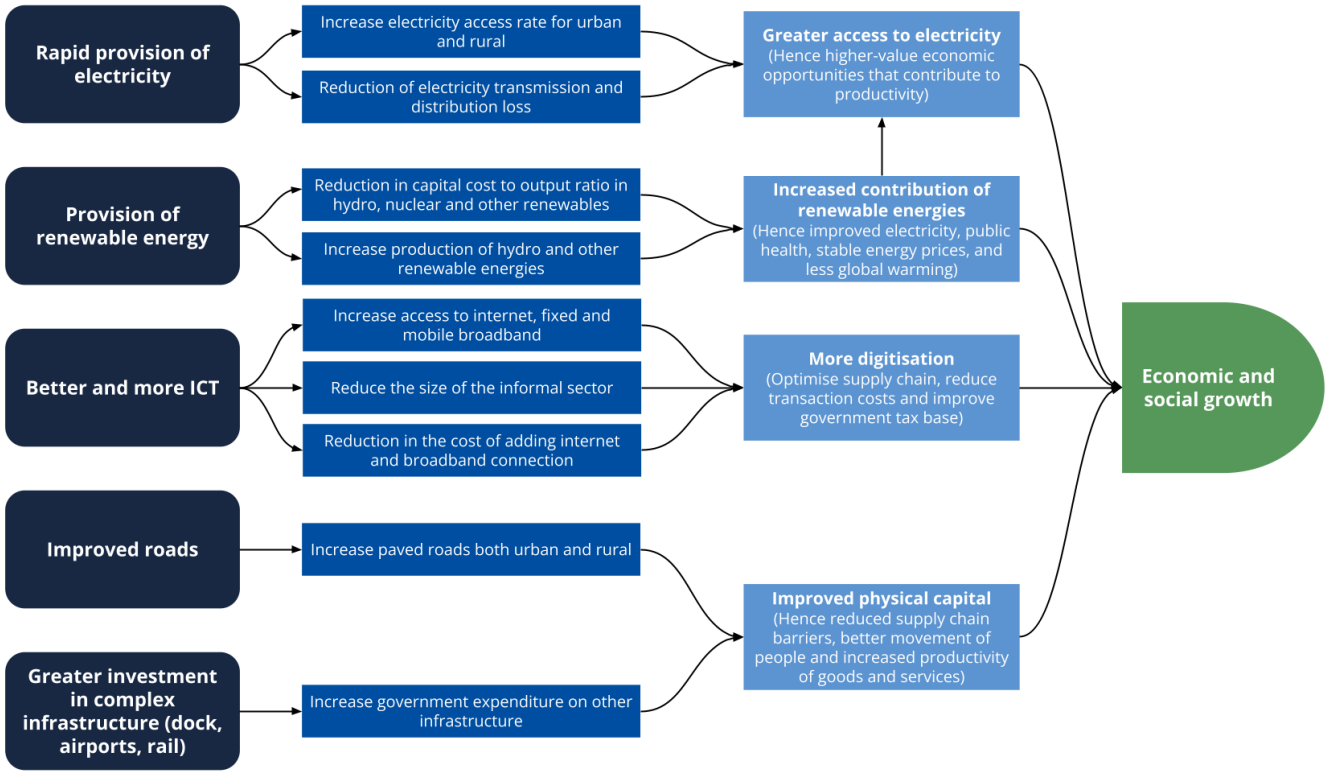


Chart 21 presents the structure of the Large Infrastructure and Leapfrogging scenario as modelled in IFs.

The Large Infrastructure and Leapfrogging scenario represents a reasonable but ambitious investment in road infrastructure, renewable energy technologies and improved access to electricity in urban and rural areas. The scenario includes accelerated access to mobile and fixed broadband and the adoption of modern technology that improves government efficiency and allows for the more rapid formalisation of the informal sector. A final intervention emulates investments in large infrastructure such as rail, port and airports.

Visit the themes on Large Infrastructure and Leapfrogging for our conceptualisation and details on the scenario structure and interventions. Chart 21 presents a summary chart that sets out the composition of the scenario.

Modern infrastructure can improve productivity, augment healthy lifestyles, boost educational outcomes and facilitate government effectiveness.[77] The study focuses on both physical and digital infrastructure, including roads, electricity access and ICT. Physical infrastructure, such as roads and railways, is a critical driver of economic growth and an important component of development. It facilitates the movement of people, goods and services, promotes intra-country trade and serves as an enabler of social service provision such as education and health.

Malian authorities continue to make efforts to improve the road network in the country. The creation of a second-generation road fund in 2000 and the inception of a Road Maintenance Executing Agency contributed to improving road infrastructure in the country.[78] In 2019, the total length of roads in Mali was estimated to be 24 175 km of which only 5 522 km, equivalent to 24.6% was paved—this is above the average for low-income countries in Africa. On the

Current Path, by 2043, the total road network in Mali will increase to 54 366 km, of which 17 659 km, or 32.6%, will be paved. By this time, paved roads as a percentage of total roads in Mali will, however, still be below the average of 37.2% in Africa's low-income countries.

Electricity production in Mali is mainly from hydraulic generated power. It comprises 55% of electricity production and diesel accounts for 45%.[79] With an estimated 800 MW of hydroelectric power, potentially unlimited solar energy and over 300 MW of biomass,[80] the country is yet to fully tap into this renewable energy potential to increase production. In 2019, 47.8% of the people in Mali had access to electricity. This was above the average of 33.3% of low-income countries in Africa.

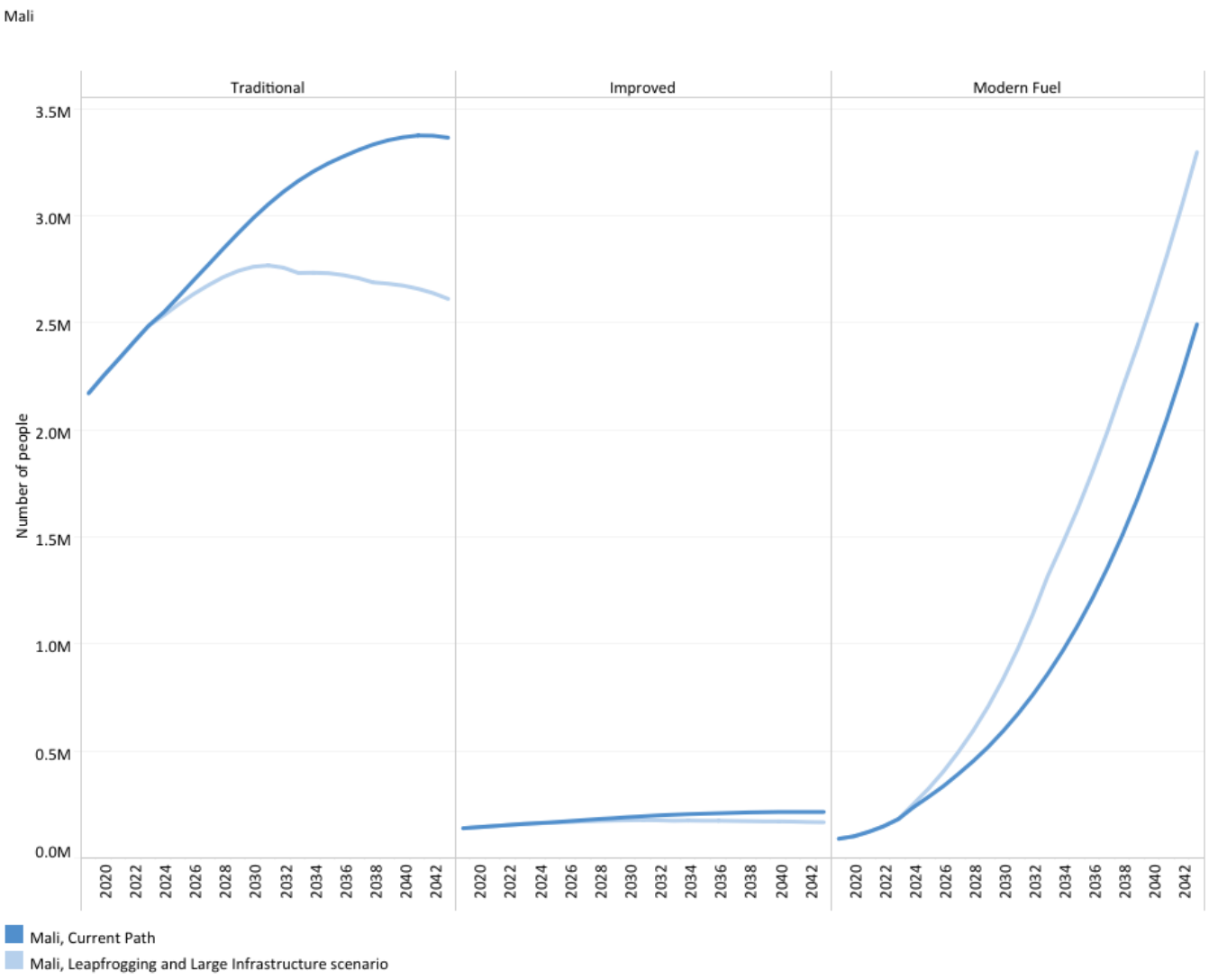
Similar to the trend observed in most low-income countries in Africa, an overwhelming 91.1% of urban residents but only 15% of rural dwellers had access to electricity in 2019, depicting a location disparity in favour of urban areas. Although there has been impressive progress in the implementation of some rural electrification programmes, there is still a long way to go before universal access. On the Current Path, access to electricity is projected to reach 69.5% of the population by 2043, which is above the average of 60.1% for Mali's income-group peers. The disparity in electricity access in favour of urban residents will continue as 97% of urban residents will have access to electricity compared to 36.7% of rural residents by 2043. About 17% of all electricity produced in Mali is lost during transmission and distribution. On the Current Path, this is expected to remain without any effort to avert these losses.

Aside from physical infrastructure, technological advancement is essential for economic growth. Technology improves productivity and reduces the transaction costs and bottlenecks associated with doing business. Mali's progress in fixed broadband access, like many other African countries, has lagged. In 2019, the total number of fixed broadband subscriptions in the country was estimated at about 1.7 per 100 people—slightly above the average of 1.6 per 100 people in low-income Africa. In the Current Path forecast, fixed broadband subscriptions will rise to 31.9 per 100 people by 2043, above the average of 24.8 subscriptions per 100 people for low-income African economies.

In contrast, mobile broadband subscription in Mali is high. The number of people with access to a mobile line grew by 300% between 2004 and 2007, allowing Mali to catch up with its income-group peers and positioning the country among the best performers in West Africa.[81] In 2019, Mali had a mobile broadband subscription rate of 31.3 per 100 people, almost double the average of 18.7 for low-income countries on the continent.

On the Current Path, mobile broadband subscriptions will rise to 153 per 100 people—18.6% above the average of its income-group peers. In terms of Internet usage, only 26% of Mali's population has access to the Internet. Although this is higher than the average usage of 19.6% in low-income countries, it is half of what exists in Gambia, which is the highest among the 23 low-income countries. Also, on the Current Path, Mali's progress is projected to lag behind its income-group peers so that by 2043, the proportion of people with access to the Internet in Mali will almost be on par with the average for its income-group peers in Africa at 22.6%.

Chart 22: Cookstove usage in Current Path and Infra/Leapfrogging scenario, 2019-2043



Source: IFs 7.84 initialising from IEA data

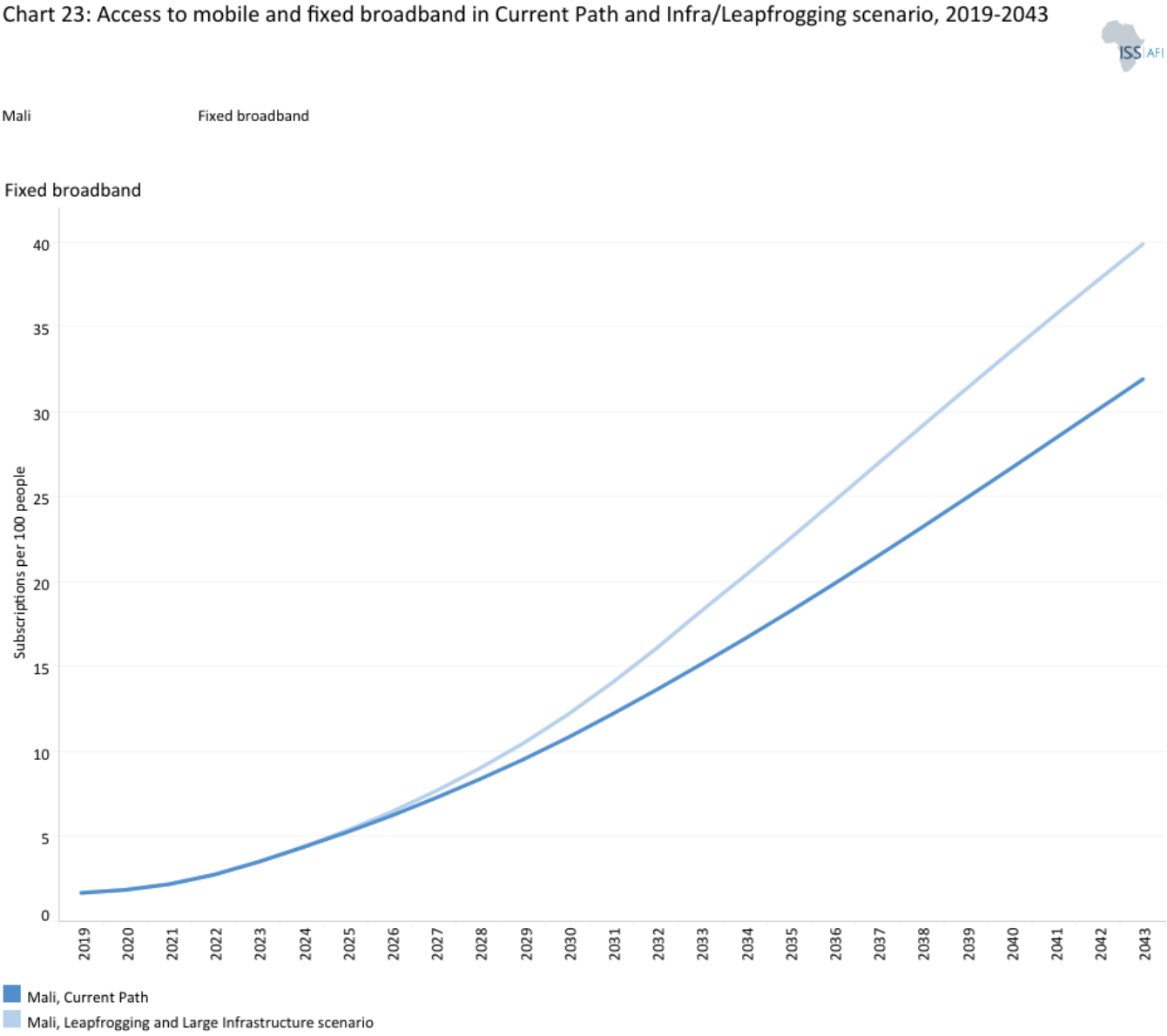
Chart 22 presents cook stove usage in the Current Path forecast and the Infrastructure and Leapfrogging scenario.

The IFs model distinguishes between three types of cooking stoves: traditional, improved and modern. In 2019, 90.5% of households in Mali used traditional stoves with firewood or charcoal for cooking, while 5.8% used improved cooking stoves and 3.7% used modern stoves for cooking. A similar trend is observed in most low-income countries in Africa with 88% of using traditional cooking stoves. An overwhelming majority of people in Mali, therefore, still rely on traditional stoves for cooking, which contributes to pollution and carbon emissions and negatively impacts the health of these households. However, as access to electricity in urban and rural areas increases, more households will likely switch from traditional cooking stoves to improved and modern fuel stoves, such as electric and gas cookers.

Based on the Infrastructure scenario, it is projected that 80% of Malians will have access to electricity by 2043, compared to 69.5% in the Current Path forecast. Also, all Malians living in urban areas will have access to electricity in the scenario and the proportion of people with access to electricity in rural areas will improve to 56.4% in the scenario instead of 36.7%

in the Current Path. Consequently, only 43% of households will use traditional stoves compared to 55.4% in the Current Path forecast by 2043. As a result, 54.3% of households in Mali are expected to use modern fuel for cooking in the Infrastructure scenario. This is close to the average for the country's income-group peers at 59.7%, compared to 41.2% in the Current Path forecast by 2043. Clearly, this will reduce health-related diseases and carbon emissions arising from the use of traditional cooking stoves in the country.

Chart 23: Access to mobile and fixed broadband in Current Path and Infra/Leapfrogging scenario, 2019-2043



Source: IFs 7.84 initialising from ITU data

Chart 23 presents access to mobile and fixed broadband in the Current Path and the Infrastructure and Leapfrogging scenario.

