

Africa in 50 Years' Time

The Road Towards Inclusive Growth

African Development Bank,
Tunis, Tunisia
September 2011



African Development Bank Group



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* The findings of this paper reflect the opinions of the authors and not those of the African Development Bank Group, its Board of Directors or the countries they represent. For any inquiries on the paper contact: Professor Mthuli Ncube, Chief Economist and Vice President, African Development Bank, e-mail: m.ncube@afdb.org

Table Of Contents

ACKNOWLEDGEMENTS.....	7
I. INTRODUCTION.....	9
II. AFRICA IN 50 YEARS: PROJECTIONS.....	11
III. THE DRIVERS OF CHANGE.....	19
3.1 GLOBAL DRIVERS OF CHANGE.....	19
3.1.1 CHANGING STRUCTURE OF GLOBAL MARKETS.....	19
<i>Developing countries will dominate global trade</i>	19
<i>The global middle class will grow</i>	20
<i>Commodity prices will continue to decline and fluctuate</i>	20
3.2 NEW TECHNOLOGIES AND INNOVATION.....	21
<i>Agricultural biotechnology will create a “gene revolution”</i>	21
<i>Health innovations will shape health outcomes</i>	21
<i>Energy systems will respond to low carbon pressures</i>	22
3.3 CHANGING RULES OF THE GAME.....	22
<i>Global trade and financial rules will change</i>	22
<i>Regional agreements between Europe, the US, and Africa face an uncertain future</i>	23
<i>Aid flows are likely to diminish</i>	23
3.4 PHYSICAL DRIVERS OF CHANGE.....	24
3.4.1 CLIMATE CHANGE.....	24
3.4.2 NATURAL RESOURCES.....	24
<i>Mineral discoveries and growing demand will change mining</i>	25
<i>Sustainability will challenge renewables</i>	25
3.4.3 LAND AND WATER.....	26
3.4.4 INFRASTRUCTURAL DEFICIT.....	27
3.5 HUMAN DRIVERS OF CHANGE.....	28
3.5.1 DELAYED DEMOGRAPHIC TRANSITION.....	28
3.5.2 THE BURDEN OF AIDS.....	31
<i>AIDS will remain an exceptional challenge</i>	31
<i>AIDS demographic impact will shape future economic prospects</i>	31
3.5.3 LAND TENURE AND ACCESS.....	32
3.6 PRIVATE SECTOR AND DEMOCRATISATION.....	32
3.6.1 PRIVATE SECTOR.....	32
3.6.2 DEMOCRATISATION.....	33

IV. THE CONSEQUENCES.....	35
4.1 URBANISATION WILL ACCELERATE.....	35
4.2 MIGRATION WILL INCREASE.....	35
4.3 AGRICULTURE IS LIKELY TO DECLINE.....	36
4.4 NATURAL RESOURCES WILL REMAIN IMPORTANT.....	37
V. POLICY CHOICES AND STRATEGIES	39
5.1 COUNTRY-LEVEL RESPONSES.....	39
<i>Investing in cities</i>	39
<i>Managing migration</i>	40
<i>Transforming African agriculture</i>	41
<i>Avoiding the resource curse</i>	42
<i>Breaking in at the bottom</i>	43
5.2 COLLECTIVE RESPONSES.....	44
<i>Deepening regional integration</i>	44
<i>Boosting market access</i>	45
<i>Improving Aid</i>	46
5.3 PRIVATE SECTOR, INFRASTRUCTURE AND DEMOCRATIZATION	46
<i>Infrastructural Development</i>	47
<i>Democratic Governance</i>	47
VI. CONCLUSIONS.....	49
A. ESSAYS IN THE AFRICA 2050 SERIES	51

References 51

B. OTHER REFERENCES..... 51

List of Table

Table 1: Real GDP Growth Rates by Sub-Region.....	13
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List of Figures

Figure 1: Africa- Gross Domestic Product.....	11
Figure 2: Africa- Real GDP Growth - Real Per Capita GDP.....	12
Figure 3: Africa-Urban Population by Region	13
Figure 4: Distribution of African Population by Selected Classes	14
Figure 5: Africa- ICT Broadband.....	14
Figure 6: Africa- Under-Five Mortality Rate.....	15
Figure 7: Africa- HIV Prevalence in Total Population	15
Figure 8: Africa- HIV Deaths per 100,000 People.....	16
Figure 9: Africa Life Expectancy By Region.....	16
Figure 10: Africa- Adult Literacy Rates.....	17
Figure 11: Africa- Mobile Cellular Telephone Subscription	26
Figure 12: Africa- Total Population	27
Figure 13: Population Growth by Region	29
Figure 14: Africa- Population By Region	29
Figure 15a: Africa- Population By Year Group, 2010	30
Figure 15b: Africa- Population By Year Group, 2050	30



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This Report builds on the Vision 2050 Project sponsored by the African Development Bank and Agence Française de Développement. It examines African economies' socio-economic outlook in fifty (50) years' time (year 2060). It also highlights a number of "drivers of change" and identifies the opportunities and constraints that the countries will face as they move toward 2060. Furthermore, the document identifies policies that will be needed to respond to these trends in the coming years. The Report has been produced under the guidance of Professor Mthuli Ncube, Chief Economist and Vice President, African

Development Bank. Barfour Osei (Chief Research Economist, EDRE), John Anyanwu (Lead Research Economist, EDRE), and Charles Jebuni (Consultant, EDRE) drafted the Report under the supervision of Désiré Vencatachellum (Director, EDRE). The statistical projections were produced by Beejaye Kokil (Manager, ESTA.2), Maurice Mubila (Chief Statistician, ESTA), Louis Koua Kouakou (Senior Statistician, ESTA), Nirina Letsara (Statistician, ESTA), Ben Hadj Abdellatif Abdellaziz (Consultant, ESTA), and Saad Yahyaoui (Statistician) under the supervision of Charles Lufumpa (Director, ESTA).

I. Introduction

Since the advent of independence for most African countries, the African continent has struggled with a seemingly endless array of development challenges, from civil war and political instability to epidemic disease, chronic food insecurity and pervasive poverty. However in recent years, Africa has experienced an economic resurgence. The emerging economies, particularly Brazil, India, South Africa and China, have recognised Africa's potential as an investment destination and a source of natural resources.

Over the past decade, despite the successive global food and financial crises, Africa has been growing at an unprecedented rate. Though it will take decades of growth to make major inroads into Africa's poverty, there is now a growing optimism about Africa's potential.

Africa has some of the most abundant natural resources in the world, many of which are yet to be tapped. These include not just minerals and oil, but also bountiful possibilities for clean energy. But natural resources are not Africa's only advantage. While Western countries are shouldering the burden of aging populations, Africa is the world's youngest continent. If it invests in education and training to develop the potential of its youth, Africa could become one of the most dynamic and productive of economies.

In a rapidly changing global environment, Africa needs to seize the initiative and take advantage of these emerging conditions. It needs policies that maximise its comparative advantage and bring about the necessary structural changes in its economy. It needs to invest far more in its young people and in the hard and soft infrastructure required for growth. And above all, it

needs institutions that are capable and responsive, and leaders in politics, business and society willing to behave in a democratic and accountable manner.

The future, as always, is shrouded in uncertainty. But many of the trends that will determine Africa's future prospects are already visible today. If we are clear sighted in our analysis, we can begin to identify the challenges and opportunities that lie before us.

Recently, there had been extraordinary tide of political events which led to revolutions in Tunisia and Egypt, civil war in Libya, and stirrings of discontent across a number of other countries. These events reveal that the growth experienced in Africa over the past decade – important though it has been in the fight against poverty – is not sufficient. Too many Africans have been excluded from its benefits. Growth is inclusive when it creates economic opportunities – the pace of growth – while ensuring equal access to them – the pattern of growth. But growth in Africa has been narrowly concentrated in a few sectors and geographical areas. Inequality has become more pronounced and more visible. Young Africans are finding themselves excluded from the labor market and the formal economy with rising youth unemployment. Unless we can find a way to promote inclusive growth, then growth itself may become a source of instability.

Given that Africa's independence began about 50 years ago, for the next 50 years this document assesses the economic and human development prospects in Africa. It identifies the drivers of change and their likely consequences over the next half century, and proposes policy choices that will enable Africa to fulfil its potential in the years ahead.

II. Africa in 50 Years: Projections

The balance of evidence suggests that the next half century in Africa offers good prospects for realizing the African vision of a dynamic, diversified and competitive economic zone in which extreme poverty is eliminated within peaceful, stable and vibrant societies. This vision involves the transformation of fragile and vulnerable African economies into more robust and developed market, creating opportunities for the poor and leading to peaceful, stable and vibrant societies.

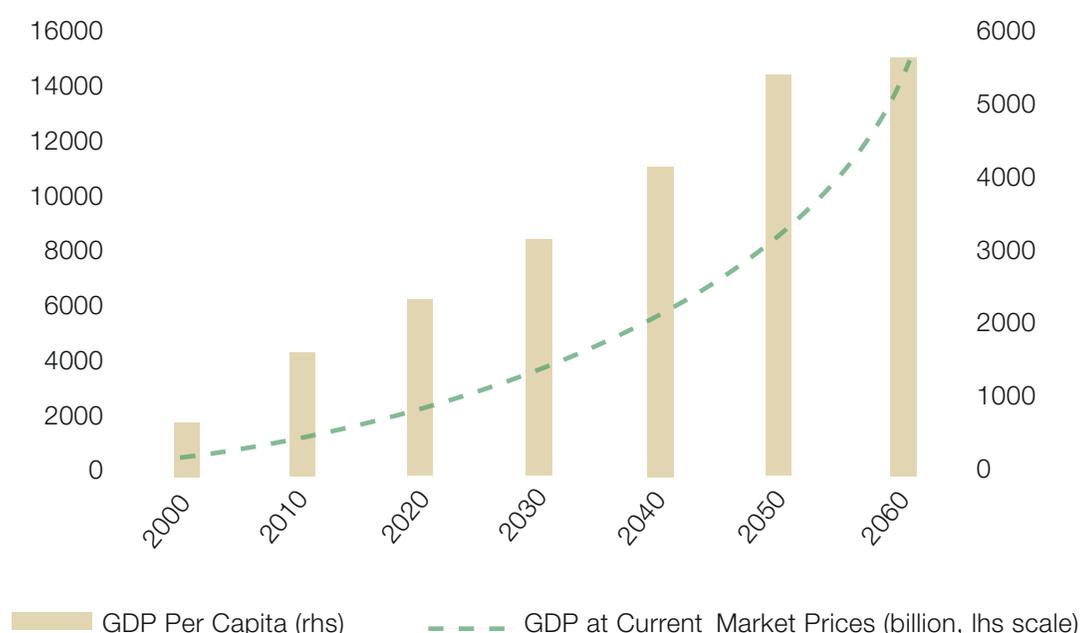
Recent evidence shows that economic growth in Africa is generally strong, fueled in large measure by business-enabling policy reforms, more favorable commodity prices and a marked improvement in peace and security, notably in the west and south-central sub-regions. Robust growth in the first decade of this century helped to diminish the depth of poverty. The recent global economic and financial crisis that beset world markets throughout 2009 sparked sharp price drops for exports and commodities and reduced trade and investment, slowing Africa's growth. Nevertheless, global recovery starting in 2010 began to curb the slide in economic

activity, and the momentum of economic growth is now enough to ensure steady progress in the coming years.

The performance of most African economies during the global economic crisis of 2008/9 was testimony to their underlying resilience and robust fundamentals. This made it possible to preserve macroeconomic balances and to implement economic policies that alleviated the impact of the crisis.

Given the extremely dynamic social and economic conditions in Africa and around the world, making accurate projections for Africa in 50 years' time is very difficult. Extrapolations of current economic performance suggest a positive future, but one that is by no means assured. African Development Bank estimates suggest that both Gross Domestic Product (GDP) and GDP per capita will increase steadily throughout the period 2010 to 2060 (Figure 1). By that time, most African countries will attain upper middle income status, and the extreme forms of poverty will have been eliminated.

Figure 1 | Africa: Gross Domestic Product (US\$)



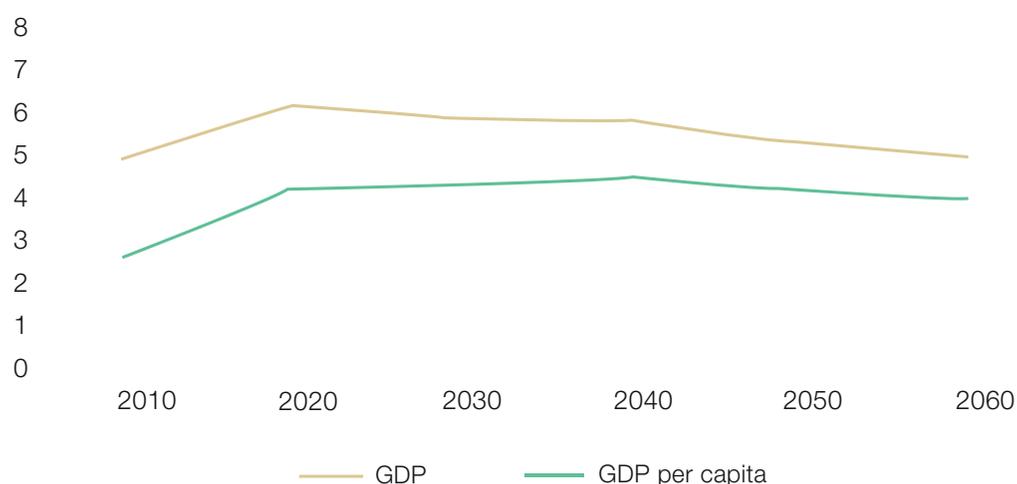
Source: AfDB

In this most positive of scenarios, Bank estimates suggest that Africa's GDP could increase to over US\$15 trillion in 2060, from a base of US\$1.7 trillion in 2010. Consequently, income per capita expressed in current US dollar terms should grow from US\$1,667 in 2010 to over US\$5,600 by 2060. While this would represent a major leap forward in standard of living, it

is still less than the current South Korean per capita GDP of US\$17,000.

However, a less optimistic scenario sees real GDP growth accelerating up to 2020, before decelerating to around 5% per annum (Figure 2). This would leave GDP per capita in 2060 at only US\$5617¹.

Figure 2 | Africa-Real GDP Growth- Real Per Capita GDP growth (%)



Source: AFDB

The projected breakdown of GDP by sub-region indicates that North Africa will continue to post the highest income per capita. However, East Africa is likely to show the strongest growth performance, reaching 9.3% in 2030. By 2060, the sub-region will have a per capita income ten times higher than in 2010.

Available data suggest that these growth rates may still be lower than the group of developing Asian countries. While in recent years African growth rates have exceeded those of the world as a whole, they remain lower than in Asia's developing countries,² and this is unlikely to change in the coming decades.

A dramatic decline in Africa's poverty would require the continent to grow at an average of 7%. These projections fall short of that level. And there are still serious risks ahead to Africa's growth path. Global developments, particularly the escalating price of commodities like food and oil, could yet pose serious threats to governance, peace and security.

In the decades ahead, Africa's growth prospects will be heavily influenced by trends in labour availability. Economic performance relies primarily on human resources, which strongly impact on overall factor productivity. Continued rapid growth in the size of the economically active population (men and women 15-64 years of age), at an average of around 3.5% per annum, will lead to an absolute increase in Africa's working age population of around 1.87 billion. Around 74% of Africans will be of working age.

As both a cause and a consequence, economic and population growth will be associated with rapid migration and urbanisation. The movement of working age people from rural areas to urban centers will be instrumental in accelerating economic growth. At the same time, this population migration will lead to more diversified economies, away from a reliance on subsistence agriculture toward more productive sectors such as manufacturing and service activities. The growth of urban sectors will act as a driver for

¹ Annex 1 presents details of the high and low scenarios.

² African Development Bank (2009), African Competitiveness Report, Part 1 Selected Issues of African Competitiveness

strengthening the continent's economic advancement. The process will be very important for the continent and the rates of urbanization in Africa will advance

quickly: the proportion of urban dwellers in 2010 was nearly 40 percent, and this will rise to 50% by 2030, and will reach 65% by 2060. (See Figure 3)

Table 1 | Real GDP growth rates by sub-region (%)

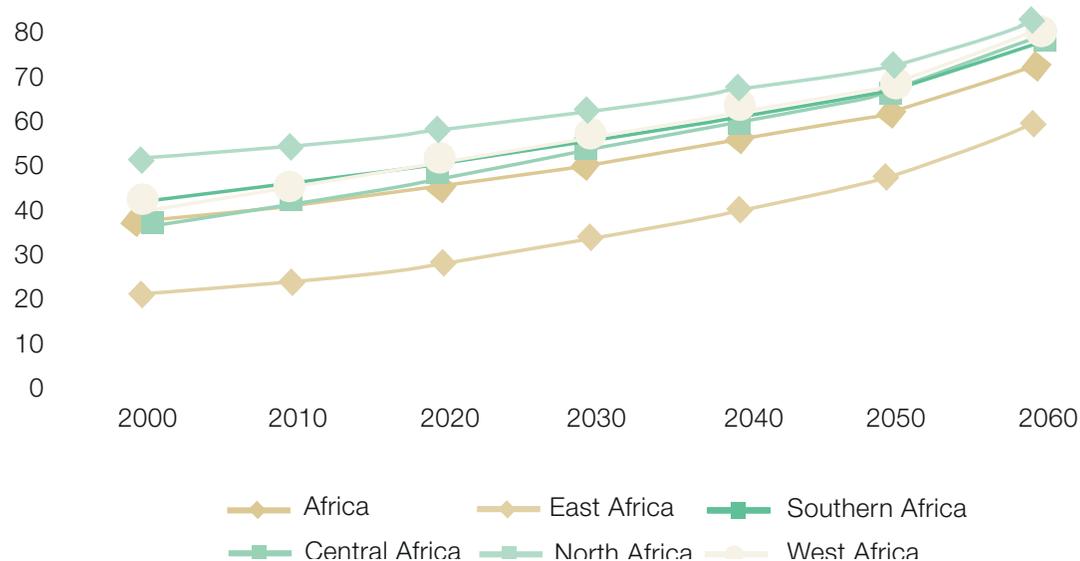
	2000	2010	2020	2030	2050	2060
Africa	4.5	4.9	6.2	5.9	5.3	5.0
Central Africa	-1.4	4.7	7.2	6.8	2.8	4.1
East Africa	7.5	6.2	7.9	9.3	8.3	6.8
North Africa	3.9	4.7	5.5	4.8	3.7	3.2
Southern Africa	5.4	3.3	3.9	5.3	4.5	4.1
West Africa	4.1	6.7	8.8	5.5	4.6	4.9

Source: AFDB Database and projections

One of the results of strong economic growth in the past two decades has been a significant increase in the size of the African middle class (defined as earnings of between US\$4 and US\$20 per day). The middle class will continue to grow, from 355 million

(34% of Africa's population) in 2010 to 1.1 billion (42%) in 2060. Conversely, poverty levels are expected to fall, with the proportion of the population living on less than US\$1.25 a day declining from 44% in 2010 to 33.3% in 2060 (see Figure 4).