The Infrastructure scenario will lead to a larger increase in fixed broadband access, so that, by 2043, subscriptions will likely be at 40 per 100 people compared to 32 subscriptions on the Current Path. This is above the average of 24.8 for low-income African countries. Owing to the high performance in improving access to mobile broadband in the country, in the Current Path forecast, reaching 153 subscriptions by 2043, the Infrastructure scenario has only a marginal impact. The

Infrastructure scenario will peak at 156 subscriptions per 100 people by 2038 and remain so till 2043—higher than the average of 129 for Africa's low-income countries.

Financial Flows scenario

Chart 24: Financial Flows scenario

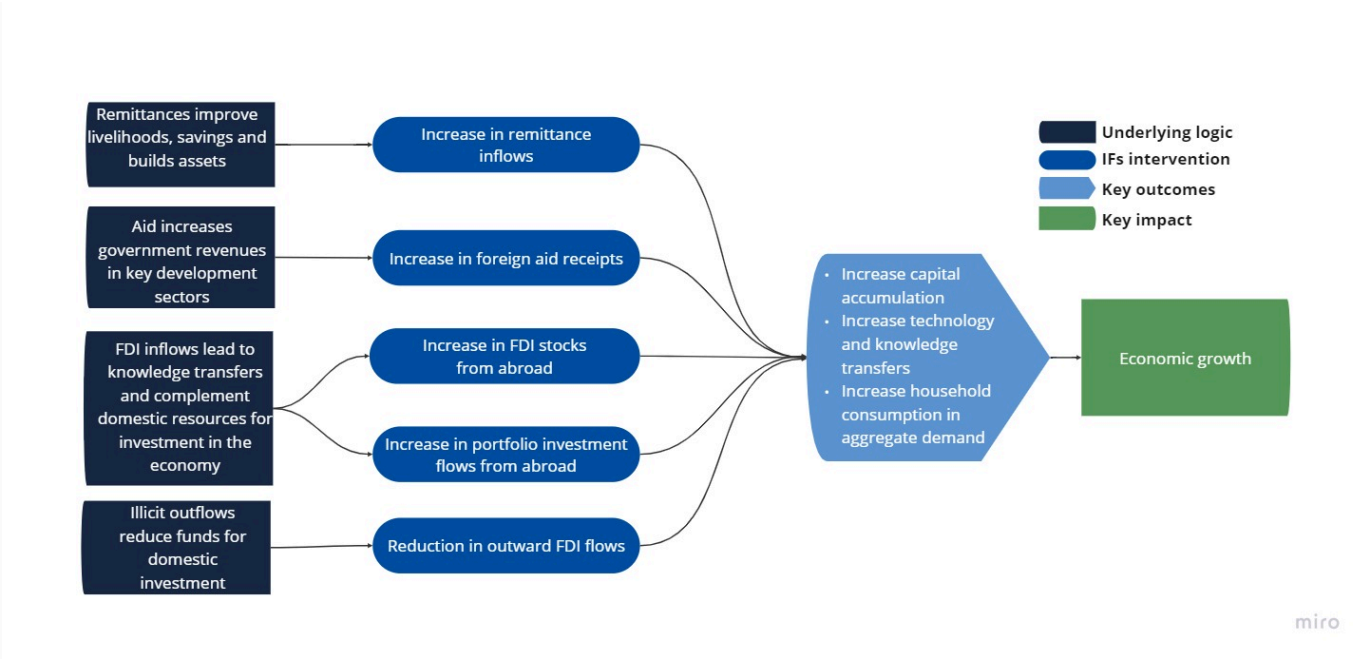


Chart 24 presents the structure of the Financial Flows scenario as modelled in IFs.

The Financial Flows scenario represents a reasonable but ambitious increase in inward flows of worker remittances, aid to poor countries and an increase in the stock of foreign direct investment (FDI) and additional portfolio investment inflows. We also reduce outward financial flows to emulate a reduction in illicit financial outflows.

Visit the theme on Financial Flows for our conceptualisation and details on the scenario structure and interventions. Chart 24 presents a summary chart that sets out the composition of the scenario.

FDI inflows to Mali, like most low-income countries, are historically low. In 1990, the total FDI inflow to Mali was equivalent to a paltry 0.2% of GDP—on par with the average for low-income countries in Africa. By 2019, FDI inflows to Mali reached 4.2% of GDP above the average of 3.8% of GDP for low-income African countries. The majority of the FDI received by Mali is destined for oil extraction, gold exploitation, the textile industry, telecommunication, infrastructure and financial intermediation and comes from France, China and the US, Canada and India.[82]

In 2020, Mali was ranked 148 out of 190 countries in the World Bank's Ease of Doing Business 2020 Report. This reflects the poor business environment and numerous obstacles to investing in Mali. The country's fragile political situation, persistent insecurity, especially in the northern part, and underdeveloped business environment are the main reasons for the low FDI in the country.[83] Other obstacles to attracting foreign investment to Mali include corruption, economic sanctions and the poor state of infrastructure in the country. Businesses in Mali have to grapple with corruption in procurement processes, land administration, tax payment and customs procedures.[84]

Prior to the coups, the government put in place various measures to attract more FDI. This is to be achieved by encouraging competitiveness and private sector participation in all sectors of the economy, with particular attention given to sectors such as agribusiness, fishing and fish processing, livestock and forestry, mining and metallurgical industries, and

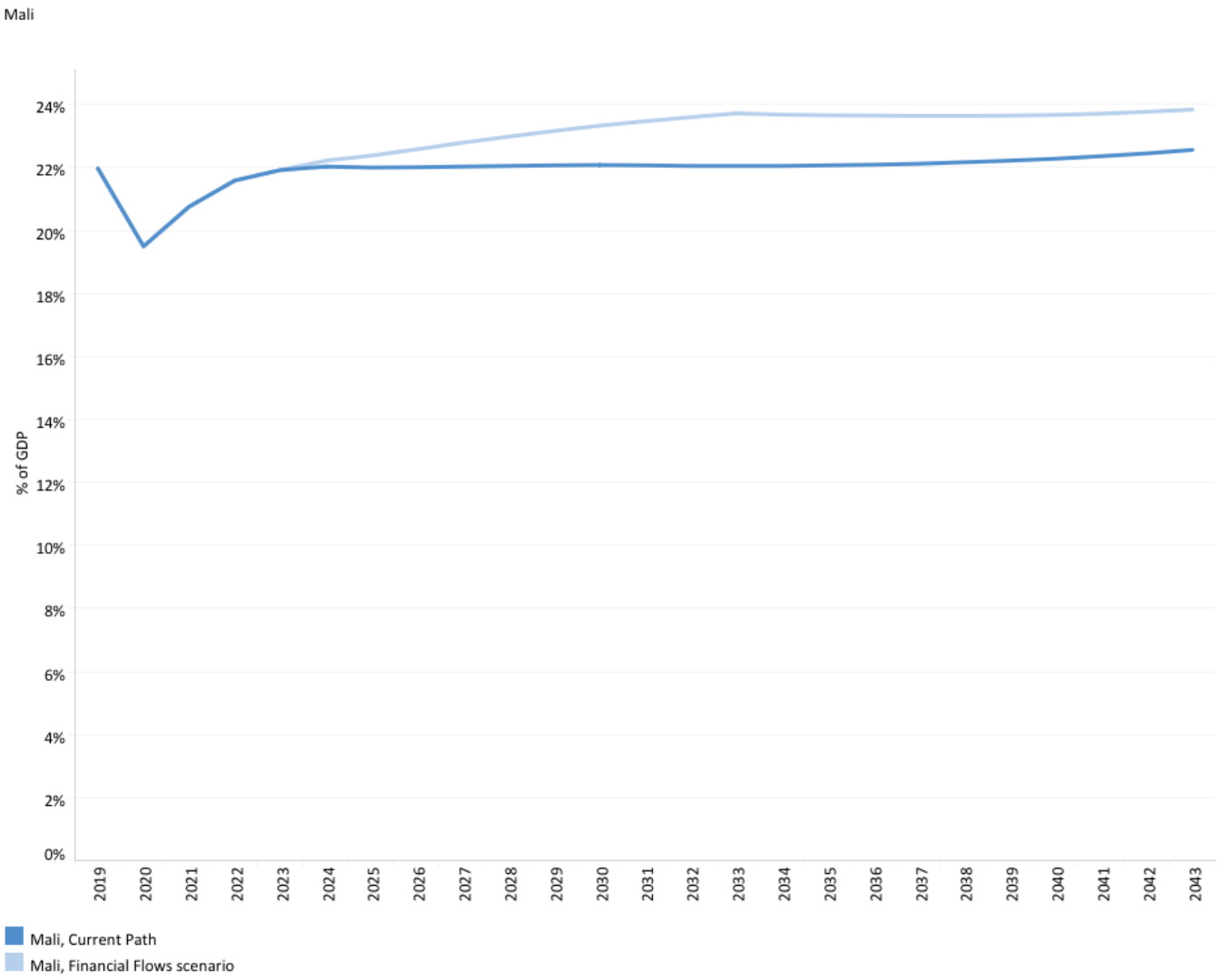
tourism and hospitality industries.[85]

There have also been efforts to undertake financial and economic reforms, such as improving fiscal transparency and reducing corruption to attract FDI. In this vein, the government committed to improving public financial management practices and increasing tax revenue by strengthening revenue collection agencies, ensuring tax compliance and reducing fraud in tax administration.[86] On the Current Path, FDI inflows are expected to marginally decline to 3.7%—this is significantly below the Current Path average of 5.2% for low-income countries on the continent by 2043.

Prior to the 2020 coup, Mali had received relatively more foreign aid than other low-income African countries. In 1990, the total aid received by Mali constituted 14.2% of GDP, compared to 11.3% received by other low-income African countries in the same period. By 2019, total aid as a percentage of GDP stood at 18%, equivalent to US$941 million. This was almost twice the average of 9.2% for other low-income countries in Africa. Mali received aid from diverse donor sources. For instance, in 2022, US bilateral foreign assistance to support the country's development amounted to US$148 million. Likewise, the EU also provided a total €47.3 million in humanitarian aid to Mali. A large proportion of aid received by Mali is spent on food, basic essential goods or emergency shelter, health and nutrition and education, among others.[87] On the Current Path, foreign aid is projected to decline to 6.2% of GDP, although the absolute value will increase to US$4.1 billion. However, this will still be higher than the average of 4.6% of GDP for other low-income countries in Africa.

Remittances in Mali are high compared to its income-group peers in Africa. In 2019, Mali received US$856 million in remittances, constituting 4.3% of GDP, well above the average of 2.5% for low-income African countries. It could mean that there are more Malian migrants than its income-group peers, or Malian migrants have sent relatively higher remittances home than in other low-income countries. Most of the remittances are for household consumption and development and provision of basic infrastructure in high emigration areas, mainly rural areas. The majority of the Malian diaspora is found in France, Spain and Italy, suggesting a large inflow of remittances from these countries.[88] On the Current Path, remittances to Mali is expected to increase to US$2.1 billion (3.2% of GDP), exceeding the average of 0.4% of GDP projected for low-income countries.

Chart 25: Government revenue in Current Path and Financial Flows scenario, 2019-2043



Source: IFs 7.84 initialsing from IMF data

Chart 25 presents government revenues in the Current Path and Financial Flows scenario.

Wagner's law, or the law of increasing state activity, is the observation that public expenditure increases as national income rises. It is, therefore, reasonable to expect that government revenues will increase as a per cent of GDP in the Financial Flows scenario compared to the Current Path forecast.

Higher external inflows in the form of FDI, aid and remittances have increased government revenue. For instance, increased FDI means higher GDP growth, which in turn increases revenues accrued to the government through corporate and income taxes, royalties and indirectly through value-added tax. In 2019, the government's total revenue in Mali amounted to US$4.4 billion, equivalent to 22% of GDP—higher than the average of its income-group peers in Africa. Similarly, Mali's revenue without aid, estimated at 11.4% of GDP, is above the average of 9.7% for low-income countries in Africa.

In the Financial Flows scenario, government revenue is projected to rise to US$15.8 billion in 2043, representing 23.8% of GDP above the average of 21.5% for low-income countries in Africa in the same year. Compared to the Current Path, the Financial Flows scenario can improve government revenue in Mali by almost an extra US$1 billion by 2043.

Governance scenario

Chart 26: Governance scenario

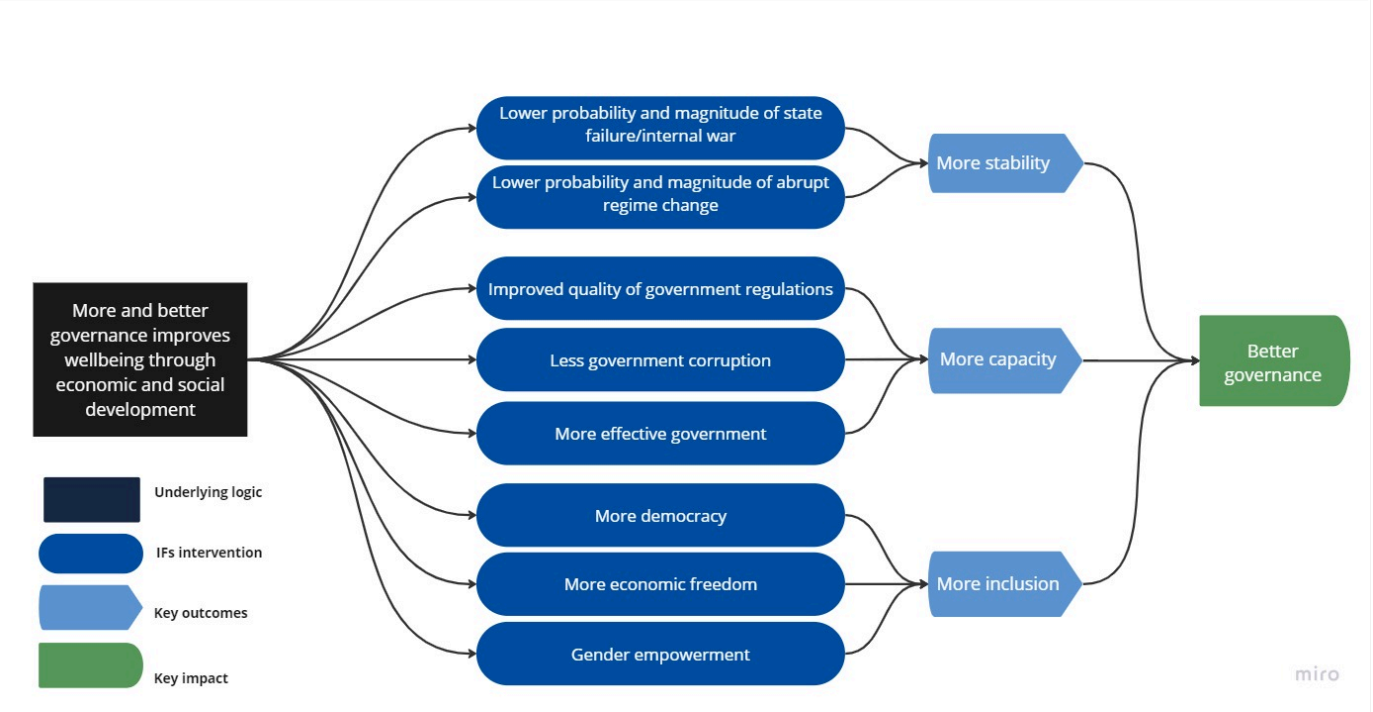


Chart 26 presents a summary chart that sets out the composition of the Governance scenario as modelled in IFs. Thinking of governance in terms of security, capacity and inclusion provides a useful lens to compare how countries progressed over time, as well as compare the state of governance between countries and groups of countries.

The stability dimension uses data from the Political Instability Task Force on:

- the probability and magnitude of state failure/internal war, and
- the probability and magnitude of abrupt regime change.

Capacity is enhanced by improving the quality of government regulation, government effectiveness (both from the Worldwide Governance Indicators) and reductions in corruption using data from Transparency International.

Inclusion improves as a result of:

- an improvement in levels of democracy using the Polity IV index applied to those countries that evidence a democratic deficit,
- an improvement in gender empowerment using the gender empowerment measure (GEM) from the United Nations Development Programme (UNDP), and
- more economic freedom (using the associated index from the Fraser Institute).

Visit the theme on Governance for a conceptualisation and details on the scenario structure and interventions.

Stability and better governance are generally prerequisites for other aspects of development as they ensure accountability, efficient allocation and distribution of state resources and encourage inflows of FDI. To emulate the sequential evolution of governance over time, IFs draw on the establishment of nation states in the Westphalian tradition that first created a security community (through internal oppression and war with others), built capacity (largely through the collection of taxes and the establishment of a coercive social contract) and then, in time, became more inclusive and eventually, democratic. Traditionally, these transitions occurred sequentially with progress in one dimension providing a basis for the next.

The process of externally imposed state formation during colonialism in Africa did not follow this process. The result was that many African countries do not comprise a security community and have limited capacity. Yet, they are required to democratise without the fundamentals of sufficient security and capacity being in place. The composite 'governance triangle' in IFs measures a state's progress using the average of these three indices. To this end, it includes an index (0 to 1) for each dimension, with higher scores indicating improved outcomes.

Mali's performance on the governance security index is marginally better than that of its peers on the continent. Its score of 0.67 for 2019 before the 2020 coup was 4.5% higher than the average of 0.64 for low-income countries in Africa. This is despite Mali's history of insecurity, political instability and the threat of terrorism and rebel groups. For instance, since 2012, Mali has experienced political instability, with two coups in August 2020 and May 2021 truncating the democratic processes in the country. The country's stability is also continuously threatened by internal armed conflict and attacks on civilians by security forces, rebel and militant groups leading to the displacement of people and loss of lives and livelihoods.[89] In 2022 alone, the clashes between the Islamic State in the Greater Sahara and Jama'at Nasr al-Islam wal Muslimin led to the displacement of over 30 000 Malians to Ménaka, in eastern Mali.[90]

Violence in the country has escalated since 2015, with various attacks linked to al-Qaeda and Islamic State leading to the deaths of thousands of people and displacement of over six million people.[91] Despite the presence of the UN peacekeepers, French troops and other missions, including the recent deployment of the Wagner private military company from Russia, the number of terror attacks and Malians joining insurgent groups in the country has steadily risen over the years.[92] The interim government has asked the UN peacekeeping mission known as MINUSMA, which has been in the country since 2013, to leave the country as a result of mistrust between the government and the mission. The UN Security Council subsequently voted to terminate its mission.[93] On the Current Path, it is projected that Mali's score on the governance security index will reach 0.73, compared to the average of 0.71 for low-income African countries, by 2043.

Regarding governance capacity, Mali's score in 2019 of 0.28 was about 12% higher than the average of low-income Africa but declines to 3% by 2043. The most important reason is that government revenue as a percentage of GDP for Mali (without aid) was 11.4% of GDP, exceeding the average of 9.7% of GDP of low-income countries in Africa. Similarly, the country's performance on the World Bank government effectiveness index is better than its peers. Its score of 1.4 in 2019 ranks it 11th of the 23 low-income countries and above the group average.

Despite the progress in government capacity, the country is still lagging behind in fighting corruption. Most of the corruption cases are through procurement. It currently ranks 137th out of 180 countries globally on the Transparency International Corruption Perception Index (CPI) with a score of 28. This is a seven-point decline from its peak of 35 in 2015.[94] Corruption permeates every state institution in the country, creating mistrust among the public. The 2019 global corruption barometer reports that 60% of Malians (almost a double of what was recorded in 2015) believed corruption has increased in the last 12 months.[95] The high level of corruption is likely to weaken government effectiveness in the country. On the Current Path, Mali's progress on the governance capacity index will be slower than the average for its income-group peers such that by 2043, its score of 0.34 will be almost equal to the average for low-income countries in Africa.

Just like the security and capacity index, Mali's performance on the Governance Inclusion Index is higher than its income-group peers in Africa. In 2019, Mali scored 0.49 on the inclusion index, which was about 16.7% above its income-group peers on the continent rated at 0.42. Mali's democracy score on the Polity index ranks ninth out of the 23 low-income countries in Africa, above the average for low-income African countries. However, it lags behind countries such as Guinea Bissau and Sierra Leone. The country also currently ranks 15th out of the 23 low-income countries, and by 2043 will deteriorate to 17th position on the economic freedom[96] index by the Fraser Institute.

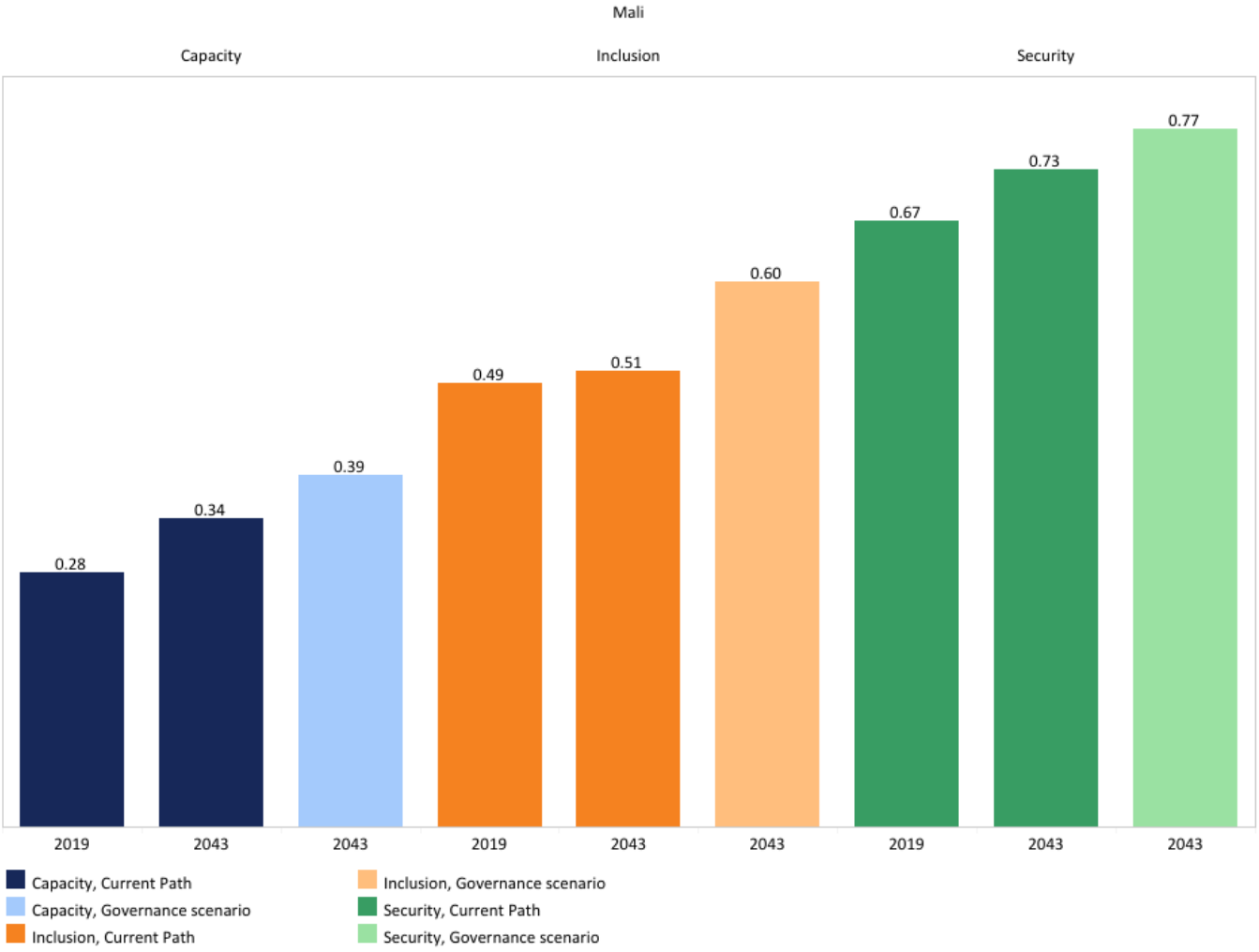
Mali ranked 19th out of the 23 low-income countries on the UNDP gender empowerment index in 2019. The 2020 Gender Inequality Index also ranked Mali 184th globally with gender-based violence and inequality still prevalent in the country.[97] Historically, female representation in government has been low in Mali and consistently below the 30% global benchmark. For instance, women's representation in the national parliament has declined since its peak of 12% in the 1990s.[98] Between 2010 and 2013, only 9.5% of seats in the national parliament were occupied by women.[99]

The marginalisation of women in government led to the enactment of the 2015 Gender Quota Law that requires at least 30% of females in nominated or elected positions. As a result, the 2020 elections witnessed the highest female representation of 29% in the national parliament.[100] Even with the quota rule, women are still underrepresented in almost all political spheres. Women make up 23.6% of the national government, 1% and 5% of interim administration at the regional and district levels, respectively. Also, only 6% of the National Council for Security Sector Reforms, 3% of the National Commission on Disarmament, Demobilization and Reintegration and 20% of the Truth, Justice and Reconciliation Commission are women.[101]

On the Current Path, Mali will progress slowly so that by 2043 the country's score on the Governance Inclusion Index will still be 6.3% below the average of low-income countries in Africa.

Chart 27: Composite governance index in Current Path vs Governance scenario, 2019-2043

Mali



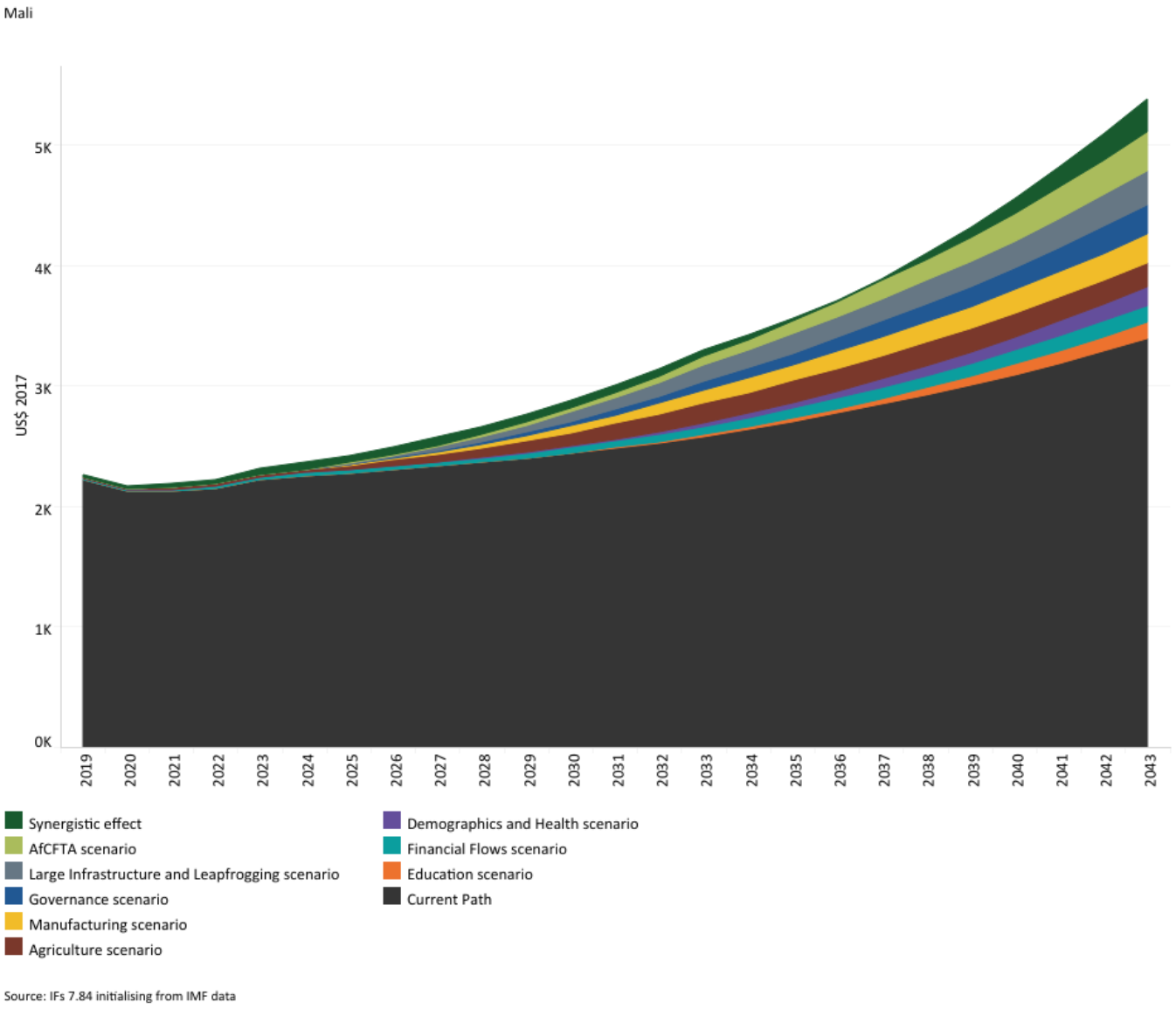
Source: IFs 7.84 initialising from WGI and TI data

Chart 27 presents progress with each of the three governance dimensions by 2043 in the Current Path and Governance scenario compared to 2019.

In the Governance scenario, Mali's score on the governance security index will improve to 0.77, which is about 6.2% above the Current Path forecast by 2043 and about 8.4% above the Current Path average of low-income Africa in the same year. Governance capacity is also expected to also improve in the Governance scenario, with its score increasing to 0.39 by 2043, constituting a 14.4% improvement above the Current Path forecast and 16.8% above the average of its income-group peers on the continent. In terms of inclusion, the Governance scenario will improve Mali's score on the Governance Inclusion Index by 19.4% above the Current Path forecast, reaching 0.60 by 2043. In the scenario, Mali's score is 26.9% higher than the average of low-income countries in Africa in 2043.

Scenario Comparisons

Chart 28: GDP per capita in Current Path and scenarios, 2019-2043



Source: IFs 7.84 initialising from IMF data

Chart 28 presents a stacked area graph of the contribution of each scenario to GDP per capita. The cumulative impact of better education, health, infrastructure, leapfrogging, etc. means an additional benefit in the integrated IFs forecasting platform that we refer to as the synergistic effect.

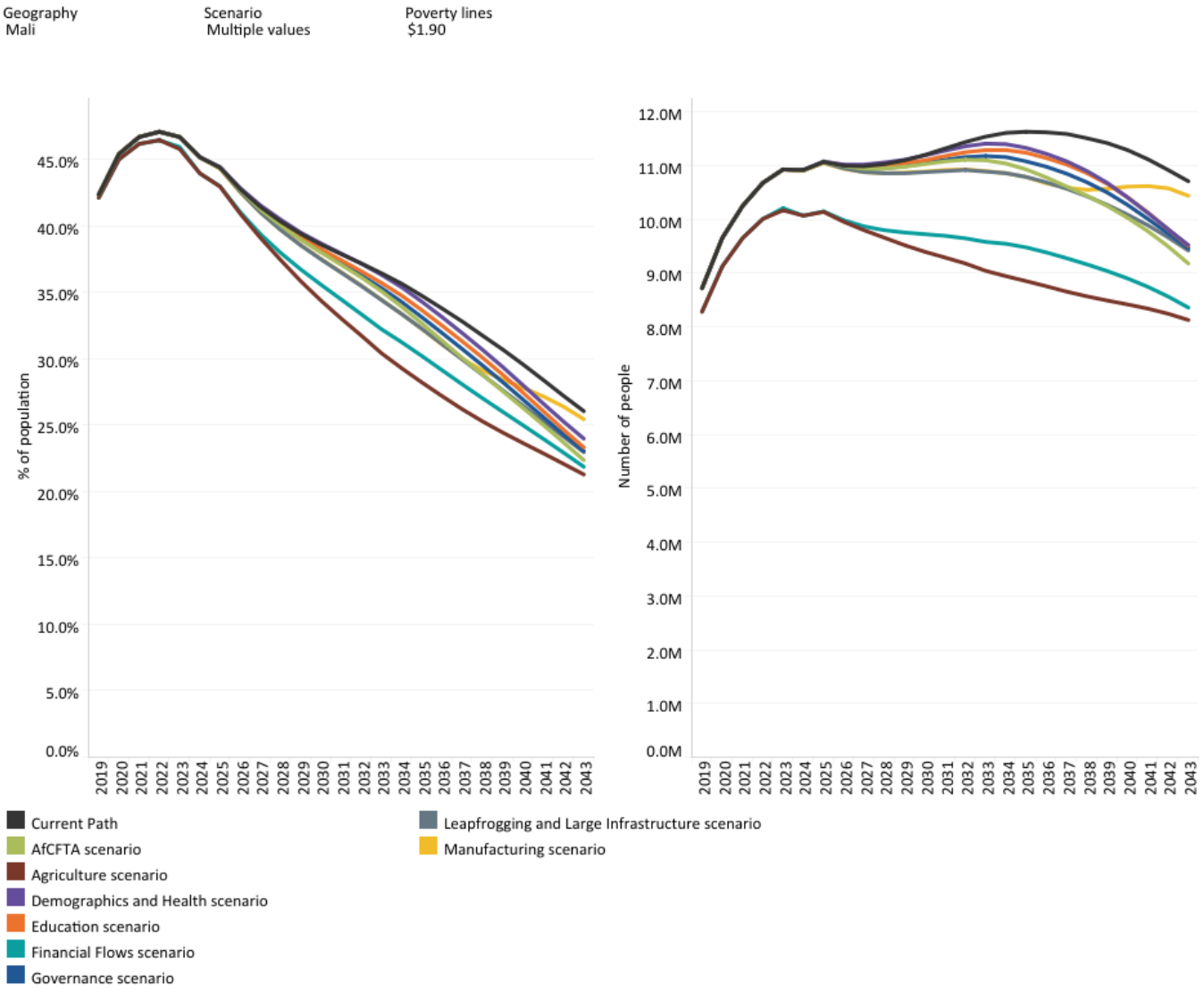
The scenarios with the greatest impact on GDP per capita in Mali by 2043 will be the AfCFTA scenario, followed by the Governance and Infrastructure scenarios. In the AfCFTA scenario, Mali's GDP per capita (PPP) will increase to US$3 714 by 2043, which represents an increase of US$326 (or 9.6%) compared to the projections on the Current Path in the same year. This shows that Mali has considerable potential to increase its GDP per capita if it takes advantage of the full implementation of the AfCFTA. The high impact of AfCFTA in improving the standard of living in Mali is not surprising, given that trade between African countries has considerable benefits. 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 Mali's exports, as it provides access to a much larger market and improves the country's manufacturing sector through competition. This could lead to more rapid economic growth and increased employment in key sectors.