Figure 3 | Africa Urban Population by region (as % of Total)

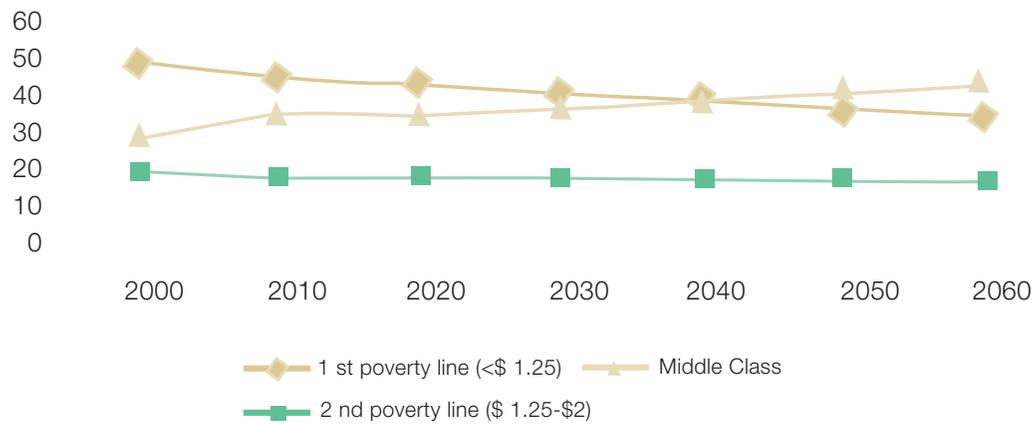


Source: AFDB based on UN Population Division Data

Africa will need substantial levels of investment to ensure strong and sustainable growth over the next 50 years. Beyond the pressing requirements for social investment in education and health, massive injections of capital will be needed to bridge the huge infrastructure gap confronting the continent. This is required to build a business-enabling environment that will attract domestic and foreign investment, promote cross-border trade and regional integration, and bolster private sector-driven growth. Such investments are needed in almost all the infrastructure sub-sectors

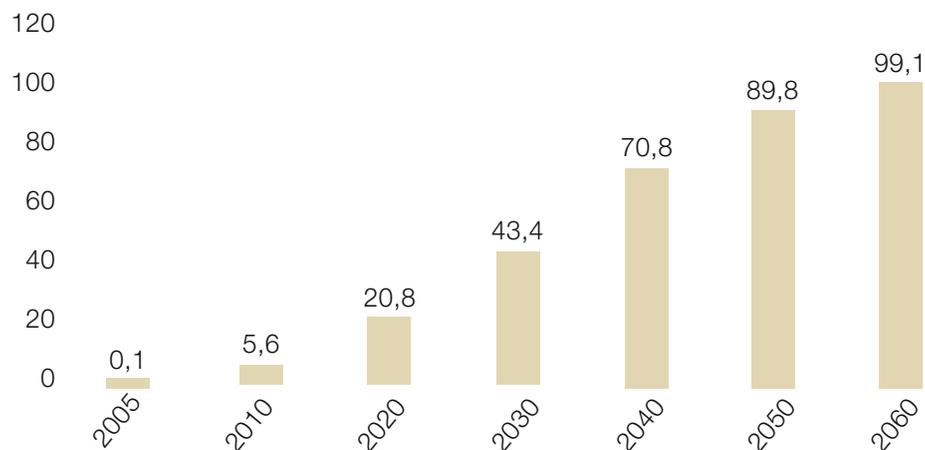
- transportation (road, railroad, ports and airports), telecommunications, water and sanitation, and energy supply. Broadband penetration (Figure 5) is at present low, but should increase steadily. The 2010, ICT broadband penetration estimated at 7 per cent of the population is projected to rise very sharply to 99 per cent of the population in 2060. In addition, the African continent should benefit from increasing south-south trade, by steering its export flows longer towards faster growth areas (emerging markets), develop trade on a regional level, and promote exports overall.

Figure 4 | Distribution of African Population by Selected Classes (% of Population)



Source: AFDB

Figure 5 | Africa: ICT Broadband (% of Population)

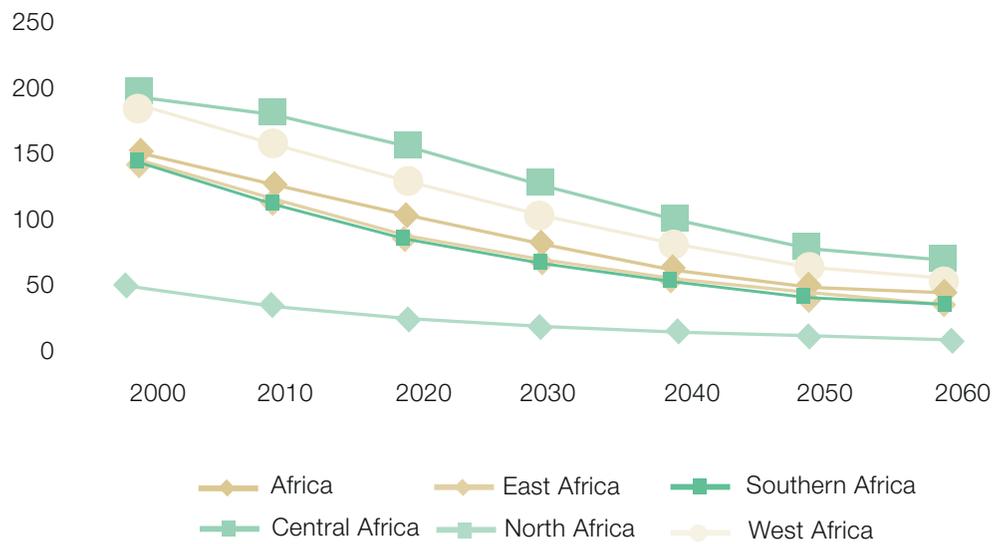


Source: AFDB

Africa has already made some important progress in improving the health of its population, and this is projected to continue. Mortality rates will decline in most places over the coming decades as the strong focus on reducing the impact of communicable diseases continues. Good progress is expected in reducing child and infant mortality. Child mortality is

projected to decline from 127 per 1,000 live deaths in 2010 to 45 per 1,000 live deaths in 2060 (see Figure 6). This will result largely from improvements in incomes, access to improved water supply and sanitation and better health services. North and East Africa will benefit the most from the reduced burdens of child mortality, in large part due to the declining impact of HIV/AIDS.

Figure 6 | Africa: Under five mortality rate per 1000 live births by region

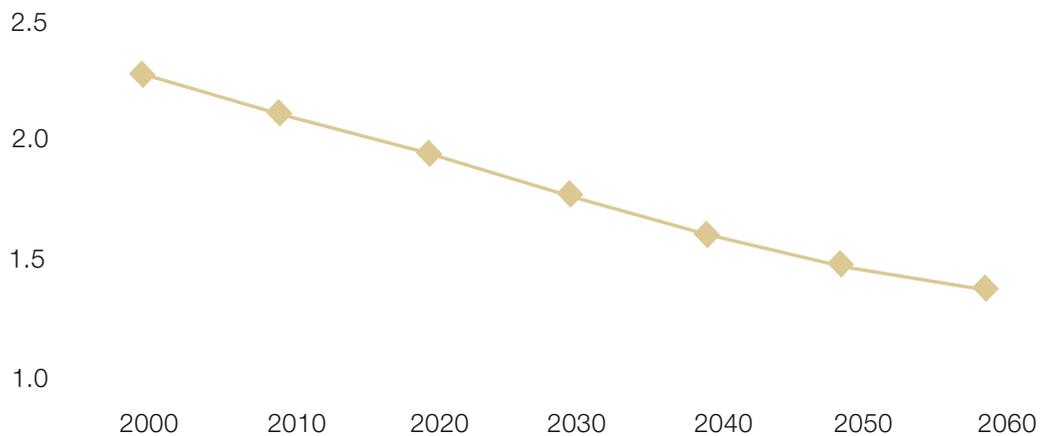


Source: AFDB based on UN Population Division Data

It is, however, to note that malaria is still endemic in most African countries and continues to represent a major cause of morbidity and mortality in the continent.

The impact of climate change on the geographical spread of malaria is still unknown. A lot remains to be done to reduce the impact of malaria.

Figure 7 | Africa: HIV Prevalence in Total Population (%)

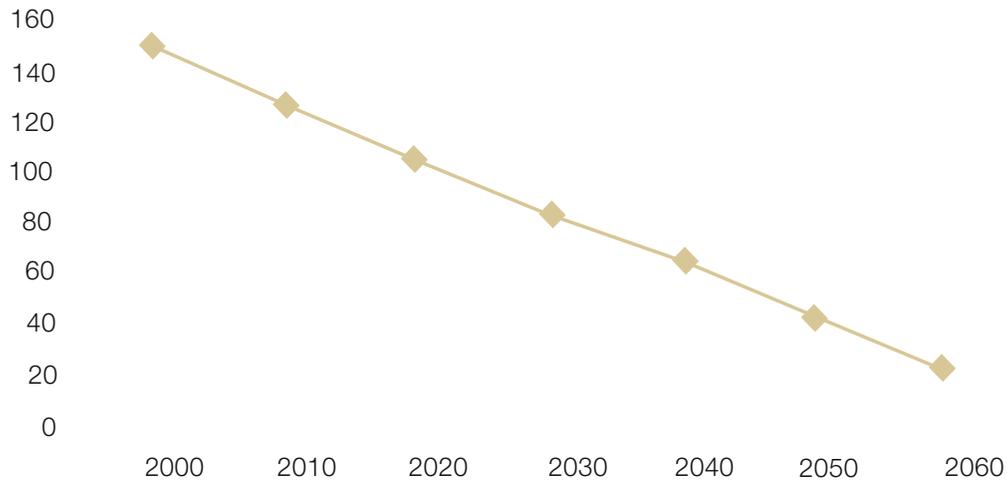


Source: AFDB based on UN Population Division Data

HIV/AIDS and deepening poverty are the most important challenges facing Africa, particularly sub-Saharan Africa. HIV prevalence rates are expected to decline from 2.1% in 2010 to 1.4% in 2060 (see

Figure 7). The number of deaths due to HIV/AIDS is also projected to drop substantially as a result of HIV prevention programs and improved access to antiretroviral treatment (see Figure 8).