In the Infrastructure scenario, Mali's GDP per capita is estimated to increase to US$3 665 by 2043. This is an increase of US$277 (or 8.2%) compared to the Current Path forecast. Expansion of modern infrastructure such as electricity and roads can improve the standard of living by stimulating the growth of other sectors such as education, health and industries. Also, advancements in digital infrastructure have the potential to increase GDP through their effect on reducing transaction costs for businesses. It can also help firms adopt efficient technologies, which can improve productivity and ultimately lead to economic growth. Moreover, if Malian authorities can formalise the huge informal sector through digitisation, productivity, GDP and government revenue can increase.

In the Governance scenario, GDP per capita for Mali is projected to rise to US$3 634 by 2043, representing a 7.3% increase over the Current Path forecast for that year. It means that the Governance scenario can raise GDP per capita in Mali by an additional US$246 by 2043. Good governance and political stability can undoubtedly inspire investor confidence in the economy and attract more FDI into Mali, which can lead to growth. Likewise, good governance in the form of adherence to the rule of law, reduced corruption and improved transparency and accountability can lead to more rapid economic growth. Therefore, it suggests that if authorities in Mali can reduce the levels of insecurity in the country and promote good governance, the country will be set on a path of sustained economic growth.

Chart 29: Poverty in Current Path and scenarios, 2019-2043



Source: IFs 7.84 initialising from UNPD population prospects estimate, WDI and PovcalNet data

Chart 29 presents the impact of each scenario on extreme poverty by 2043. The user can select the number of extremely poor people or the per cent 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:

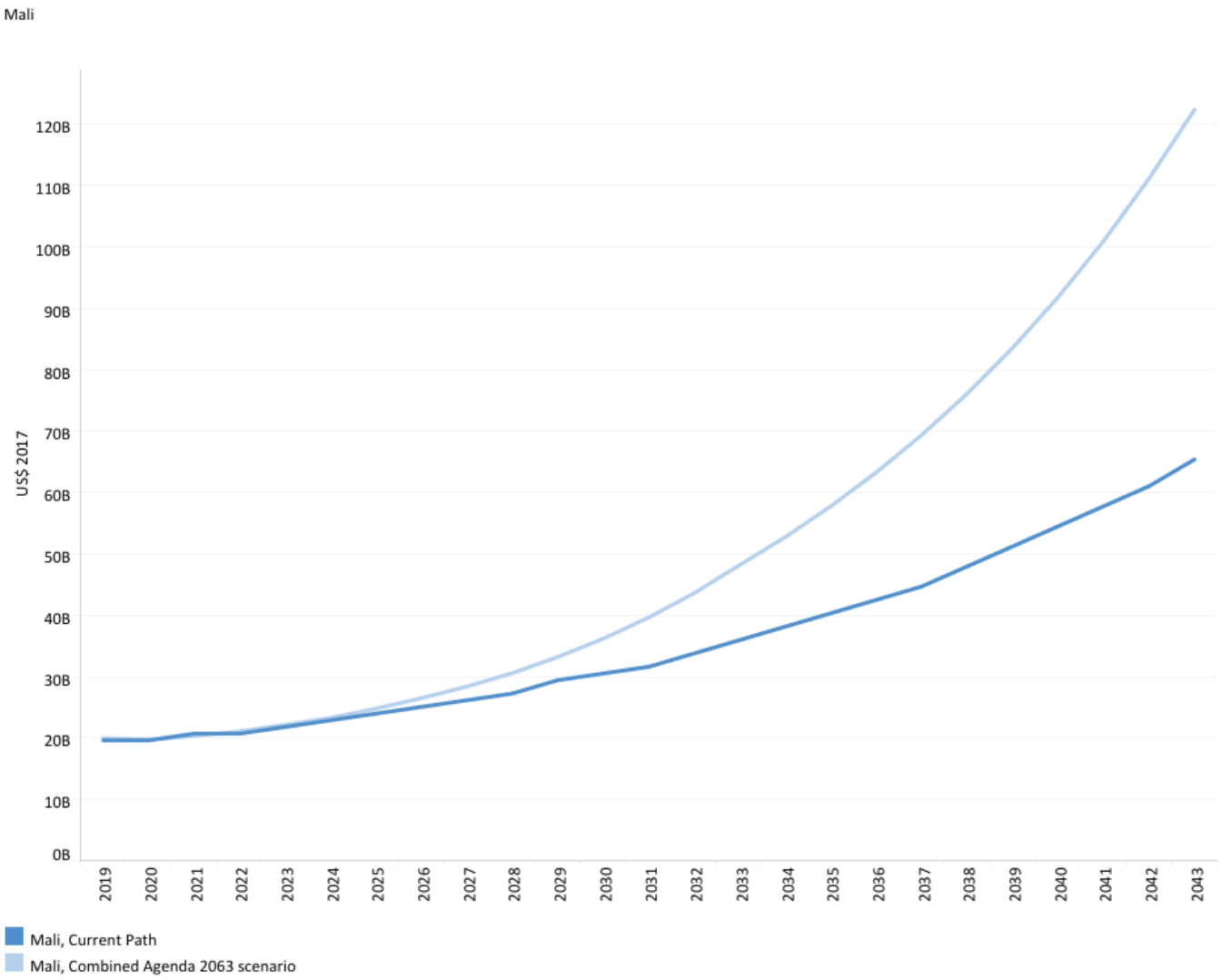
- US$3.20 for lower-middle-income countries, in 2017 values.
- US$5.50 for upper-middle-income countries, now US$6.85 in 2017 values.
- US$22.70 for high-income countries. The Bank has not yet announced the new poverty line in 2017 US$ prices for high-income countries.

The Agriculture scenario has the greatest potential to reduce extreme poverty in Mali. In the Agriculture scenario, the number of poor people is projected to decline to 8.1 million (equivalent to 21.3% of the population), compared to the Current Path forecast of 10.7 million people (26.1%) by 2043. It means that an agricultural revolution in Mali has the potential to reduce extreme poverty in Mali by an additional 2.6 million people. This is expected given that nearly 80% of the Malian population depend on the agricultural sector for their livelihoods. It therefore demonstrates the effectiveness of agriculture as an antidote to poverty, especially in rural areas, and underscores the importance of prioritising an agricultural revolution in Mali as a means of combating extreme poverty.

In the Financial Flows scenario, 8.4 million Malians (representing 22% of the total population) are expected to be living in extreme poverty by 2043, making it the scenario with the second largest impact on poverty reduction. This means that there will be 2.3 million fewer poor people in this scenario (or 4.2 percentage points below the Current Path forecast) compared to the Current Path. The huge impact of this scenario on poverty reduction in Mali demonstrates the importance of financial flows, particularly aid and remittances, in fighting extreme poverty in the country.

The AfCFTA scenario has the third largest impact on poverty reduction in Mali. In the scenario, 9.2 million people (constituting 22.4% of the population) are expected to live in extreme poverty by 2043. This will be 3.7 percentage points lower than the Current Path forecast, and equivalent to a reduction of about 1.5 million people living in extreme poverty. This further demonstrates that Mali stands to benefit substantially from the full implementation of the agreement.

Chart 30: GDP (MER) in Current Path and Combined Agenda 2063 scenario, 2019-2043



Source: IFs 7.84 intialising from IMF data

Chart 30 compares the size of the economy in the Current Path with the Combined Agenda 2063 scenario at market exchange rates (MER).

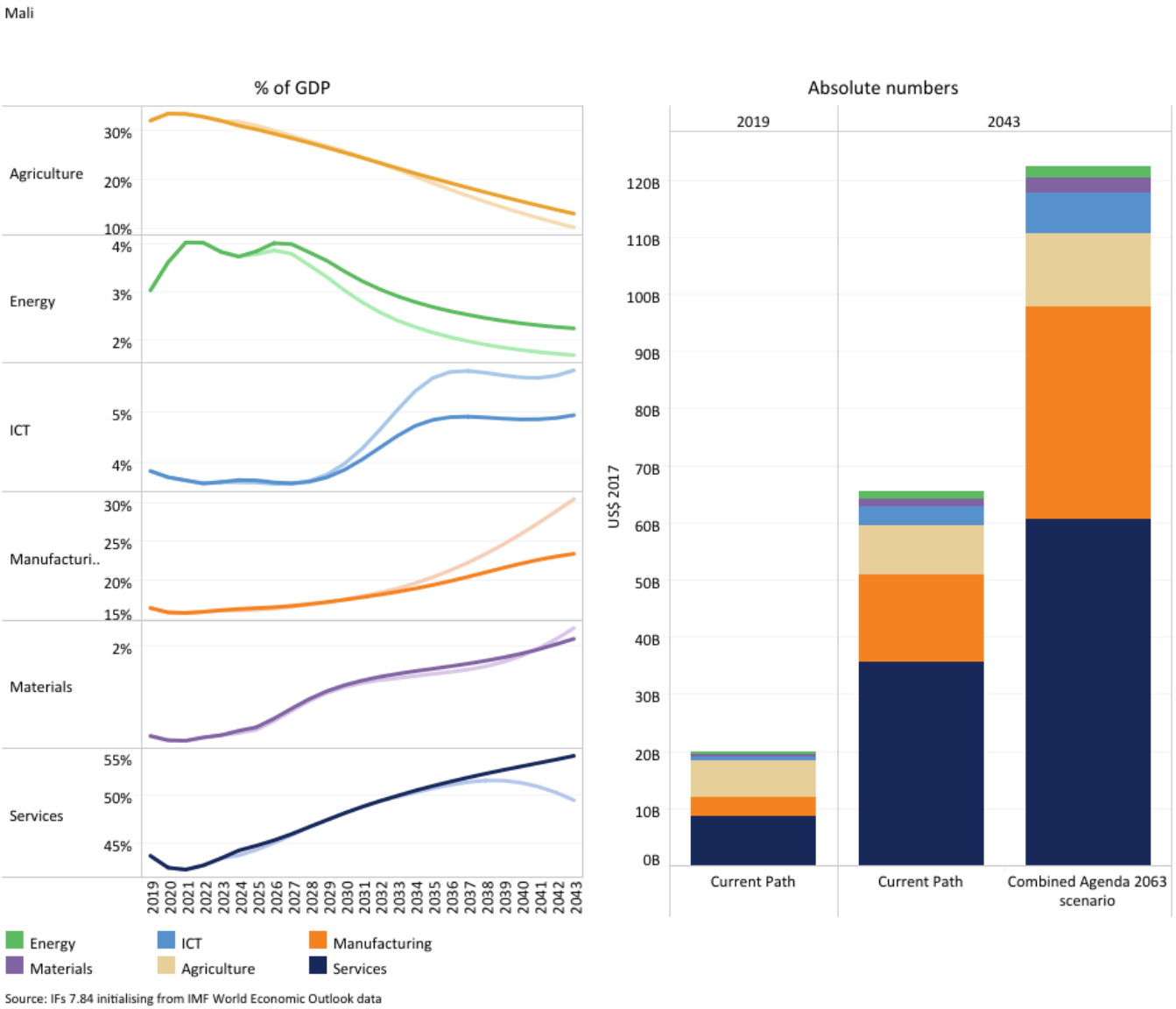
The Combined Agenda 2063 scenario consists of the combination of all eight sectoral scenarios, namely Governance, Demographics and Health, Education, Infrastructure/Leapfrogging, Agriculture, Manufacturing and Leapfrogging, AfCFTA and Financial Flows.

Mali's GDP is projected to rise to US$122.4 billion in the Combined Agenda 2063 scenario, representing an increase of 513% from 2019 to 2043. This will exceed the Current Path forecast of US$65.6 billion, meaning that the Combined Agenda 2063 scenario will increase the size of the economy by an additional US$56.8 billion by 2043—an increase of 86.6% compared to the Current Path forecast.

Similarly, in the Combined Agenda 2063 scenario, GDP per capita for Mali is estimated to increase to US$5 381 by 2043.

This will be US$1 994 higher than the projection of US$3 388 on the Current Path forecast, meaning that the materialisation of the Combined Agenda 2063 scenario could significantly improve the living standard of the Malian population. The projected GDP per capita in this scenario will be US$2 976 (or 54%) more than the Current Path forecast average for low-income countries in Africa by 2043. The massive economic growth projected in the Combined Agenda 2063 scenario indicates that an integrated development push across development sectors is the best way to achieve sustained inclusive growth and development in Mali.

Chart 31: Value added by sector in Current Path and Combined Agenda 2063 scenario, 2019-2043



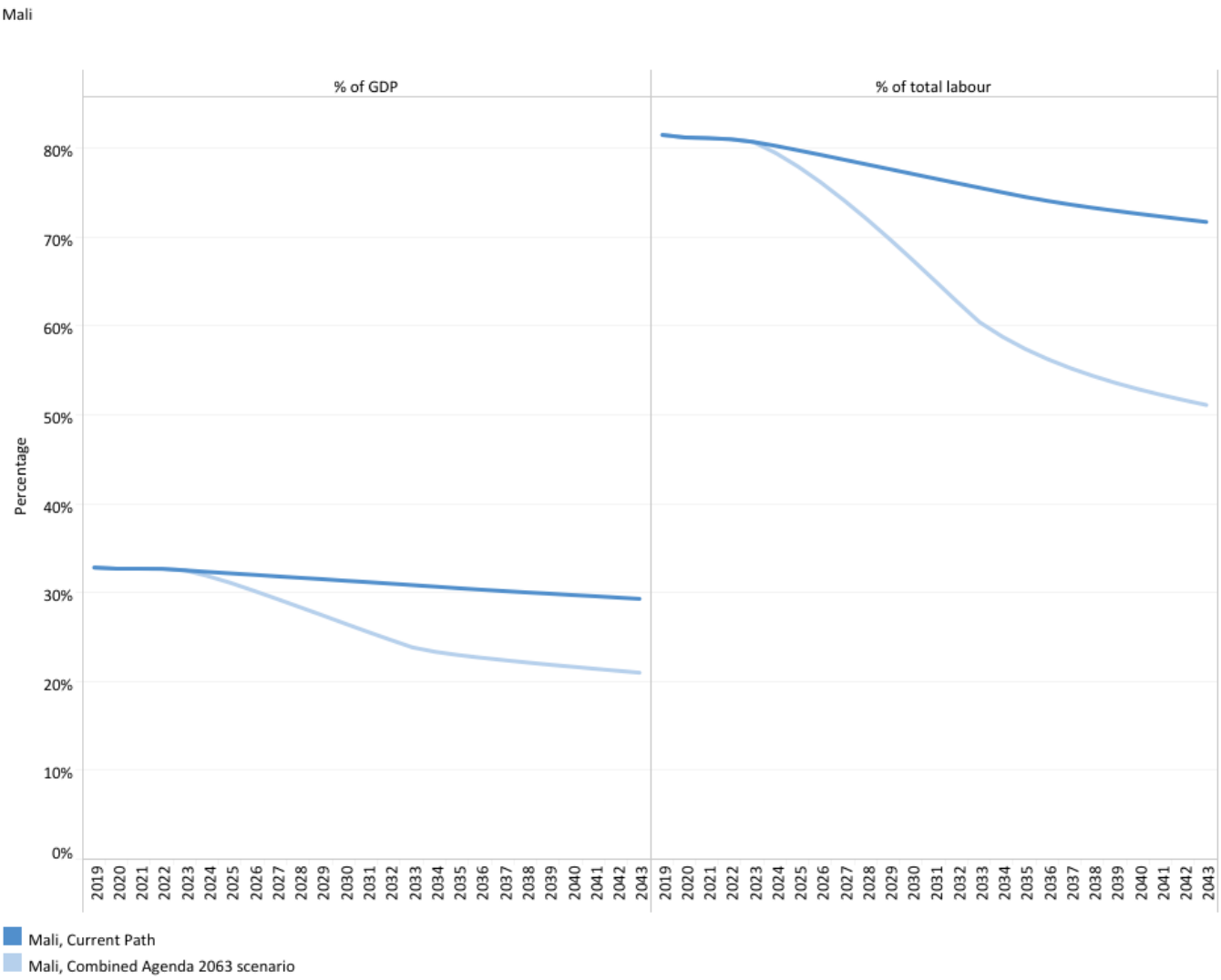
Source: IFs 7.84 initialising from IMF World Economic Outlook data

Chart 31 presents the change in the economy's structure, comparing the Current Path forecast with the Combined Agenda 2063 scenario from 2019 to 2043.