Figure 8 | Africa: HIV Deaths per 100,000 People

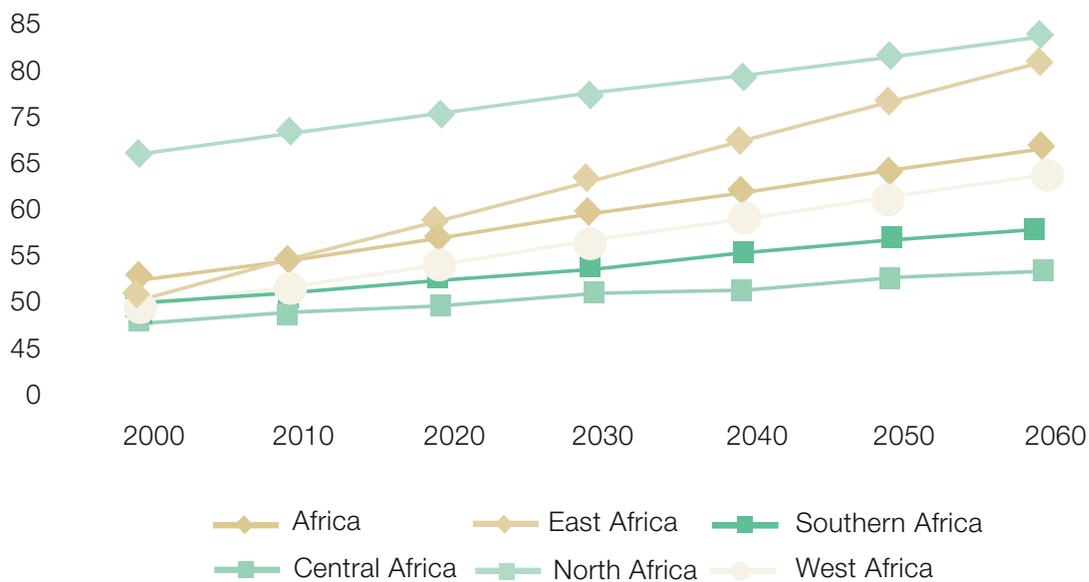


Source: AFDB based on UN Population Division Data

By 2060, the average life expectancy in Africa is projected to reach 70 years, compared to 56 years in 2010 (see Figure 9). However, there are considerable regional variations. North and East Africa are projected to have the highest life expectancy with 80 to 83 years, compared to the much lower 55 years in Central Africa.

In a rapidly changing technological environment, the ability of economies to take advantage of new technologies depends to a large degree on human capital. A skilled workforce is essential for adopting new technologies and enabling globally competitive production. Africa continues to make good progress

Figure 9 | Africa: Life Expectancy by Region (Years)



Source: AFDB based on UN Population Division Data

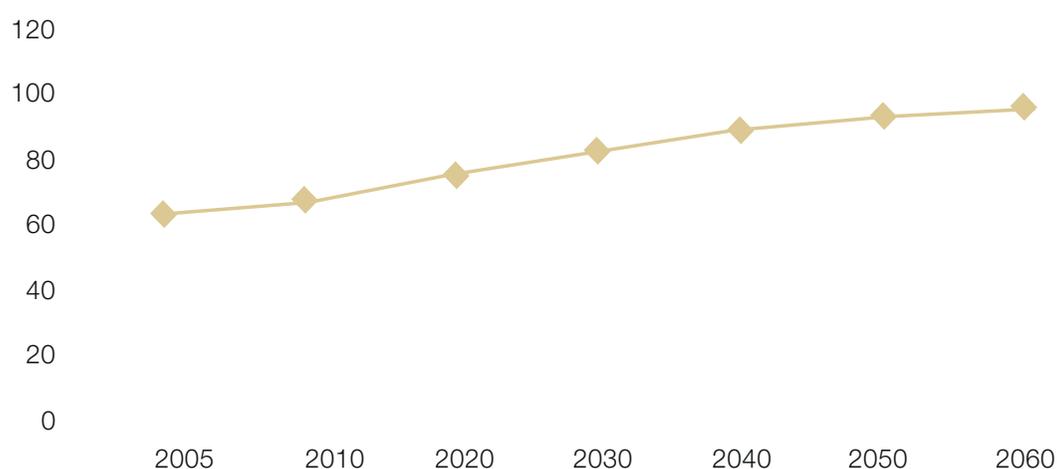
in increasing access to primary education and in promoting educational levels in general, including those of girls.

Education is an important driver of countries' economic performance and potential. Basic literacy is essential, but it is increasingly the quality and accessibility of primary, secondary and higher education that will determine whether African economies can

successfully move up the value-added production chain.

With respect to literacy rates, the current trend of rising rates is projected to continue, reaching around 96% in 2060 against 67% in 2010 (see Figure 10). Education forecasts show that Africa is currently very close to the level of India, and likely to track the advance of that country fairly closely.

Figure 10 | Africa: Adult Literacy Rates (%)



Source: AFDB based on UNESCO Data

In general, Africa's human development indicators show the potential for considerable improvement in the coming decades. Demographic indicators like population

growth, fertility rates and mortality rates are declining. Life expectancy and education levels will continue to improve, reflecting improvement in human development.

III. The Drivers of Change

Africa's development outcomes for the coming decades will be determined by a number of drivers of change, and the policy changes adopted by African countries in response to changing world conditions. These drivers of change will be global, physical and human. Cumulatively, they will create dramatic changes for the African continent and the global environment with which it interacts. Its prospects for development will in turn depend on the policies it implements to take advantage of its vibrant young population, its abundance of natural resources and its considerable human capital.

3.1 GLOBAL DRIVERS OF CHANGE

Globalisation is changing the opportunities for development in low and middle-income countries, opening up some paths and closing off others. For Africa, the next 50 years are likely to be shaped by three major global forces: the changing structure of global trade; new trends in technology; and the international architecture governance trade, finance and development assistance.

3.1.1 Changing Structure of Global Markets

Trade is important for Africa - the region is among the world leaders in terms of its trade to GDP ratio - although, ironically, it has largely missed the explosion of global trade over the past twenty years. By 2060, Africa will be profoundly affected by changes in the global economy. Over this period, three structural trends - the shift of the centre of gravity in global trade to developing countries, the rapid growth of a global middle class, and the volatility and long run decline of commodity prices - will define Africa's relationship with the rest of the world.

Developing countries will dominate global trade

The weight of global economic activity is shifting from the G7 countries toward emerging economies. Over the next 50 years, this trend is expected to

accelerate. On the most conservative projections, the economy of the G20 is expected to quadruple in size, rising from US\$38 trillion in 2009 to US\$160 trillion in 2060 in real dollar terms. Over 60 percent of this expansion will come from just six countries: Brazil, Russia, India, China, Indonesia and Mexico. GDP in these six economies will grow at an average rate of 6 percent per year; in contrast, GDP in the G7 will grow by less than 2.1 percent annually. China, India and the United States will emerge as the world's three largest economies in 2060, but US per capita GDP will still be nearly three times that of China and over eight times that of India.

Developing countries have already become major players in global trade; by 2060 they will dominate it. In 2006, developing countries accounted for 30 percent of world exports. Projections suggest that the share of world exports produced by developing countries will expand to about 70 percent by 2060. China's share alone will increase from about 8 percent to 24 percent.

Over the past two decades, trade and investment have increased not only between the rich countries and developing economies, but also among developing countries themselves, particularly Asian nations. According to UNCTAD,³ South-South exports accounted for 17 percent of total world exports in 2006, up from 11 percent in 1995. These trends are likely to continue. Trade among developing countries will outstrip that among advanced economies. In 2006, bilateral trade of the European Union with other industrialized countries accounted for 11.3 percent of world trade. By 2060, China and the rest of Asia Pacific will be the world's leading trading partners, with Asia Pacific trade accounting for 8.4 percent of the global total.

These structural shifts in global trade will mean that Africa's dependence on advanced country markets will lessen dramatically. Trade as a driver of Africa's growth will come mainly from regional trade consequent on increased regional integration and

3 See Uri Dadush (2010)

the development of free trade zones that will enhance consumer demand for large scale infrastructure investments. In 2010, only 12 per cent of Africa's trade was internal and for most countries in the continent it was easier to trade with Europe and America than with each other. By 2060, only 27 percent of Africa's exports will go to the U.S. and EU, compared to 54 percent in 2006. China will be the second largest export destination for Africa, taking up nearly 25 percent of its exports, compared to just 5 percent in 2006.

The global middle class will grow

The dramatic change in the global economic landscape will be both a cause and a consequence of the emergence of a new Global Middle and Rich class (GMR).⁴ At present, about a quarter of the global GMR population resides in developing countries. By 2030, the GMR population in developing countries will have overtaken that in advanced countries, and in 2060 about 60 percent of the world's GMR population will reside in developing countries.

Projections show that the GMR population in the developing G20 economies - China, India, Russia, Brazil, Mexico, Argentina, Indonesia, Turkey and South Africa - is likely to grow from 739 million in 2009 to 1.9 billion in 2060. In Africa, the middle class is expected to increase from 355 million (34 percent of Africa's population) in 2010 to 1.1 billion (or 42 percent of the population) in 2060.⁵

By 2060, no country in the G20 will have more than 5 percent of its population living in extreme poverty. China and India - nations that were homes to 48 percent of the world's extreme poor in 2005 - will be the driving force behind this shift, and many of those lifted from poverty will join the new GMR.

Commodity prices will continue to fluctuate

Global GDP growth has consistently outpaced the demand for commodities. Though commodity prices

are high now, creating improvements in the terms of trade for some African countries, it is expected to resume its downward trend. Thus, it is expected that commodity prices will continue to fall relative to manufactured goods and knowledge-intensive services. Empirical studies have shown that this has been the historical trend, with estimates of the long-term rate of decline ranging from -0.6 to -2.3 percent per year. The reasons for this decline have been widely explored: they include relatively low demand elasticity for primary commodities relative to manufactures and services, growth of substitutes, and rapid technological advances that have reduced the cost of growing or extracting commodities.⁶

However, the continuing decline in commodity prices is not inevitable. A major change in circumstances could break the trend. One possible scenario - increases in demand due to rapid growth in developing countries that are large net importers of energy, materials and agricultural commodities - would be offset by two other effects. First, technological advances in both the production and use of commodities in a broad range of developing countries would increase supply and reduce demand. Second, outward investment in the production of commodities by net importers is likely to increase supply.

While other commodity prices are expected to continue to decline, oil could be an important exception. The exhaustion of easily accessible reserves may place a floor on oil prices. However, the global drive to reduce carbon emissions could also make a significant dent in energy use and oil prices.⁷

Unfortunately, despite their long-term downward trend, commodity prices are likely to remain highly volatile, and price spikes such as those seen in the mid-2000 may recur. The reasons for high volatility of commodity prices include low short-term income and price elasticities of demand and supply, long lead times before investment and supply response

4 As defined by the World Bank, all individuals with a per capita income above \$4000 in 2005 PPP terms are members of the Global Middle and Rich Class (GMR). Those with incomes above \$17000 per person are considered members of the rich class.

5 African Development Bank (2011): Africa in 50 years' time

6 Dadush (2010)

7 Dadush (2010); Collier (2010); and Veit et al (2010)

to changing demand conditions, weather shocks to agricultural commodities, and policy-induced distortions that impede the orderly adjustment of commodity markets. Newer sources of instability may include more variable weather due to climate change and increased use of commodities and commodity derivatives for speculation.

Volatility is likely to limit the growth prospects of some African economies - particularly those that are dependent on minerals and other commodities. While output variability in general is declining among African countries, the relative importance of external shocks as sources of output instability in Africa has actually increased in the past 15 years. This increase is the result of two factors: (1) a decline in the variance of internal shocks, including policy failures or conflicts; and (2) a relative increase in the vulnerability of output to external shocks.⁸

3.2 NEW TECHNOLOGIES AND INNOVATION

Three key technological regimes will have a profound impact on Africa's transformation in the next few decades: agricultural biotechnology; health and health innovation systems; and new energy technologies, particularly, low-carbon, climate-sensitive technologies.

Agricultural biotechnology will create a "gene revolution"

It is contended that by 2060, the Green Revolution will be supplanted by a Gene Revolution. Since the early 1980s, modern biotechnology has led to increasing knowledge of the scientific procedures needed to utilise gene-based techniques to improve agriculture. Agricultural biotechnology has the potential to transform African agriculture by raising agricultural productivity and farmers' incomes. The potential benefits include yield increases in the staple food crops produced in tropical and semi-tropical environments,

the creation of drought- and pest-resistant varieties, and shorter harvesting cycles, enabling the planting of several crops per season. Genetic engineering also enables cost-saving techniques, such as nitrogen fixation.

Biotechnology offers the possibility of developing varieties and techniques that reduce the use of fertilizers and pesticides. For example, new crop varieties can, in some cases, contribute to a dramatic reduction in herbicide usage. It can also help create new cultivars with increased resistance to biotic stresses, increasing the possibility of farming with fewer inputs of water and energy. Biotech cotton, which is resistant to the often-devastating bollworm insect, for example, raised yields 29 percent in India, and contributed to a 78 percent increase in income for many of the country's poorest farmers. Enhanced varieties of corn have boosted yields worldwide - by as much as 61 percent over traditional varieties in the Philippines.⁹

Improved financial technologies are allowing for the spread and deepening of financial intermediation. Thus financial deepening is increasing in Africa with financial intermediaries offering several different products and designing products to meet the needs of different actors.

Health innovations will shape health outcomes

Innovations in the health field will bring together the technological process of inventing new drugs, vaccines and diagnostic tools, with profound impact on the health systems of developing countries. Research and development (R&D) in drugs is one aspect of health innovation, but it also includes organisational innovations in service delivery. Health innovation systems encompass the process, product and organisational innovations required to support research and development as well as to ensure delivery of drugs to the population.

8 Raddatz (2008)

9 Page (2010)

The main technologies that will shape health outcomes in Africa are likely to include:¹⁰

- pharmaceutical innovation in drugs and vaccines, including R&D-intensive new chemical entities (NCEs) and the production of “me too” drugs, including generics ;¹¹
- biotechnology as a core component of biopharmaceutical and biomedical research;
- genomics-based technologies such as synthetic biology and other emerging techniques; and
- health-care technologies, broadly including technologies for health technology assessments, diagnostics and laboratory technologies.¹²

Without complementary institutional reforms in health care delivery systems, however, the technological innovations in health care will not translate into improved health outcomes. While technological advances in the development of anti-retroviral drugs and therapy to treat AIDS have made the disease a manageable health condition in industrialised countries, in Africa the benefits of such advances are not yet widespread.

Energy systems will respond to low carbon pressures

Since the global energy crisis in the 1970s, technological innovation in the field of renewable energy has grown rapidly. By 2060, renewable energy could replace conventional fuels in four main sectors: power generation, hot water and space heating, transport fuels and rural energy. However, despite significant growth in the recent past, the latest data show that renewable energy comprised barely 6 percent of global power-generating capacity in 2008 and about 3.4 percent of global electricity production (excluding large hydropower) in 2006.

10 Oyelaran and Sampath (2010)

11 A global new chemical entity (NCE), also called a new molecular entity (NME), refers to a drug that has been approved or marketed in at least seven industrialized countries and does not include either biological or diagnostic drugs. The introduction of new chemical entities (NCEs), which relies extensively on R&D activities and incremental innovation activities, are also called “imitative R&D”, or “me-too” drugs (drugs that are structurally very similar – derivative medications- to already known drugs, with only minor differences).

12 Lisk (2010)

13 See Collier, (2010); and Oyeyinka and Sampath (2010).

Over a 50-year horizon, global economic growth will clearly increase the demand for energy enormously. As carbon emissions become taxed and regulated, the demand for carbon-based energy will decline and other sources of energy will rise in price due to their increased demand. This in turn will trigger further technical innovation. By 2060, two of the contributors to this series of essays think that the most likely outcome will be major advances in solar power and energy storage through batteries. As a result, the value of carbon-based sources of energy will have declined, perhaps radically.¹³

If, as a result, the overall price of energy is substantially lower than today, it would create an important opportunity for energy-intensive activities, notably industry and transport, to expand.

3.3 CHANGING RULES OF THE GAME

The next 50 years are likely to see significant changes in the rules by which the international trading, financial and aid systems operate. Three important sets of international agreements are likely to shape Africa's relations with the global economy over the next 50 years: global trade and financial regulations, the European and US bilateral trade engagement with Africa and aid policy.

Global trade and financial rules will change

The future of the Doha Round of WTO talks is uncertain, but it is unlikely that the gains made in multilateral liberalisation under the Uruguay round will be reversed. Nevertheless, the absolute shift of manufacturing production to developing countries and a likely economic slowdown among the OECD countries raise the spectre of resurgent protectionism in the North. However, given the densely interwoven fabric of today's global economy and the existence of a vast set of rules under

WTO and regional agreements (including international legal redress), a large relapse into protectionism is unlikely. Only a deterioration of great power relations to the point of open military or economic hostilities, an economic depression and rise in mass unemployment (narrowly avoided in 2009), or profound divisions over climate change and the attempt to resort to trade sanctions as an enforcement mechanism are likely to provoke a surge of protectionism. The risks to open trade would be compounded if more than one of these conditions occurred simultaneously.

The growing importance of East Asia as a global economic power and the dramatic increase in South-South trade signal an important change in the geopolitics of trade agreements. It is no longer appropriate to think of a bi-polar trading world, North and South. Increasingly, new entrants to the global economy will depend on the emerging market economies of Asia for access to the world's most dynamic markets. Whether and how these new industrial economies address the issue of market access for Africa will in large measure determine the trading environment that the continent will face in 2060.¹⁴

Increased financial integration will present new challenges for global microeconomic and regulatory policies. These policies need to ensure that capital is used effectively and that safeguards are built against sudden halts and capital flow reversals. The ability of countries to absorb the many lessons of the Great Financial Crisis and turn them into effective financial reforms remains unproven. The reasons include the financial industry's vested interest against reform, ideological differences about the appropriate role of regulation and market discipline, the difficulties of international coordination, the complexity of modern financial markets, and weaknesses in capacity of both domestic and international regulators. Furthermore, the political challenges of dealing with macroeconomic imbalances of various kinds will remain formidable.