The structure of the Malian economy is expected to undergo significant transformation in the Combined Agenda 2063 scenario. By 2043, the service sector will still be the largest contributor to GDP at 49.5% (valued at US$60.6 billion), although this will be lower than the Current Path forecast of 54.2% (valued at US$35.6 billion). The manufacturing sector

will be the second largest contributor to GDP in the scenario by 2043 with a share of 30.5% (equivalent to US$37.3 billion)—higher than the Current Path forecast of 23.4% (US$15.3 billion). It means that the manufacturing sector stands to benefit and grow in the Combined Agenda 2063 scenario. The share of the agriculture sector will decline to 10.4% (valued at US$12.7) in the Combined Agenda 2063 scenario compared to 13.1% (valued at US$8.6) in the Current Path in 2043. In the Combined Agenda scenario, the share of ICT and materials will rise above the Current Path to constitute 5.8% and 2.2%, respectively, although the share of the energy sector will decline below the Current Path to 1.7%. This is a result of the contribution of each sector increasing in the scenario, and, hence, the total size of the economy increasing.

Chart 32: Informal sector in Current Path and Combined Agenda 2063 scenario, 2019-2043



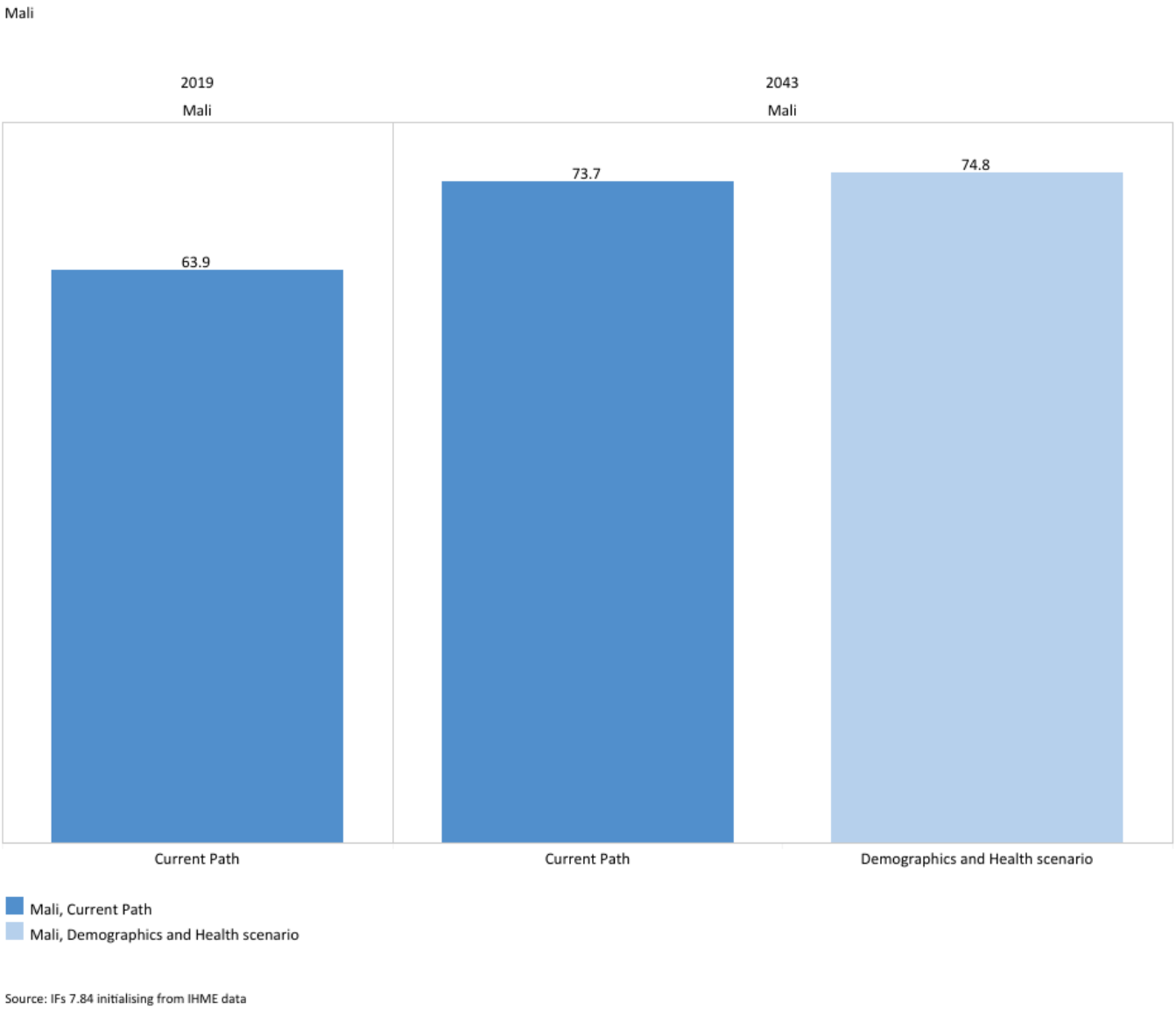
Source: IFs 7.84 initialising from Elgin and Oztunali (2008), and Schneider and Enste (2012) data

Chart 32 presents the size of the informal sector as a share of GDP and size of the informal labour force. 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 Mali will decline to 21% of GDP although its absolute value will rise to US$25.7

billion. At this rate, the contribution of the informal economy will be lower than the projected at 29.3% (valued at US$19.2 billion) on the Current Path and below the average for low-income countries in Africa at 27.5%. Likewise, the size of the informal labour force in Mali will decline. By 2043, there will be about 1.2 million fewer labour in the informal sector in the Current Path as compared to the Current Path. This will correspond to informal labour constituting 51% of total labour in the Combined Agenda 2063 scenario instead of 72% in the Current Path, reflecting the anticipated improvement in state capacity through more tax revenue.

Chart 33: Life expectancy in Current Path and Combined Agenda 2063 scenario, 2019-2043



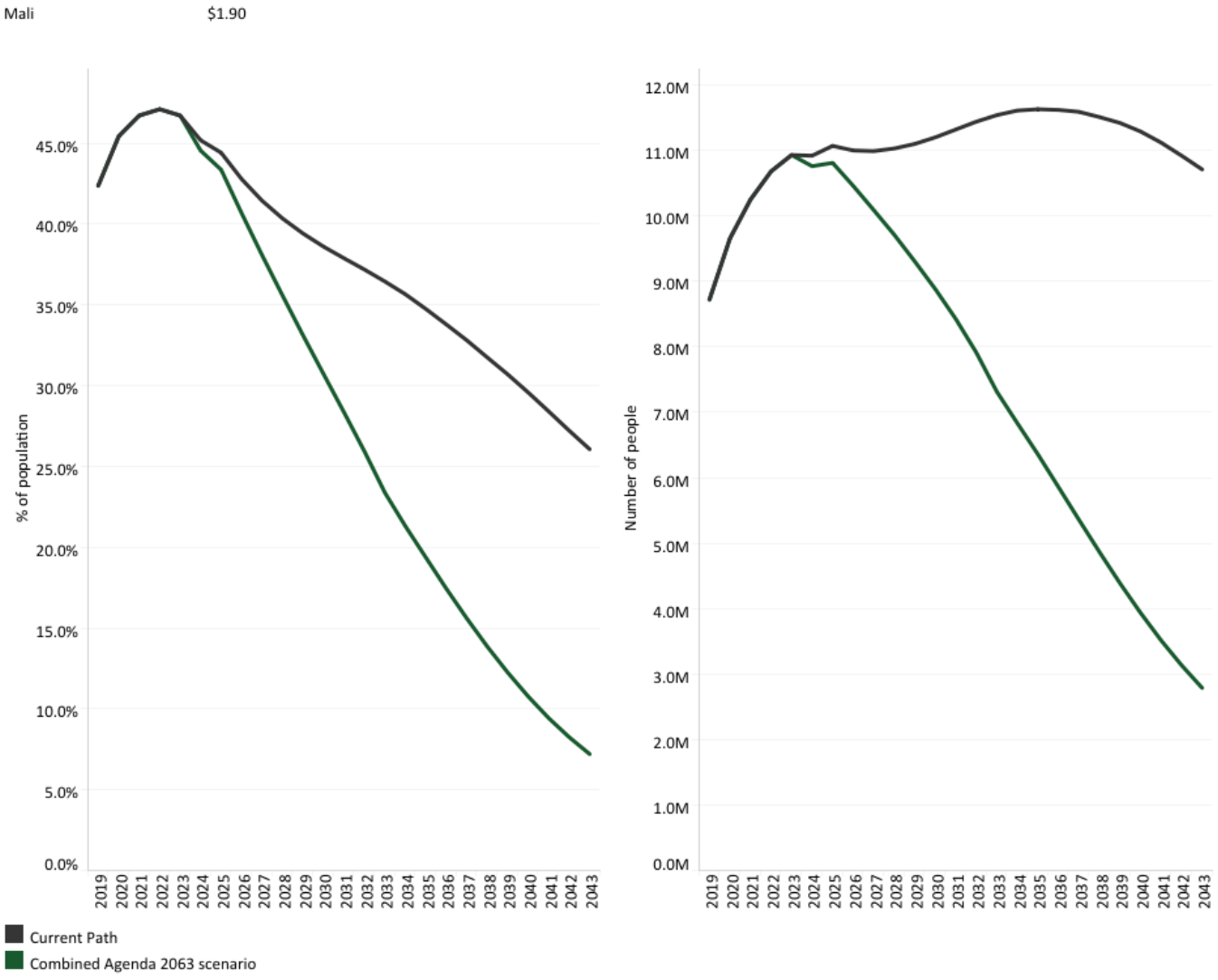
Source: IFs 7.84 initialising from IHME data

Chart 33 compares life expectancy in the Current Path forecast with the Combined Agenda 2063 scenario.

Life expectancy measures the average lifespan of individuals in a country. In 2019, the average life expectancy at birth in Mali was 63.9 years, which was about 1.8 years higher than the average for the country's income-group peers in Africa. Women in Mali generally live longer (64.9 years) than men (62.9 years). On the Current Path, life expectancy will increase to 73.7 years by 2043, which will be higher than the average of 70.3 years for low-income African countries.

In the Combined Agenda 2063 scenario, life expectancy will increase to 75.7 years by 2043, which will be two years more than the country's Current Path forecast in the same year. In both the Combined Agenda and the Current Path forecast, women will be expected to live more than two years longer than men by 2043.

Chart 34: Poverty in Current Path and the Combined Agenda 2063 scenario, 2019-2043

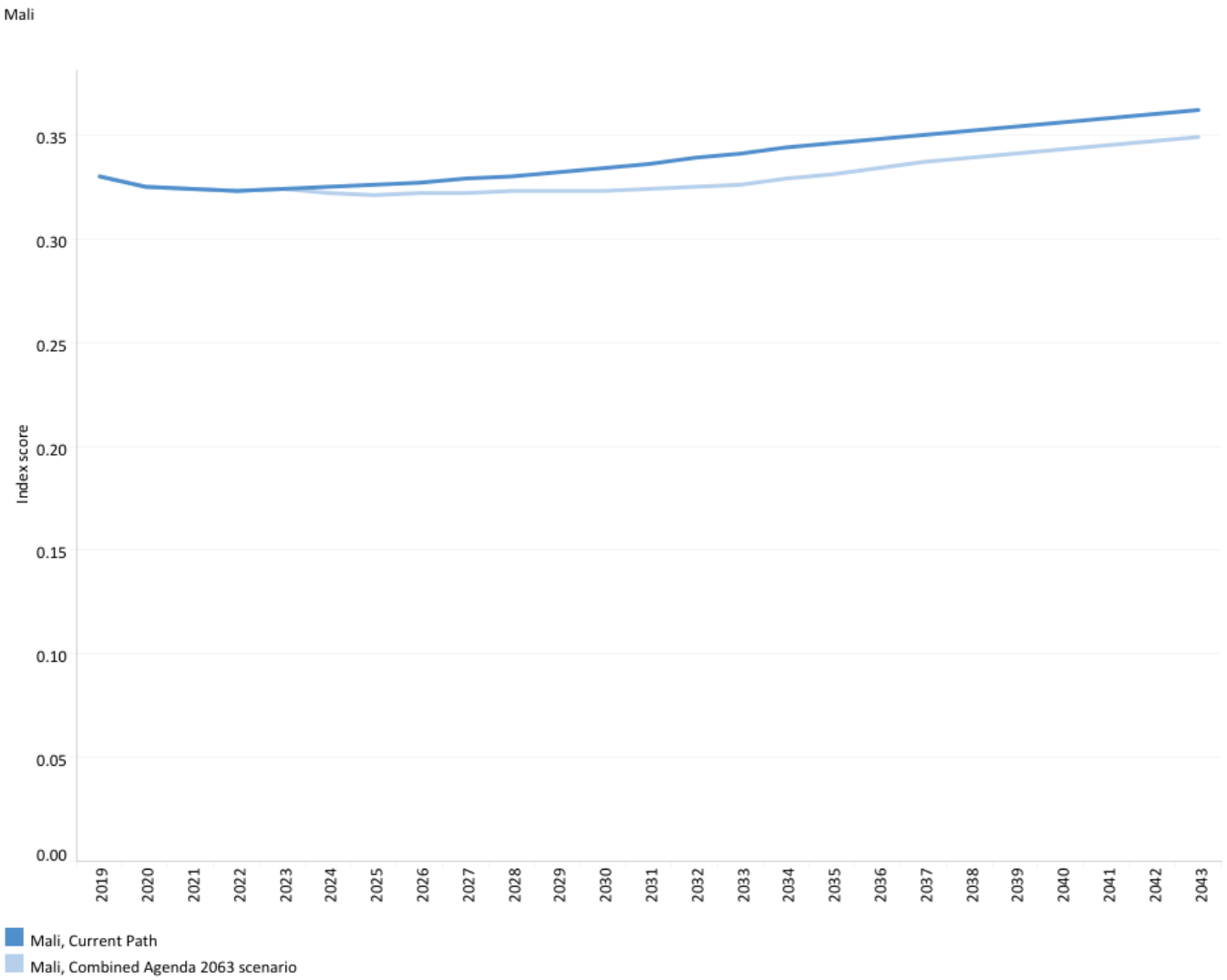


Source: IFs 7.84 initialising from UNPD population prospects estimate, WDI and PovcalNet data

Chart 34 presents the impact of each scenario on extreme poverty by 2043. The user can select the number of extremely poor people or the per cent of the population.

In the Combined Agenda 2063 scenario, both the number and the proportion of poor people in Mali will significantly decline. By 2043, about 2.8 million people in the country (7.2% of the population) will be living in extreme poverty. This means that, compared to the Current Path forecast, 7.9 million more people could be lifted out of poverty by 2043 in this scenario—a decline of 18.9 percentage points compared to the Current Path forecast of 26.1% in 2043. In addition, the projected proportion of poor people in Mali in the Combined Agenda 2063 scenario will be far lower (7.9 percentage points lower) than the average of 18.1% of low-income African countries by 2043.

Chart 35: Domestic Gini in Current Path and the Combined Agenda 2063 scenario, 2019-2043



Source: IFs 7.84 initialising from WDI data

Chart 35 compares the Gini coefficient in the Current Path forecast with the Combined Agenda 2063 scenario.