14 UNIDO (2009)

15 Chuhan-Pole and Fitzpatrick (2008)

Regional agreements between Europe, the US, and Africa face an uncertain future

Contrary to many fears, the end of the Multi-Fibre Arrangement did not mark the end of trade preferences for Africa. Both the United States and the European Union introduced new preferences in 2001. The American scheme, the Africa Growth and Opportunities Act (AGOA), differed from the European scheme, Everything But Arms (EBA), in two key respects. First, its coverage of countries was broader and included several countries, such as Kenya and Ghana, that are not officially least developed countries (LDCs). Second, the schemes differed in their rules of origin. EBA required a very high share of inputs to be produced within each African country. In contrast, AGOA substantially lowered the required home country content – at least in one product line, garments.

The future of both preference schemes is uncertain. AGOA is subject to annual review by the US Congress, and despite recent efforts to secure a multi-year mandate its future will depend on the prevailing political winds in Washington. The European Union has been seeking to replace EBA with Economic Partnership Agreements (EPA). The pace of negotiation of these agreements has been slow, but their final content will determine Africa's trading opportunities with Europe.

Aid flows are likely to diminish

By 2060, aid will have decreased in importance as a driver of Africa's development. There will be new players in the aid industry (international NGOs, private businesses, non-DAC donors) bringing new approaches. However, the total volume of aid to Africa is likely to diminish. Analysis of recent patterns in aid flows - distribution between debt relief and new flows, volatility and predictability, and progress on donor alignment and harmonisation - suggests that, while there has been improvements in the efficiency of aid, there has been little increase in its volume or predictability. The promises made at the Gleneagles G8 summit to scale up aid may never materialise.¹⁵

Furthermore, it is argued that by 2060 memories of the colonial era in Europe will have passed. One implication of fading memories is that the constituency for aid to Africa in Europe is likely to have diminished. In addition, absolute poverty in Africa and the relative income differential between Africa and Europe will have declined. Both of these will further weaken the case for aid. While it is possible that Europe will be replaced by other donors, this is unlikely. The USA has no history of substantial aid, and the emerging market economies - including China - may see little reason to provide Africa with significant aid.¹⁶

The prospects for improved aid effectiveness appear equally dim. Today, the global aid system is at a crossroads: 2010 was the target year for implementation of the Paris Declaration on Aid Effectiveness, a commitment by the international aid community to reform the way it delivers aid to developing countries. Despite progress in some areas, and renewed pledges made in Accra in 2008, most of the targets set under the Declaration have not been met.

3.4 PHYSICAL DRIVERS OF CHANGE

Africa faces three drivers of change related to its physical environment. The first is climate change. While Africa has contributed little to global warming, it is disproportionately vulnerable to its impacts. The continent's renewable and non-renewable natural resources will be a second source of change: while in some locations natural resources and ecosystems have been overexploited, much of Africa's resource base is underutilised. Third, the continent's endowment of land and water will come under increasing pressure.

3.4.1 Climate Change

Climate change is a threat globally, and a particular menace to Africa. Many African countries are already under various forms of climate-related stress - drought, floods and rainfall variability - which, coupled with low adaptive capacity, make them highly vulnerable

to climate change. Because the African continent is already among the hottest parts of the Earth, further warming will have adverse implications for socioeconomic development and welfare.

Global warming will have a particularly severe impact on Africa. A review of forecasts from 21 models suggests that by the end of the 21st century, median temperature increases of between 3°C and 4°C will occur - one-and-a-half times greater than the global mean increase. Temperatures will rise by 3.6°C in the hottest part of the continent - the Sahara - and an average of 3.2°C in the coolest part - East Africa.¹⁷

Predicting changes in precipitation is complicated by the considerable spatial and temporal variability in rainfall across Africa. Nevertheless, a consensus holds that rainfall increases are expected in East Africa and to a lesser extent in West Africa. In both West and East Africa, the chances of extremely wet seasons (high rainfall events) will increase to over 20 percent, due to an increase in atmospheric water vapour. Southern Africa and the Sahara will experience drying, and there will be a decrease in the probability of extremely wet seasons and an increase in the probability of extremely dry seasons.

As seawater warms, ocean volume will rise in a process referred to as thermal expansion. Melting of glaciers, ice caps and the Greenland Ice Sheet are also projected to contribute to sea level rise. On the African continent, populations living along the western and eastern coasts could be affected by projected rise in sea levels and flooding. Sea-level rise could also impact on the Nile Delta. A one meter sea-level rise would result in severe losses in coastal agriculture, as well as the submergence of infrastructure and other economic installations.

3.4.2 Natural Resources

Natural capital constitutes 36 percent of total wealth in North Africa and the Middle East, and 24 percent of total wealth in sub-Saharan Africa. This is greater than the share of produced capital.¹⁸

16 Collier (2010)

17 Asafu-Adjaye (2010)

18 Veit et al (2010).

Mineral discoveries and growing demand will change mining

Africa is richly endowed with metal and non-metal minerals and energy resources. Although precise data on mineral reserves in Africa (proven and probable) are not available, principally because much of the continent is under-explored, it is likely that Africa hosts about 30 percent of the world's mineral reserves, including 40 percent of gold, 60 percent of cobalt, 72 percent of chromium and 65 percent of diamonds.¹⁹

Rising commodity prices have spurred mining companies to make significant investments in exploration. Future changes in global mineral supplies and demand will increase prices. Investment will therefore increase. Strong economic growth in China will mean continued high demand for metals, and significant imports from abroad, including from Africa. Chinese investments in mining and associated infrastructure (such as Liberia's iron ore or Zambia's copper) to secure raw materials are also likely to continue.

Mining in Africa in 2060 will not resemble the mining of today. New global products will require specific metals, leading to the opening of new mines and new exports, while declining ore grades, recycling and substitution will result in other mines being shuttered. New technologies - many transferred from the west - will make mining in Africa's remote regions economically viable. These mining developments will transform the landscape of mineral-dependent countries in Africa. Some countries will benefit from the shifts in globally important minerals, while others, once heavily dependent on mining and mineral revenues, will need to diversify into other sectors.²⁰

Sustainability will challenge renewables

In 2005, Africa had 635.4 million hectares of forest area - about 21 percent of the continent's land area and 16 percent of the world's forests. From 1990 to 2005, the continent lost over 4 million hectares of forests annually.

19 Veit et al (2010)

20 Veit et al (2010); and Collier (2010)

21 Veit et al (2010)

22 Veit et al (2010)

Africa's average annual rate of forest loss was more than three times the world average. Deforestation is most rapid in West Africa and Madagascar but is also present in Central Africa. In West Africa, nearly 80 percent of the original moist forest has been cleared and the remaining forest patches have been heavily degraded.²¹

Both expansion in subsistence farming and small-scale commercial agriculture and agro-pastoral uses have put pressure on forests. Conversion to small-scale permanent agriculture accounted for 59 percent of the forest lost between 1990 and 2000. These threats are exacerbated by the expansion of commercial agriculture. Forest degradation is caused in large measure by unsustainable wood harvesting and illegal commercial logging. Much of the legal logging in natural forest concessions is coupled with unsustainable levels of illegal logging.²²

Africa has about 37,500 kilometers of coastline with a diverse number of marine fisheries and ecosystems, including coral reefs, mangrove swamps, estuaries, coastal wetlands and rocky shores. The continent also has many inland fisheries. The evidence shows that the world's fisheries - including Africa's - are being depleted at a rate that makes the collapse of all marine fisheries a possibility by 2060. At least 70 percent of world fish stocks are estimated to be fully exploited, overexploited or recovering from a period of depletion.

In Africa, the greatest threat to sustainability has been over-exploitation of fisheries by artisanal, small-scale and industrial fishing. In many cases, fish capture exceeds sustainable yields. In most areas, fishing has proved difficult to regulate and local fisheries have been depleted. Many foreign fleet owners do not have agreements with coastal states in Africa and fish illegally within territorial waters. Such fleets - principally from eastern and western Europe and the Far East - operate largely without monitoring, since few coastal states have the aircraft and naval vessels to take action against intruders.

3.4.3 Land and water

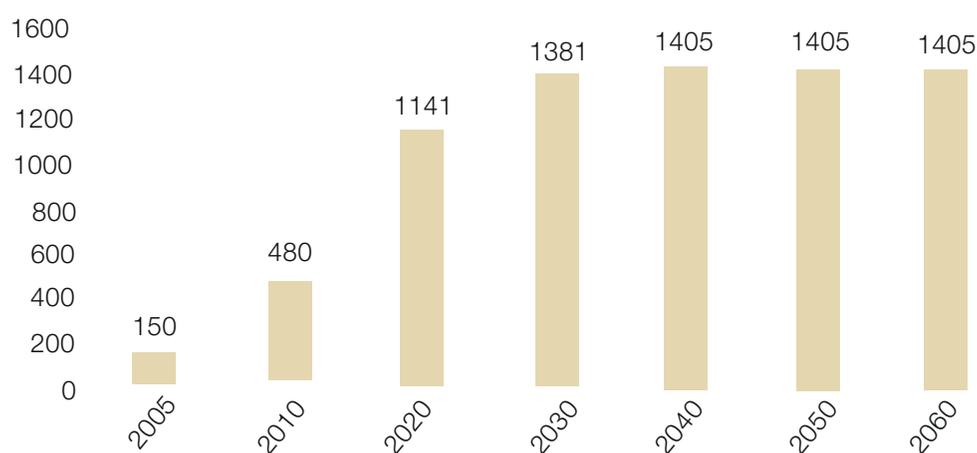
In spite of the continent's immense size, pressures on land and water will shape the future. About 21 per cent of Africa's total land is suitable for cultivation. While the soils in North Africa are generally well managed, most experts agree that the soils of sub-Saharan Africa are the most degraded in the world. Estimates of degradation, however, vary widely - some soil scientists estimate that about 20 percent of Africa's agricultural lands have been seriously degraded; others argue that up to 75 percent of Africa's farmland is plagued by severe soil degradation.²³

Erosion and mineral depletion (the loss of vital mineral nutrients) are the two principal sources of soil degradation. As population pressure increases, it is likely that more land will be cultivated for longer periods of time, reducing vegetative cover, lowering soil fertility and accelerating erosion. Some agricultural experts argue that if soil degradation in Africa continues unabated, yield reductions could be from 17 to 30 percent by 2020. Other experts predict that crop yields will be halved within 30 to 50 years.

Africa is one of the driest continents. It has about 22 percent of the world's land area and 14 percent of its population, but only 9 percent of the world's renewable water resources. Roughly 82 percent of land is classified as arid or semi-arid. A common benchmark of water scarcity is renewable water availability of less than 1,000 m³/capita/year. By this measure, physical water scarcity exists in much of North Africa, as well as in many countries in East and Southern Africa. North African countries rely heavily on groundwater, and many countries are pumping groundwater resources faster than they are being recharged.

Water consumption will increase for each of the major uses - irrigation, domestic and industrial. In sub-Saharan Africa, mean water withdrawals and total water consumption will increase at least up to 2025. Given current population growth trends and water use patterns, research findings indicate that a number of countries will exceed the limits of their land-based water resource capabilities by 2025. Projections suggest that the number of people living in water-stressed areas in Africa will be about 350-403 million by 2055, even in the absence of climate

Figure 11 | Africa: Mobile cellular telephone subscriptions (post-paid + prepaid) per 1000 inhabitants



Source: AFDB based on ITU Data

23 Veit et al (2010)

24 Page (2010)

change. With climate change the population at risk of increased water stress is projected to be 350-600 million people.

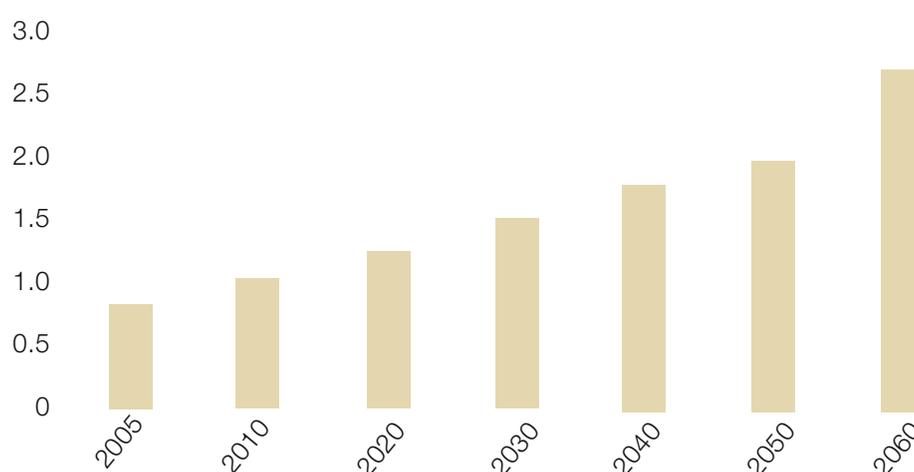
3.4.4 Infrastructural Deficit

Infrastructure service provision such as improved water and sanitation, reliable energy, better housing and more efficient transport systems improve lives and

contribute to poverty reduction. Better infrastructure also leads to improvement in economic activities like manufacturing and agriculture. Improved information and communication technologies (ICT) promote growth, and improve delivery of services in social sectors like education and health.

In terms of access to infrastructure services, Africa lags well behind other developing regions. Weak physical

Figure 12 | Africa: Total Population (billion)



Source: AFDB based on UN Population Division Data

infrastructure is a key factor that has prevented African countries from successful integration into the global trading system. Poor infrastructure is behind the higher trade cost that Africa, especially its landlocked countries, face compared with other regions. Poor infrastructure accounts for 40 per cent of transport costs for coastal countries and 60 per cent for landlocked countries. Africa seems to have failed to sustain the gains that were made during the three decades up to 2000. In this respect a number of countries are failing to expand services fast enough to keep up with rapid demographic growth and urbanisation. If the present trends prevail, Africa is likely to fall even further behind other developing regions, delaying universal access for a half century or more in many countries.²⁵

Mobile penetration in Africa has been on the rise with an estimated penetration rate of 37% in 2010, and forecast to rise to 56% by 2014. Mobile subscription is projected to rise nearly threefold from 480 per 1,000 inhabitants in 2010 to 1,405 in 2060 (see Figure 11). ICT broadband coverage has also picked-up in the last five years, from 0.1% of the population in 2005 to 7% in 2010. Projections reveal a sharply rising trend to 99% of the population in 2060 (Figure 5).

One of the constraints on improving ICT penetration in Africa is low electrification. Africa's electrification rate as at 2009 was estimated at 42%, with coverage of 69% and 25% for urban and rural areas, respectively. Available projections for electrification rates indicate a steadily rising trend in the coming three decades to a rate of 51% in 2030.²⁶

25 AICD, (2008), Access, Affordability, and Alternatives: Modern Infrastructure Services in Africa.

26 Abeeku Brew-Hammond, (2007), Challenges to Increasing Access to Modern Energy Services in Africa.

Transport infrastructure is vital for integration, intra-Africa trade and development in general. Africa's road infrastructure development is quite low in quantity, quality and access. Under 20 percent of roads are currently paved, and a study by the World Bank found that a significant share of the road networks built in the 1970s and 80s were in poor condition due to lack of maintenance. To address this situation, African governments should take advantage of the renewed interest from donors and investors in the infrastructure sectors to develop road networks. Significant policy reform is also needed to improve and maintain the road infrastructure network over the next decades.

Africa's rail transport system is heterogenous and poorly interconnected. There is a network of about 83,987 km of railway lines over an area of about 30.3 million square km. However, the African rail system has potential for expansion and to act as a catalyst for regional integration, intra-Africa trade and economic development, if current barriers between regions and countries can be addressed.²⁷

Other analyses of African infrastructural deficits produced interesting findings.

- Africa's infrastructure networks increasingly lag behind those of other developing countries and are characterized by missing regional links and stagnant household access.
- Africa's difficult economic geography presents particular challenges for infrastructure development.
- Africa's infrastructure services are twice as expensive as elsewhere, reflecting both diseconomies of scale in production and high profit margins caused by lack of competition.
- Power is by far Africa's largest infrastructure challenge, with 30 countries facing regular power shortages and many paying high premiums for emergency power.
- Africa has many ports but few are capable of handling modern, large-scale vessels

- Many ports suffer from congestion with average dwell time in Africa twice as high as in Europe.
- The cost of addressing Africa's infrastructure needs is around \$93 billion a year, about a third of which is for maintenance.
- The infrastructure challenge varies greatly by country type - fragile states face an impossible burden and resource-rich countries lag despite their wealth.
- A large share of Africa's infrastructure is domestically financed, with the central government budget being the main driver of infrastructure investment.
- Even with efficiency gains, Africa would still face an infrastructural funding gap of \$31 billion a year, particularly in power.

3.5 HUMAN DRIVERS OF CHANGE

Three human conditions will impact Africa in the next 50 years: a delayed demographic transition; the burden of AIDS; and land access and tenure. Each of these will play a major role in defining the opportunities and constraints faced by the continent.

3.5.1 Delayed Demographic Transition

Compared with other parts of the developing world, Africa's demographic transition is delayed and highly variable across countries.²⁸

Africa's population is projected to peak at 2.7 billion in 2060, compared to 1.0 billion in 2010 (Figure 12). The projections show the population growth rate declining, following a similar trajectory to other major global areas. Overall population size, however, will continue to increase, overtaking that of China and India.²⁹

The projections are based on varying declining fertility rates of individual countries. A faster constant

27 World Bank (2009)

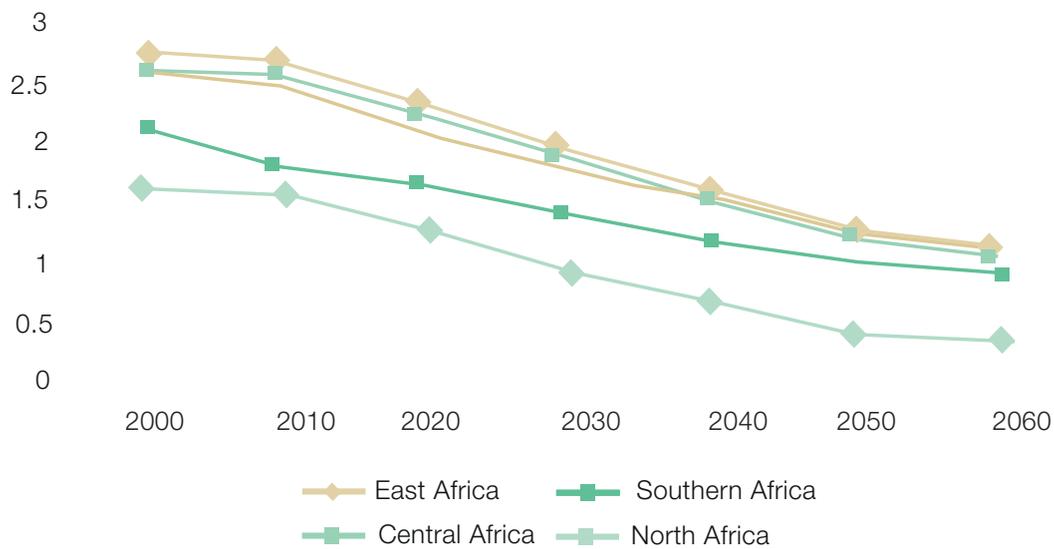
28 See Guengant (2010)/

29 African Development Bank (2010): "Africa Vision 2060", Tunis.

population growth rate of 2.3 percent, as recorded by Africa in 2010, would cause the population to double in about 30 years. But with the decrease in the total fertility rate, the growth rate of the population of Africa as a whole will decelerate to an annual 1% by 2060.