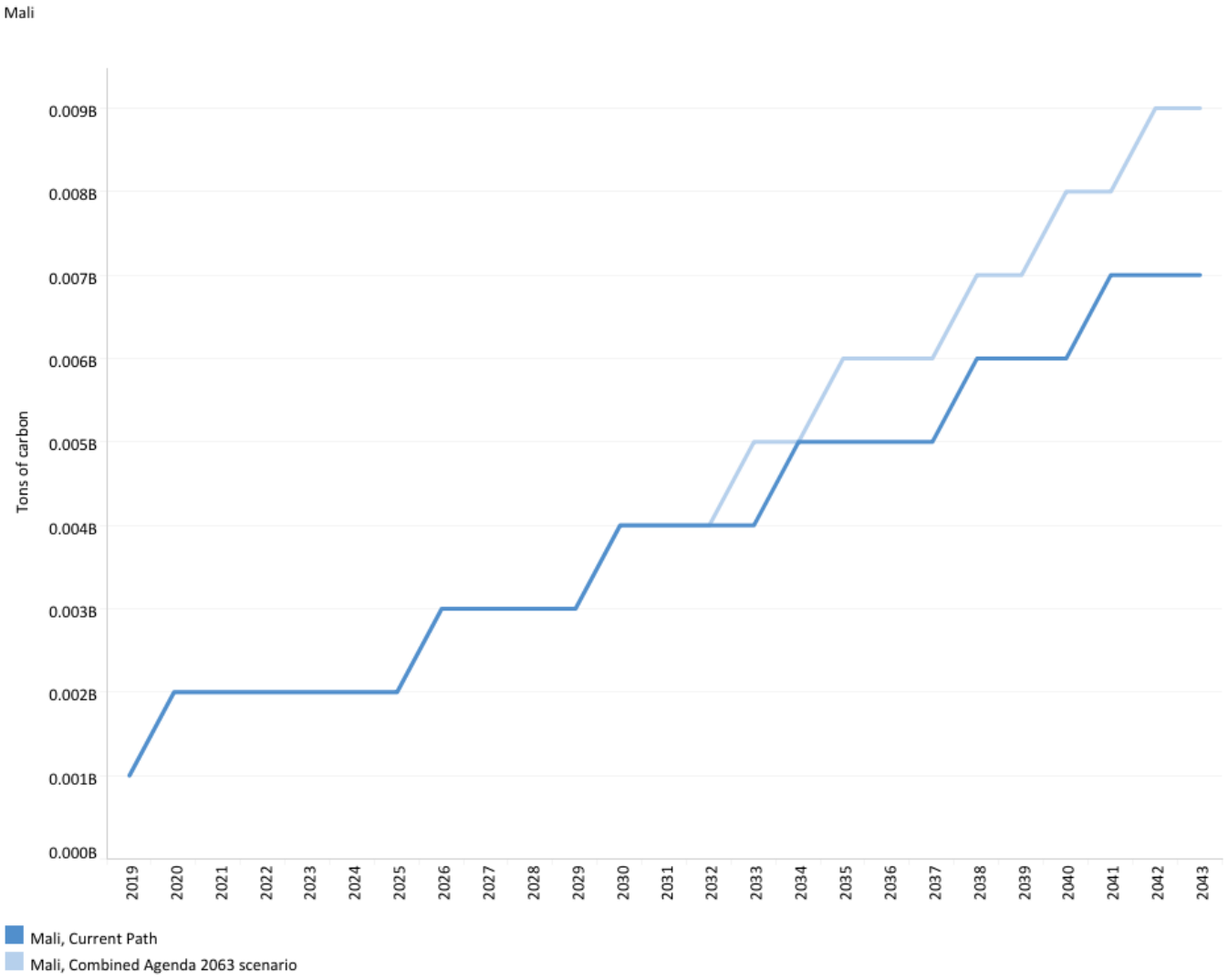
The high level of income inequality has many negative effects including a breakdown of social structure and cohesion, which can result in instability. The Gini coefficient is the standard measure of the level of inequality in a country.[102] Historically, inequality in Mali has been lower than the average of its income-group peers in Africa.

In 2019, Mali's Gini coefficient was 0.33 compared to the average of 0.40 of the low-income country in Africa. This makes Mali the least unequal country among the 23 low-income countries in Africa and the sixth least unequal in Africa. The Agriculture scenario has the greatest potential to reduce income inequality in Mali followed by the Education and Financial Flows scenarios. On the Current Path, income inequality in Mali is projected to increase with a Gini coefficient of 0.36 by 2043.

In the Combined Agenda 2063 scenario, inequality in Mali will be slightly lower than the Current Path forecast with a Gini

coefficient of 0.35 by 2043. This means that economic growth in the Combined Agenda 2063 scenario will be broadly shared.

Chart 36: Carbon emissions in Current Path and in Combined Agenda 2063 scenario, 2019-2043
Million tons of carbon (note, not CO2 equivalent)



Source: IFs 7.84 initialising from Carbon Dioxide Information Analysis Center data

Chart 36 compares carbon emissions in the Current Path forecast with the Combined Agenda 2063 scenario.

Since carbon dioxide (CO_2), carbon monoxide (CO) and methane (CH_4) have different molecular weights, IFs uses carbon. Many other sites and calculations use CO_2 equivalent.

Like most African countries, Mali's emission of carbon is very low. In 2019, Mali released about 1.4 million tons of carbon from fossil fuel use, reflecting the low levels of carbon emissions in the country. This makes it the 28th largest emitter of carbon in Africa and 13th largest emitter among the 23 low-income African countries.

According to the Greenhouse Gas Emissions Factsheet by ClimateLinks, deforestation is one of Mali's main causes of

carbon emissions, accounting for around 17% of all greenhouse gas emissions. Logging, fuelwood use and the spread of agriculture are a few examples of the causes of deforestation. In addition to increasing CO_2 emissions, the loss of forest cover diminishes the country's capacity to absorb carbon through natural carbon sinks, worsening Mali's overall carbon footprint.[103]

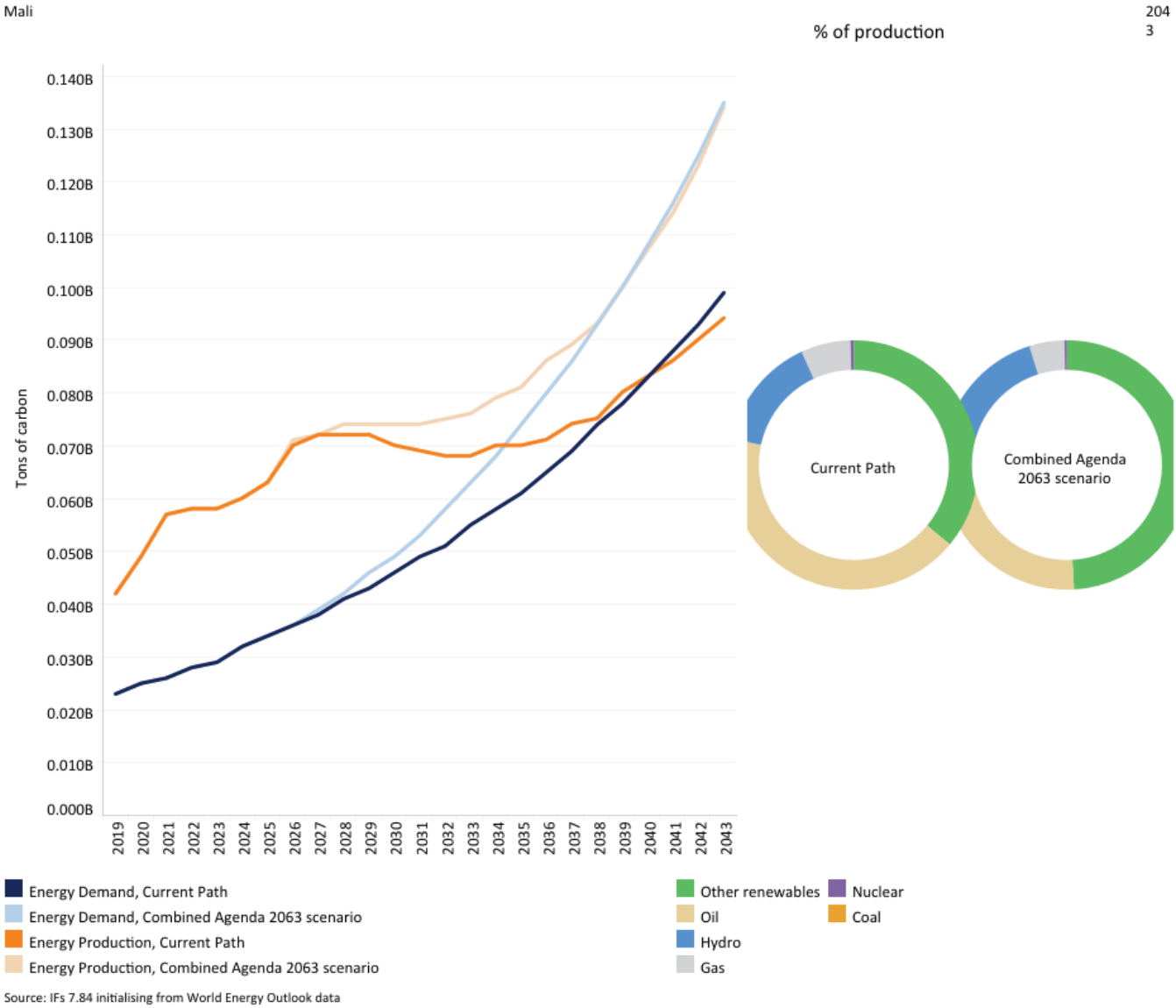
The energy sector in Mali is a substantial source of carbon emissions, mainly as a result of the country's reliance on conventional biomass for cooking and heating. Most people still use firewood and charcoal as their primary energy sources in rural regions, which increases indoor air pollution, harms people's health and increases carbon emissions.[104] Inadequate public transportation infrastructure, the use of a large number of outdated and inefficient automobiles and a lack of vehicle emission requirements are the leading causes of the transportation sector's contribution to carbon emissions. These elements raise fuel consumption, which in turn causes a rise in CO_2 emissions.[105]

Mali has acted to reduce carbon emissions and prepare for the effects of climate change in order to deal with these issues. The country pledged in its Intended Nationally Determined Contributions (INDC) to cut emissions by 27% from predicted levels by 2030 compared to emissions of the status quo. Agriculture, energy and Land Use Change and Forestry (LUCF) each have emission reduction commitments of 29%, 31% and 21%, respectively.[106] To decrease its reliance on fossil fuels, the country has been emphasising the promotion of renewable energy sources like solar and wind. The demand for biomass and the resulting carbon emissions have been decreased by initiatives that have been put in place to increase access to cleaner cooking technology. Furthermore, in an effort to stop deforestation, Mali has been pursuing sustainable land management techniques.[107]

On the Current Path, carbon emissions from fossil fuels are projected to increase more than fivefold to 7.2 million tons by 2043 from a low base in 2019. The Manufacturing and AfCFTA scenarios are the most carbon-intensive as they involve aggressive manufacturing of low-end manufacturing goods that will imply more fossil fuel use. On the other hand, the Large Infrastructure and Leapfrogging, Financial Flows and the Agriculture scenarios are the least carbon-intensive scenarios in Mali.

In the Combined Agenda 2063 scenario, Mali's total carbon emissions will rise to 9 million tons—25% higher than what is estimated in the Current Path forecast in the same year. The materialisation of the Combined Agenda 2063 and achieving sustainable economic development will come at the cost of more carbon emissions in Mali. However, the country can rely on its huge renewable energy potential to pursue a green development pathway.

Chart 37: Energy demand and production by type in Current Path and Combined Agenda 2063 scenario, 2019-2043



Source: IFs 7.84 initialising from World Energy Outlook data

Chart 37 compares energy demand and production in the Current Path forecast with the Combined Agenda 2063 scenario. 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.

In 2019, energy demand slightly exceeded production. In the Current Path forecast, demand is expected to significantly outpace production by 2043, creating an energy deficit. According to the IFs forecast, the total energy produced in Mali in 2019 was equivalent to 21.2 million BOE. In the same period, total energy demand of 23.5 million BOE was slightly higher than total production. On the Current Path, total energy demand is projected to outgrow production so that by 2043, excess energy demand will be equivalent to 51.9 million BOE.

The main source of energy in Mali is oil, followed by gas and hydro. In 2019, the total amount of oil produced in the country amounted to 10 million BOE, constituting 47.8% of total energy production. By 2043, the total amount of oil

produced is projected to double to 20 million BOE, with its share declining to 41.4% of total energy production on the Current Path. Gas production constituted 45.6% (almost 10 million BOE) of total energy production in 2019 but is projected to rapidly decline to about 5.9% (valued at 300 000 BOE) in 2043 on the Current Path. Hydro, which in 2019 constituted just 4.8% of total production (300 000 BOE), is projected to rise to 15.7% by 2043 in the Current Path. Other renewable energy production is currently low, estimated at 1.6% of total production is projected to grow rapidly to constitute 36.4% of total energy production (17 million BOE) by 2043 in the Current Path. In 2019, bioenergy accounted for 96% of the total renewable energy supply in the country.[108]

The Combined Agenda 2063 scenario shows an increase in energy demand, creating a larger energy deficit, with renewable energy becoming the dominant energy source, surpassing oil and gas. In the scenario, energy demand in Mali will jump to 135 million BOE, which will be 35.9 million BOE more than the Current Path forecast. Although the total energy production of 66.8 million BOE in the Combined Agenda 2063 scenario will be 19.5 million BOE more than the Current Path forecast, it will fall short of the total demand. Indeed, by 2043, the excess demand for energy of 68.3 million BOE will be 31.6% higher than the Current Path projections.

The share of other renewable energy in total energy production in the country will rise significantly to constitute half of total energy production to become the leading contributor. This will be 20 percentage points more than its contribution to total energy production in the Current Path. The share of hydro and total production in the scenario will also be slightly above its contribution to total energy production in the Current Path. Consequently, the contribution of oil and gas to energy production in the scenario will be 12 and 1.6 percentage points, respectively, below the Current Path by 2043.

Annexure: List of Interventions within IFs

- Mali Scenario

Mali Scenario

Project Data File

All interventions start in 2024 and interpolate to 2033 and then maintained afterwards unless otherwise stated.

Name and Description	Adjustments within IFs 7.84	Benchmarking and Justification
GDP growth rates (gdprext)	2022 = 3.7%; 2023 = 5.0%; 2024 = 5.1%	Current Path adjustment based on the recent IMF GDP growth projections for Mali.
Governance scenario		
Democracy multiplier (democm)	Interpolate to 1.12	To improve the democracy score in Mali. Although Mali's democracy score is above the average for low-income African countries, it ranks

		ninth out of the 23 low-income countries in Africa and lags behind countries such as Guinea Bissau and Sierra Leone. Also, the 2022 coup in the country has the potential to derail democratic progress. Historically, Burkina Faso improved its democracy by 60% between 2008 and 2018. In the Governance scenario, democracy in Mali will improve by 14.8% between 2024 and 2033. By 2043, Mali's score in the scenario will be 17% above the Current Path forecast and 55.2% higher than the average for low-income countries in Africa. However, this will still be behind Sierra Leone.
Economic freedom (econfreem)	Interpolate to 1.12	Rwanda improved its score by about 23% between 2000 and 2010. Mali currently ranks 15th out of the 23 low-income countries and by 2043 will deteriorate to 17th position on the economic freedom index by the Fraser Institute. The average score for Mali increases by about 16.5% between 2024 and 2033 in this intervention. By 2043, Mali's score on the economic freedom index will be 17.3% more than the Current Path forecast and about 11% above average for low-income countries in Africa. However, Mali's score will still be below countries such as Uganda, Rwanda and The Gambia.
Gender Empowerment (gemm)	Interpolate to 1.25	Between 1995 and 2009, gender empowerment improved by 126% in Ethiopia. Mali currently ranks 19th out of the 23 low-income countries on the UNDP gender empowerment measure. Between 2024 and 2033, the intervention will improve gender empowerment by 24.1%, which is above the Current Path forecast but will still be 15.3% behind the average of low-income African countries.

Government corruption multiplier (govcorruptm)	Interpolate to 1.15	Mali currently ranks 137th (out of 180 countries) globally on the corruption perception index (CPI) with a score of 28. This is a seven-point decline from its peak of 35 in 2015. As a benchmark, Tanzania improved its transparency by 58% between 1998 and 2008. The intervention improves transparency in Mali by about 23.4% between 2024 and 2033. By 2043, Mali's score will be 27.1% higher than the Current Path forecast and 35.5% above the average for low-income countries in Africa. Nonetheless, Mali's performance on this index in the scenario will still be lower than Rwanda and Burkina Faso.
Government regulatory quality (govregqualm)	Interpolate to 1.15	Between 1996 to 2006, Rwanda increased its average score on the governance regulatory quality index by about 59%. Mali has the fourth highest score on the governance regulatory quality index behind Rwanda, Uganda and Burkina Faso. However, its Current Path progress will be slow compared to its peers, thereby moving it to the seventh position by 2043. The scenario improves government regulatory quality by 5.5% from 2024 to 2033. By 2043, Mali's score on the government regulatory score will be above the average for low-income countries but lower than income-group peer countries such as Rwanda.
Government effectiveness multiplier (goveffectm)	Interpolate to 1.15	Historically, Rwanda improved its government effectiveness by 66% from 1996 to 2006. Mali currently ranks 11th rank out of the 23 low-income countries on the World Bank government effectiveness index. The intervention increases Mali's score by 47.2% between 2024 and 2033. However, it will still be behind the performance of Rwanda by 2043.

State failure/internal war, addition – probability (sfintlwaradd)	Interpolate to 0.4	Between 1990 and 2000, Rwanda reduced the probability of state failure by 100%. Likewise, Uganda was able to reduce it by 100% between 2006 and 2016. There is a high level of insecurity in Mali from possible threats of terrorism and political instability. This intervention reduces the risk of internal war in Mali.
State failure/internal war, multiplier – magnitude (sfintwarmagm)	Interpolate to 0.8	Between 1990 and 2000, Rwanda reduced the probability of state failure by 100%. Likewise, Uganda was able to reduce it by 100% between 2006 and 2016. There is a high level of insecurity in Mali from possible threats of terrorism and political instability. This intervention reduces the risk of internal war in Mali.
State failure through instability (abrupt regime change). Event occurrence (SFINSTABALL)	Africa: Initial value in 2017 set to 0.05	Between 1990 and 2000, Rwanda reduced the probability of state failure by 100%. Likewise, Uganda was able to reduce it by 100% between 2006 and 2016. There is a high level of insecurity in Mali from possible threats of terrorism and political instability. This intervention reduces the risk of internal war in Mali.
State failure through instability (abrupt regime transition), magnitude (SFINSTABMAG)	Africa: Initial value in 2017 set to 0.1	Between 1990 and 2000, Rwanda reduced the probability of state failure by 100%. Likewise, Uganda was able to reduce it by 100% between 2006 and 2016. There is a high level of insecurity in Mali from possible threats of terrorism and political instability. This intervention reduces the risk of internal war in Mali.
Demographics and Health scenario		

Contraception use multiplier (contrusm)	Interpolate to 1.4	To reduce the total fertility rates among women in Mali. The use of modern contraceptives among fertile women in Mali is very low, currently estimated at about 19%, and ranks 17th below the average among the 23 low-income countries in Africa. Consequently, the total fertility rate among fertile women in Mali is the second highest in African countries only below Niger. Rwanda increased modern contraceptive use from 17% in 2005 to 52% in 2015. The intervention increases contraception use by 72% between 2024 and 2033. By 2043, modern contraceptive use in Mali will reach 49.5% and will be 44% above Current Path close to the average for its income-group peers in Africa.
Population with access to piped water (watsafem)	Interpolate to 1.2	Between 2010 and 2020, Ethiopia increased its population with access to piped water by 93%, and DR Congo by nearly 70%. Mali currently ranks the third highest in access to piped water connection among the low-income countries in Africa at 48% behind The Gambia and Eritrea. However, on the Current Path, the country is projected to fall to eighth position. The intervention improves access to piped water by 23.7% between 2024 and 2033. By 2043, about 70% of Malians will have access to piped water in this scenario compared to the 62% in the scenario. Although this will be higher than the average for low-income countries, it will still be behind the access rate in countries such as The Gambia, Eritrea and Rwanda.
Population with access to improved sanitation (sanitation-improved)	Interpolate to 1.2	Mali improved its population with access to improved sanitation by 87% between 2000 and 2010. With about

		44% of the population having access to improved sanitation, Mali ranks fourth among low-income countries in Africa. However, by 2043, Mali's performance will drop to seventh position on the Current Path. In this scenario, Mali will increase its population with access to improved sanitation by an extra 18.7% from 2024 to 2033 such that by 2043, 76.5% of Malians will have access to improved sanitation. Despite the progress in the scenario, it will still be lower than countries such as Rwanda, Eritrea and The Gambia in 2043.
Maternal mortality ratio multiplier (matmortatiom)	Interpolate to 0.75	Between 2000 and 2010, Rwanda reduced its maternal mortality rate by over 200%. The maternal mortality ratio in Mali is above the average for low-income countries in Africa and ranks 10th highest among the group. The intervention will reduce the maternal mortality rate in Mali by 86.4% between 2024 and 2033. By 2043, the maternal mortality rate in Mali will be 50% lower than on the Current Path. However, this will still be higher than 11 of its income-group peers such as Rwanda, Mozambique and Malawi.
Mortality for children under five (hlmortcdchldm)	Interpolate to 0.85	Between 2000 and 2010, Rwanda reduced the under-five mortality rates by over 200%. Mali has the third highest under-five mortality rate among the 23 low-income countries in Africa. The intervention will reduce under-five mortality in Rwanda by 88.7% between 2024 and 2033. By 2043, the under-five mortality rate will be 30.5% lower than the Current Path and 21.2% below the average for low-income countries in Africa. However, it will still be higher than seven other countries such as Eritrea and Rwanda.

Mortality multiplier (hlmortm) (AIDS)	Interpolate to 0.85	Burkina Faso reduced AIDS-related deaths by 66% between 2004 and 2014. The Demographics and Health scenario will reduce AIDS-related deaths in Mali by 72.1% between 2024 and 2033. By 2043, death from AIDS-related deaths in Mali will be 31.3% below the Current Path forecast.
Mortality multiplier (hlmortm) (diarrhoea)	Interpolate to 0.9	In the past, Uganda was able to reduce mortality from diarrhoea by 42% between 1998 and 2008. The intervention will reduce death from diarrhoea in Mali by 37.3% between 2024 and 2033. By 2043, death from diarrhoea in Mali will be 29.2% lower than in the Current Path forecast.
Mortality multiplier (hlmortm) (malaria)	Interpolate to 0.85	Between 2007 and 2017, Guinea was able to reduce mortality from malaria by 72%. The intervention will reduce deaths from malaria in Mali by 108% between 2024 and 2033. By 2043, deaths from malaria in Mali will be 49.5% lower than the Current Path forecast.
Mortality multiplier (hlmortm) (respinfection)	Interpolate to 0.9	Between 2010 and 2020, Malawi reduced deaths from respiratory infection by 40%, and the intervention is poised to decrease deaths in Mali by 91.3% between 2024 and 2033. By 2043, deaths from respiratory infections in Mali will be 30.3% lower than in the Current Path forecast.
Mortality multiplier (hlmortm) (diabetes)	No intervention	Mali has the lowest rate of diabetes among the 23 low-income countries in Africa.
Mortality multiplier (hlmortm) (OthCommumDis)	Interpolate to 0.9	Between 2007 and 2017, Ethiopia reduced deaths from other communicable diseases by about 40%. The intervention will reduce deaths from communicable diseases

		in Mali by 63.8% between 2024 and 2033. By 2043, deaths from other communicable diseases will be 48% lower than the Current Path forecast.
Mortality multiplier (hlmortm) (OtherNonComm)	Interpolate from 1 to 0.75	Malawi reduced deaths from other non-communicable diseases by 21% between 1994 and 2003. The intervention will reduce deaths from other non-communicable diseases by 28.7% between 2024 and 2033. By 2043, deaths from other non-communicable diseases will be 39.3% lower than the Current Path.
Mortality multiplier, SAM prevalence (malnchpsamm)	Interpolate to 0.85	Between 2006 and 2014, severe acute malnutrition (SAM) prevalence declined by over 259% in Togo. In this intervention, SAM prevalence declines by 18.8% between 2024 and 2033. By 2043, SAM prevalence in Mali in the scenario will be 28% lower than the Current Path.
Education scenario		
Lower secondary, vocational share, additive factor, decimal rate (edseclowrvocadd)	Interpolate to 5	Burkina Faso increased vocational training in lower secondary schools by 115% between 2009 and 2019. (No data.)
Upper secondary, vocational share, additive factor, decimal rate (Edsecupprvocadd)	Interpolate to 4	Coming from a low base of 2.6, Ethiopia increased its vocational training share of upper secondary education from 21.56% to 59.20% between 2001 and 2011. The upper secondary vocational share is above the average for low-income countries in Africa but below Ethiopia. The intervention will see Mali improve its upper secondary vocational training by 11% between 2024 and 2033, and by 2043 Mali will be on par with Ethiopia.
Tertiary, sci-eng share of graduates,	Interpolate to 6	Increase in science and engineering

additive factor, decimal rate (edtersciencshradd)		graduates is necessary for quality human capital for sustainable growth and development. Between 2004 to 2016, the share of science and engineering graduates in Mali increased by 73.8%. Just like many African countries, the share of graduates with science and engineering backgrounds is low, estimated to be about 17%. The intervention pushes the science and engineering graduate share in Mali to about 24% close to the rate in Sudan but lower than the rate in Eritrea.
Primary net intake rate multiplier (total) (edpriintnm)	Interpolate to 1.1	To increase net primary enrolment. Mali has the fifth lowest net enrolment rate among the 23 low-income countries in Africa. Niger increased primary net intake by 54% between 2007 and 2017. In this scenario, net intake will increase by 13.6% between 2024 and 2033. As a result, net enrolment increases by 19% from 2024 to 2033. By 2043, net enrolment in Mali will reach 85.6% close to the 87.2% average for low-income countries in Africa.
Primary, survival rate, multiplier (total) (edprisum)	Interpolate to 1.05	The primary survival rate in Mali is currently the fifth highest among the 23 low-income countries. However, on the Current Path, Mali is set to progress slower than its peers, thereby dropping to 11th position by 2043. Malawi improved its survival rate at the primary level by 60% between 2004 and 2013. The intervention will increase the survival rate in Mali by 9.6% between 2024 and 2033 such that by 2043, the survival rate in Mali will reach 84% instead of the 80% projected in the Current Path forecast. However, this will still be lower compared to the rates in six other low-income African countries such as Eritrea, The Gambia and Liberia.

Lower secondary transition rate (edseclowrtran)	No intervention	Between 2000 and 2010, Niger improved its lower secondary transition rate by 45%. Mali had the second highest transition rate at 99.4% in 2019; it will attain 100% by 2024 and remain so throughout the forecast period. As such, no intervention was needed in this regard.
Upper secondary transition rate, multiplier (edsecupprtranm)	Interpolate to 1.1	Lower to upper secondary transition rate in Mali at 83.1% is ranked 13th among low-income countries in Africa. On the Current Path, Mali will make progress slowly to only 84.8% by 2043. Between 1994 to 2005, the upper secondary transition rate almost tripled. In this scenario, the upper secondary transition rate will increase by 9.2% from 2024 to 2033. By 2043, upper secondary transition will reach 97.7% in the scenario, close to countries such as DR Congo that reach 100% transition rate as early as 2033.
Lower, secondary, graduation rate, multiplier (edseclowrgram)	Interpolate to 1.25	Lower secondary graduation rate in Mali is low, estimated at 31.1% in 2019 and ranking 16th among the 23 low-income groups in Africa. On the Current Path, this will slowly improve to only 48.2% by 2043. The intervention pushes lower secondary graduation rates by 42% between 2024 and 2033. By 2043, the lower secondary graduation rate in Mali of 60% will be above the low-income average but still below the levels in Eritrea and The Gambia.
Upper secondary, graduation rate, multiplier (total) (edsecupprgram)	Interpolate to 1.25	Upper secondary graduation rate in Mali is very low estimated at 18.8% in 2019 ranking 12th among the 23 low-income groups in Africa. On the Current Path, this will slowly improve to only 36% by 2043. This intervention pushes the upper

		secondary graduation rate by 50% between 2024 and 2033. By 2043, it will reach 41.5% above the average for low-income countries but still below the rates in countries such as Rwanda, Togo, Eritrea and The Gambia by 2043.
Tertiary, intake rate, multiplier, total (edterintm)	Interpolate to 1.2	Tertiary enrolment in Mali is very low. Currently, only 6.4% of people within the age group are enrolled in tertiary institutions in Mali, and it will only improve to about 18.3% by 2043 on the Current Path. Madagascar improved its tertiary intake by 61% between 2007 and 2017. From a low base, the intervention will see Rwanda improve its tertiary intake by 133% between 2024 to 2033. By 2043, gross tertiary enrolment in Mali will improve to 29%—close to the rate in Liberia.
Tertiary, graduation rate multiplier (edtergradm)	Interpolate to 1.3	Only about 4% of tertiary students are estimated to graduate in Mali and it is projected to improve slowly to 9% by 2043 on the Current Path. Between 2007 and 2017, Madagascar improved graduation from tertiary education by 160%. In this scenario, Mali will witness an improvement in the tertiary graduation rate such that by 2043, it will be about 11% close to the average for low-income countries in Africa.
Quality, multiplier on primary (total) (edqualpriallm)	Interpolate to 1.2	Primary test scores are low in Mali averaging about 29.2 out 100 for mathematics, reading and science. This score is expected to improve slowly to only 33.7% by 2043 on the Current Path. Burkina Faso improved quality at primary level by 31% between 2008 and 2018. The intervention improves quality by 21.8% from 2024 to 2033. By 2043,

		the average test score for primary students in Mali will be 39, which is on par with the level in Togo.
Quality, multiplier on secondary (total) (edqualsecallm)	Interpolate to 1.2	The average test score for secondary students of 32.8 out of 100 in Mali is the second lowest among the 23 low-income countries in Africa, only better than Niger. The intervention increases the quality of secondary education by 24.9% between 2024 and 2033, which is above the average of low-income African countries. By 2043, the average secondary test score in Mali of 44.5 will be above the average for low-income African countries but slightly below the levels in Togo and Liberia.
Primary, gender parity time for intake, years (edprigndreqintn)	Interpolate to 10	Currently, there are 93 girls for every 100 boys enrolled in primary schools. This is to create a more aggressive gradient and pushes gender parity rates closer to the 1-to-1 female-to-male goal for intake at the primary level. As a result, gender parity in net primary enrolment is achieved as early as 2026 and maintained until 2043.
Lower sec, gender parity time for transition, years (edseclowrgndreqtran)	Interpolate to 10 in 2024 to 2033	There is gender inequality in lower secondary enrolment. For every 100 boys enrolled in lower secondary, there are 89 girls. This is to create a more aggressive gradient and pushes gender parity rates closer to the 1-to-1 female-to-male goal for intake at the lower secondary level. As a result, gender parity in gross lower secondary enrolment occurs by 2034 in the scenario for Mali.
Upper secondary gender parity time for transition, years (edsecupprgndreqtran)	Interpolate to 10	There is gender inequality in secondary enrolment. For every 100 boys enrolled in lower secondary, there are 72 girls. This is to create a more aggressive gradient and pushes

		gender parity rates closer to the 1-to-1 female-to-male goal for intake at the upper secondary level. Owing to this, gender parity in gross upper secondary enrolment improves significantly reaching 98 girls' enrolment for every 100 boys by 2043 in the scenario for Mali.
Tertiary, gender parity time for intake, years (edtergndreqint)	Interpolate to 10	The number of males enrolled in tertiary level is almost twice the enrolment for females at the same level implying 50 females for every 100 males enrolled. This is to create a more aggressive gradient and pushes gender parity rates closer to the 1 to 1 female-to-male goal for intake at the tertiary level. As a result, gender parity in gross tertiary enrolment occurs by 2040 in the scenario for Mali.
Agriculture scenario		
Yields multiplier (ylm)	Interpolate to 1.25	Yield per hectare in Mali is low, ranking 13th among low-income countries in Africa. It is less than half of what is in Rwanda and Malawi. Mali improved yields per hectare by 100% between 2009 and 2019. The intervention will improve agricultural yield in Mali by 42% between 2024 and 2033. By 2043, the average yields of 5.4 tons per hectare will be higher than the average of low-income countries in Africa but significantly lower than levels in countries such as Rwanda and Malawi.
Multiplier on land actually irrigated (landirareaactualm)	Interpolate to 1.2	Mali ranks fourth after Sudan, Ethiopia and Madagascar as the country with the largest irrigated land area among the 23 low-income countries in Africa. The intervention improves land irrigated by 36% between 2024 and 2033.

Multiplier on land equipped for irrigation (landirareaequipm)	Interpolate to 1.15	Mali ranks fourth after Sudan, Ethiopia and Madagascar as the country with the largest land equipped for irrigation among the 23 low-income countries in Africa. Ethiopia improved its land equipped for irrigation significantly by 455% between 2002 and 2010. This intervention improves land equipped for irrigation by 15.6% between 2024 and 2033. By 2043, land equipped for irrigation in Mali of 525 per 1 000 hectares will be higher than the average for low-income countries in Africa but below the levels in Sudan, Madagascar and Ethiopia.
Loss rate of agricultural production (crop) (aglossprodm)	Interpolate to 0.8	To reduce agricultural loss and waste as a share of production. Agricultural loss and waste as share of production is estimated at 26.2% for Mali. Indeed, 10.3% of the production is estimated as post-harvest losses for crops. The intervention will reduce crop production loss by 26% between 2024 and 2033. By 2043, Mali will reduce agricultural production loss lower than its peers in low-income Africa but below the level in Eswatini.
Loss rate of agriculture as moves from producer to consumer multiplier (crop) (aglosstransm)	Interpolate to 0.8	Agricultural loss and waste as a share of production is estimated at 26.2% for Mali. Indeed, 12.7% of the production is estimated as transmission losses for crops. The intervention will reduce food transmission loss by 31.3% between 2024 and 2033, and by 2043 Mali will reduce food waste lower than average low-income African peers but higher than Eswatini, Somalia, Eritrea and South Sudan.
Per capita calorie demand multiplier (total) (clpcm)	Interpolate to 1.05	Mali has the highest per capita calorie demand among the low-income countries globally and the 11th highest in Africa. Between 2009 and

		2019, calories available in Sudan increased by 56%. The intervention will increase Mali's available calories by 6.7% between 2024 and 2033. By 2043, calories per day available in Mali will be higher than the average in Africa but behind countries such as Ghana, Mauritius and Seychelles.
Water withdrawal (ground) (waterwithdrawalm)	Interpolate to 1.05	Dryland conditions, variable rainfall and non-perennial rivers necessitate access to sustainable water resources such as groundwater. High rainfall bands with fewer meteorological droughts can utilise either rainwater harvests or surface water sources and therefore not increase. Mali as a country with dryland conditions (steppe, desert) and is faced with repeated and severe rainfall variability and meteorological droughts, which necessitate high interventions.
Forest protection multiplier (forest)	Interpolate to 1.02	Total forest cover in Mali was estimated to be about 10.8% of total land area. For the sustainability of agriculture this intervention helps in reducing the rate of conversion for agricultural land. This ensures that deforestation is stopped and slowly reforestation takes shape over the course of decades. Between 1990 and 2000, Mali lost an average of 100 000 hectares of forest per year. Also, between 1990 and 2005, Mali lost 10.7% of its forest cover, or around 1 500 000 hectares.
Manufacturing scenario		
Government-to-household welfare transfers (govhhtrnwelm) (unskilled)	Interpolate to 1.4	Transfers to households are necessary to smoothen offset the negative redistribution effect of manufacturing. Government-to-household welfare transfers in Mali are very low, ranked

		seventh among Africa's low-income countries and less than a third of the group's average. From a low base, the intervention will push government household transfers by 94.4% from 2024 to 2033. By 2043, the Malian government will make transfers to the household equivalent to 2% of GDP but will just be a third of the average of its income-group peers.
Government regulation of business index multiplier (govbusregindm)	Interpolate to 0.85	Reducing bureaucratic government regulation is necessary for promoting manufacturing in Mali. This intervention is to improve the business environment to stimulate private investment in the manufacturing sector to enhance private sector led-growth. Between 1996 to 2006, Rwanda increased its average score on the governance regulatory quality index by about 59%. Mali has the fourth highest score on the governance regulatory quality index behind Rwanda, Uganda and Burkina Faso. However, its Current Path progress will be slow compared to its peers, thereby moving to the seventh position by 2043. The scenario improves government regulatory quality by 5.5% from 2024 to 2033. By 2043, Mali's score on the government regulatory score will be above the average for low-income countries but lower than income-group peer countries such as Rwanda.
Investment in manufacturing sector (idsm)	Interpolate to 1.1	Investment in manufacturing in Mali is low, currently ranking 11th among the 23 low-income countries in Africa. Interventions are based on the African industrialisation index produced by the African Development Bank. According to the index, countries are divided into five quintiles by rank top, upper-middle, middle, low-middle and bottom. Mali is ranked among the low-middle

		quintile countries category signalling low manufacturing in the country. As such, the intervention is to promote investment in the manufacturing sectors in the country. The intervention improves the manufacturing investment share of GDP by 16.2% in 2024 to 19.6% in 2033. By 2043, Rwanda's projected manufacturing share of GDP will surpass the average of its peers but on par with the Current Path average for Uganda.
Increase research development activities (total) (randdexpm)	Interpolate to 1.1	Building technological capability through research and development (R&D) is crucial for a robust manufacturing sector. It stimulates innovation, increases productivity and improves the quality of products. Mali spending as a share of GDP is slightly below the average for its income-group peers in Africa. The intervention improves the R&D spending as a share of GDP by 8% between 2024 and 2033 from a low base, and by 2043 the R&D share of GDP in Mali will be 7.6% higher than the average for low-income countries but lower than Togo and DR Congo.
Increase government revenue (govrevm)	Interpolate to 1.05	To increase the government's ability to support industrialisation and provide social grants to mitigate the initial increase in inequality associated with rapid structural transformation (Kutznet tension/developer's dilemma). Government revenue as a percentage of GDP in Mali is low like most African countries, estimated to be about 19.5% in 2022 by the World Bank. The intervention will push government revenue to GDP to 24% by 2043, which is above the average of low-income countries but below countries such as Rwanda, Eritrea and Liberia.

Total labour participation rate (male & female), female more aggressive (labparm)	Male: Interpolate to 1.1 Female: Interpolate to 1.15	Labour participation rate in Mali is slightly below the average for low-income countries in Africa. Historically, male labour participation rates have been higher than female rates in Mali. For every 100 males that are in the labour market, there are only 76 females. This is below the average for low-income countries where there are 84 females for every 100 males that participate in the labour market. The intervention will push both male and female labour participation by 13.3% between 2024 and 2033. By 2043, labour participation rate in Mali will be 84% close to Eritrea and slightly below the rate in Madagascar. Additionally, the gender gap will be closed significantly such that by 2043, there are 90 females for every 100 males in the labour market.
Large Infrastructure and Leapfrogging scenario		
Capital cost to output ratio in energy – qem – Q (OthRenew)	Interpolate to 0.8	Lower energy costs to output will enhance the production of more energy to fuel economic growth and development. The intervention will triple renewable energy production from a very low base between 2024 to 2033. By 2043, renewable energy production will constitute 64% of total production in the scenario instead of 52% in the Current Path forecast.
Capital cost to output ratio in hydro (qem – hydro)	Interpolate to 0.8	Lower energy costs to output will enhance the production of more energy to fuel economic growth and development. By 2043, renewable energy production will constitute 64% of total production in the scenario instead of 52% in the Current Path.
Increase production of hydro energy (enpm – hydro)	Interpolate to 1.2	Mali is endowed with plentiful solar and hydro potential. The country has

		an estimated 800 MW of hydroelectric power, potentially unlimited solar energy and over 300 MW of biomass. By 2043, renewable energy production will constitute 64% of total production in the scenario instead of 52% in the Current Path forecast.
Energy production multiplier for other renewables – enpm (OthRenew)	Interpolate to 1.2	Mali is endowed with plentiful solar and hydro potential. The country has an estimated 800 MW of hydroelectric power, potentially unlimited solar energy and over 300 MW of biomass. By 2043, renewable energy production will constitute 64% of total production in the scenario instead of 52% in the Current Path forecast.
Electricity access multiplier urban-infraelecaccm (urban)	Interpolate to 1.05	Access to electricity in urban areas is positively correlated with income across Africa. Mali has a high urban electricity access rate currently estimated at 91.2% making it the fourth highest among the 23 low-income countries after Rwanda, Ethiopia and Togo. Burkina Faso improved urban electricity access by 45% between 2009 and 2019. The intervention improves urban electricity access by 10.3% between 2024 and 2033, reaching 100% in 2038. Ethiopia will reach 100% urban access by 2022.
Electricity access multiplier rural – infraelecaccm (rural)	Interpolate to 1.4	Access to electricity in urban areas is positively correlated with income across Africa. While the electricity access rate is very high in urban centres, it is very low in rural areas. Currently, only 15% of rural dwellers in Mali have access to electricity indicating a huge disparity between urban and rural areas. Between 2009 and 2019, Eritrea improved rural access to electricity by 99%. Rwanda also increased its rural access to

		electricity from 1.1% in 2011 to 38.2% in 2019. The intervention improves rural access by 97.5% between 2024 and 2033. By 2043, rural electricity access rate will reach 56.4%, which is above the average for low-income countries but lower than the rates in countries such as Eritrea, Rwanda and Ethiopia.
Electricity transmission and distribution loss (infraelectranlossm)	Interpolate to 0.8	Historical data indicates that transmission and distribution loss is highest at low income. About 17% of all electricity generated in Mali is lost during transmission and distribution. Between 2001 and 2011, Sudan reduced its electricity transmission and distribution losses by 67%. This intervention will reduce electricity transmission losses by 23% between 2024 to 2033 such that by 2043, transmission losses in Mali will constitute 13.4% of production. This will be below the average of low-income countries but still higher than rates in South Sudan, Eritrea and Sudan.
ICT mobile broadband multiplier (ictbroadmobilm)	Interpolate to 1.1	From a low base, Uganda improved mobile broadband subscriptions by 134.7% between 2010 and 2017. Mali has the fifth highest mobile broadband subscriptions among low-income countries. The intervention will improve mobile broadband subscriptions by 128% between 2024 and 2033. By 2043, mobile broadband subscriptions will reach 156 subscriptions per 100 people—slightly above the rate in Burkina Faso.
ICT broadband multiplier on the cost of adding a connection (ictbroadcostm)	Interpolate to 0.9	A reduced cost of adding a connection improves connectivity to ICT broadband infrastructure. Mali will need more broadband connections to leverage the opportunities that digitalisation

		offers. A reduction in the cost of mobile broadband will make it affordable and improve access.
Cost of adding an ICT mobile broadband connection (ictmobilbroadcostm)	Interpolate to 0.9	A reduced cost of adding a connection improves connectivity to ICT broadband infrastructure. Mali will need more broadband connections to leverage the opportunities that digitalisation offers. A reduction in the cost of fixed broadband will make it affordable and improve access.
ICT fixed broadband multiplier (ictbroadm)	Interpolate to 1.2	Like many African countries, fixed broadband subscription in Mali is currently estimated at 1.6 subscriptions per 100 people. Togo improved its connection by 283.5% between 2008 and 2018. From a very low base, the intervention improves fixed broadband subscriptions by 318% between 2024 and 2033. By 2043, the intervention pushed Mali to reach 39 subscriptions per 100 people but will be lower than the rates in countries such as Somalia, The Gambia and Rwanda.
Increase population with Internet access	Interpolate to 1.2	Between 2009 and 2019, The Gambia increased its population with access to the Internet from a paltry 7.6% to 51%. Only 26% of Mali's population has access to the Internet. This is half of what it is in The Gambia, which is the highest among the 23 low-income African countries. The intervention will increase the population with access to the Internet by 12.4% from 2024 to 2033 reaching about 23% by 2043—close to the rates in countries such as Eritrea, Burkina Faso, Togo and Guinea.
Paved roads (Infraroadpavedpcntm)	Interpolate to 1.1	Improved road transportation networks are an important driver of growth. Guinea Bissau increased

		paved road length from 9.4% in 1993 to 27% in 2003. The intervention improves the paved road share of total roads by 16.7% between 2024 and 2033. By 2043, the intervention will push paved roads in Mali to constitute about 36% of total road networks in the country, almost on par with the average of low-income countries in Africa.
Informal labour contribution to employment (labinformshrm)	Interpolate to 0.9	The informal sector in Mali is huge. It currently contributes about 33% to GDP and employs about 81% of the economically active population. Formalising the economy and reducing informal labour will raise government revenue and increase GDP. The intervention reduces informality by 11.8% between 2024 and 2033. By 2043, the informal sector contribution will decline to 64% of GDP but will be above the average of low-income countries in Africa.
Reduce informality (gdpinformshrm)	Interpolate to 0.9	The informal sector in Mali is huge. It currently contributes about 33% to GDP and employs about 73% of the economically active population. Formalising the economy and reducing informal labour will raise government revenue and increase GDP. The intervention reduces informality by 18.2% between 2024 and 2033. By 2043, the informal sector contribution will decline to 25.6% of GDP, which is slightly below the average of low-income countries in Africa.
AfCFTA scenario		
Export shift as a result of the promotion of exports manufacturing ratio (xshift)	Interpolate to 0.015	In the World Bank policy research paper, export promotion agencies for developing countries will have an elasticity of 8%. Manufacturing export

		value as a per cent of GDP improves by 23.1% between 2024 and 2033. By 2043, Mali projects a manufacturing export share of GDP of 29%, which will be higher than the average of low-income Africa but below Somalia and Chad.
XSM-Export multiplier – Agriculture	Interpolate to 1.2	Agricultural export share of GDP albeit small will be 21% higher in the scenario than in the Current Path by 2043.
XSM-Export multiplier – Services	Interpolate to 1.15	Services export in Mali will increase by 73.2% between 2024 and 2033, and by 2043 services export share will reach 9.7% of GDP.
XSM-Export multiplier – ICT	Interpolate to 1.2	Coming from a low base, the ICT export share will improve by 127% between 2024 and 2033, reaching 0.12% by 2043.
XSM-Export multiplier – Materials	Interpolate to 1.15	Coming from a low base, the export share of material will improve by 146% between 2024 and 2033, reaching 0.8% by 2043.
Increase multifactor productivity (mfpadd)	Interpolate from 0 in 2023 to 0.008 in 2033, maintain	Free trade unleashes productivity growth. Calculations or adjustments were based on annual average growth rates for the period 2010 to 2018 using the Penn World Tables data - TFP at current PPPs (USA = 1).
XSM-Export multiplier – Energy	No intervention	The Current Path forecast is already aggressive.
Import tariff tax multiplier by country and sector- Mtarifftaxrm (agriculture)	Interpolate from 1 in 2029 to 0.1 in 2042 (13 years)	Lower import tariffs promote free trade between countries and boost growth and development. In the AfCFTA, agriculture products are considered sensitive products and have a fixed 10% tariff. Current tariffs can be maintained during the first

		five years with phase-down starting in year six.
Import tariff tax multiplier by country and sector – Mtarifftaxrm (manufacturing)	LDC: Interpolate from 1 in 2023 to 0.05 in 2033	Lower import tariffs promote free trade between countries and boost growth and development. A number of manufactured products are excluded from the non-sensitive list, e.g. most goods and passenger vehicles; thus, a 95% tariff reduction.
Import tariff tax multiplier by country and sector – Mtarifftaxrm (energy)	Interpolate from 1 in 2023 to 0 in 2033	Lower import tariffs promote free trade between countries and boost growth and development. Energy goods are all classified under non-sensitive products, and they have a 100% tariff reduction.
Import tariff tax multiplier by country and sector – Mtarifftaxrm (service)	Interpolate from 1 in 2023 to 0 in 2033	Lower import tariffs promote free trade between countries and boost growth and development. Services are all classified under non-sensitive products, and they have a 100% tariff reduction.
Import tariff tax multiplier by country and sector – Mtarifftaxrm (ICT)	Interpolate from 1 in 2023 to 0 in 2033	Lower import tariffs promote free trade between countries and boost growth and development. ICT goods are all classified under non-sensitive products, and they have a 100% tariff reduction.
Import tariff tax multiplier by country and sector – Mtarifftaxrm (materials)	LDC: Interpolate from 1 in 2023 to 0.01 in 2033 (10 years)	Lower import tariffs promote free trade between countries and boost growth and development. Non-sensitive products have a 100% tariff reduction under the AfCFTA. A few material products are included in the 3% of the excluded products, e.g. corrugated flat-rolled steel; thus, the 99% reduction in material tariffs.
Financial Flows scenario		
Worker remittances multiplier	Interpolate to 1.15	On average, low-income African

(xworkremitinm)		countries like Mali receive more remittances than lower-middle-income countries. Uganda increased its remittance share of GDP by 234% between 2009 and 2019. This intervention increases the remittance share of GDP is projected to increase by 6.8% between 2024 and 2033. By 2043, total remittances in Mali will constitute about 4% of GDP instead of 3.1% in the Current Path forecast. Although this is far above the average for low-income countries, it is below the rates in The Gambia and Uganda.
Aid (foreign) receipts multiplier (aidrecm)	Interpolate to 1.2	On average, low-income countries in Africa like Mali receive more aid than lower-middle-income countries as they rely more on aid. Liberia increased its aid share of GDP from 8.7% in 2000 to 97% in 2007. Between 2024 and 2033, the projected share of aid receipts in GDP for Rwanda is poised to decrease by 3.4% compared to the 20.2% in the Current Path. By 2043, aid to GDP in Mali will constitute 7.2% of GDP above the Current Path although below rates in countries such as the Central African Republic and Liberia.
FDI, stocks of investment from abroad, multiplier (xfdistockm)	Interpolate to 1.1	Foreign direct investment (FDI) is an enabler of growth. FDI stock in Mali is currently ranked 10th among the 23 low-income countries in Africa. Togo improved its FDI receipt by 132% between 2010 and 2020. In the intervention, FDI stock will increase to 17.2% between 2024 and 2033. By 2043, the stock of FDI in Mali will constitute 49.4% of GDP.
FDI, stocks of outward investment, multiplier (xfdistoutm)	Interpolate to 0.8	As a proxy for capital flight, reducing the outflow of FDI is paramount to building the domestic capital stock of Mali.

Portfolio investment, stocks of investment from abroad, multiplier (xportfoliom)	Interpolate to 1.2	Investment in financial assets in Mali promotes the financial market development and its long-term growth.

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