Almost all the sub-regions of Africa would witness the same dynamics in population growth except the North Africa region, where population growth will decline rapidly to just 0.3% a year by 2060.

Figure 13 | Population Growth Rate by Region (%)

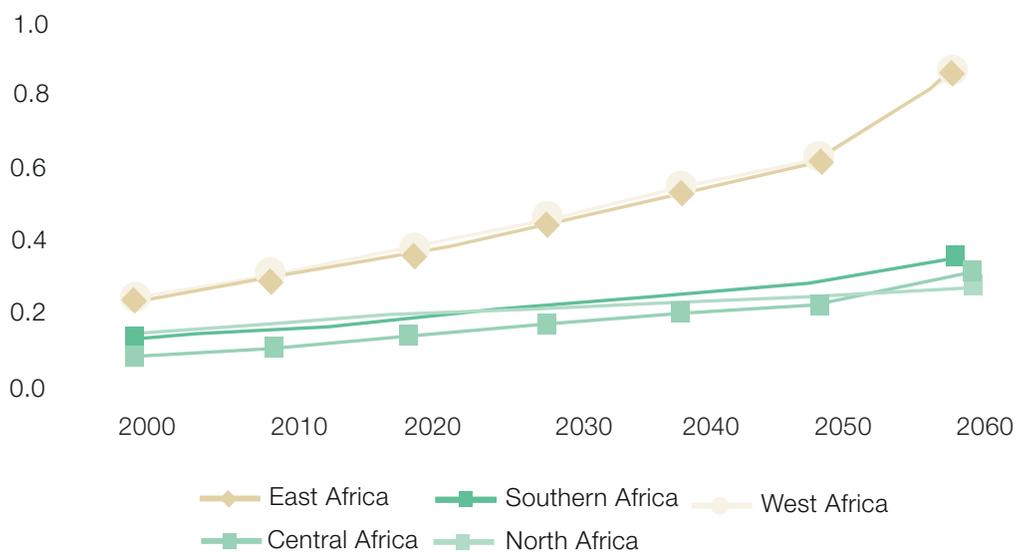


Source: AFDB based on UN Population Division Data

Figure 13 indicates, the population in two sub-regions of the continent - East and West Africa - are however projected to grow vigorously from 2010 to 2060, almost tripling in size. The population growth rates for this period are slightly higher than the continental average, which is partly attributable to

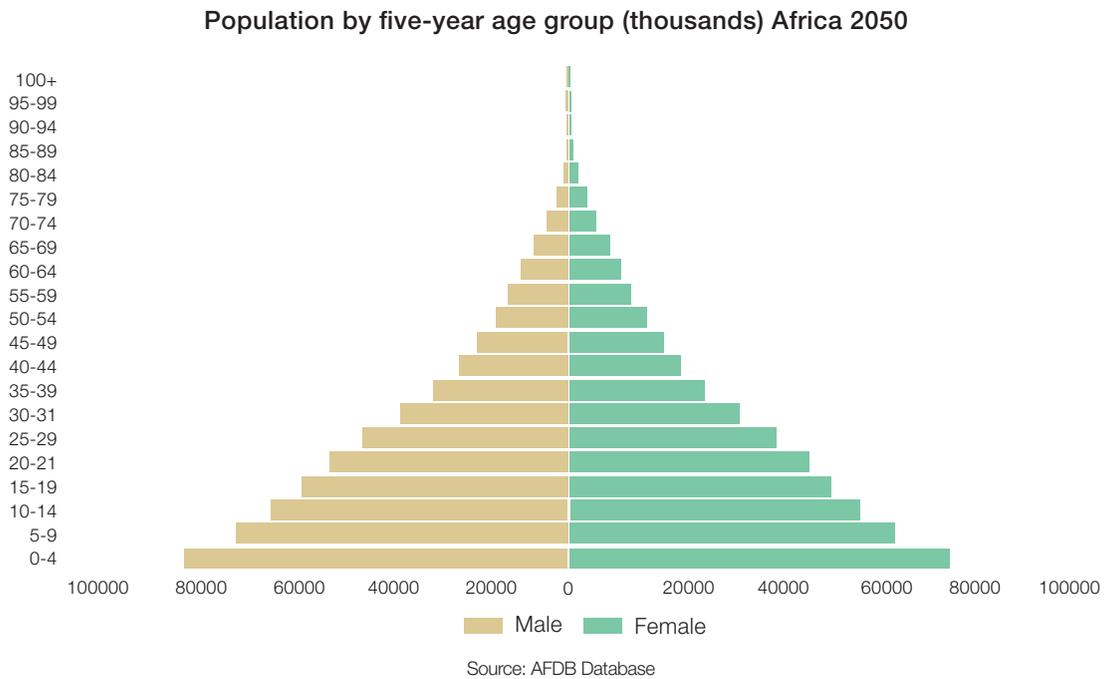
higher fertility rates. These sub-regions already have the largest share of the continent's population, and this is projected to grow from 55.3% in 2010 to 64.0% in 2060. Together, their populations will reach about 1 billion people in 2040 and 1.7 billion by 2060 (see Figure 14).

Figure 14 | Africa: Population (billion) by region



Source: AFDB based on UN Population Division Data

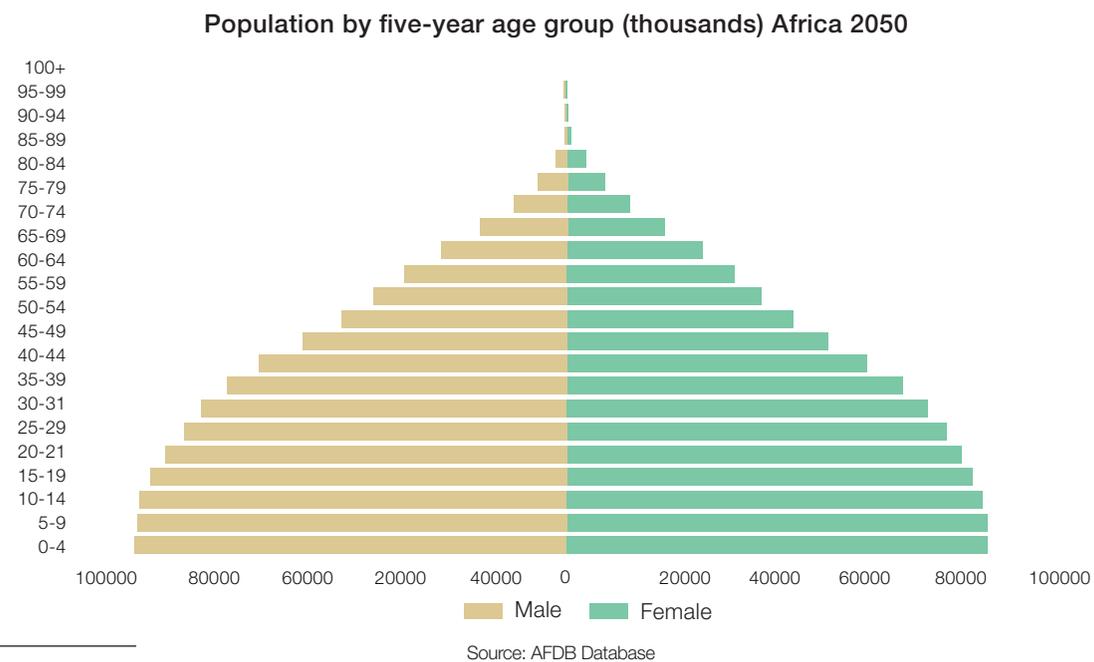
Figure 15a | Africa-Population by rear group 2010



A positive aspect of delayed demographic change is that Africa could benefit from what is called a “demographic dividend” - the increase in the ratio between the working age population and the non-working age population. Half of Africa’s population is aged 17 or less, and the active population aged 15 to 64 will triple between 2005 and 2060. (See Figure 15a and 15b) The demographic dividend can result in an increase of the labour

force, a decline in dependency ratios, increased national savings and an acceleration of urbanisation. All of these may lead to higher productivity and more rapid economic growth. However, this “virtuous circle” is not automatic and depends upon other factors: the labour force must be well educated, national savings efficiently mobilised and appropriate economic policies and good governance adopted.³⁰

Figure 15b | Africa-Population by year group 2050



30 Guengant (2010)

The demographic dividend will also exhibit itself in increased importance and role of Africa's middle class in socio-economic development. Africa's middle class which is strongest in countries that have robust and growing private sectors, is not only crucial for economic growth but is also essential for the growth of democracy. The emerging middle class in the continent which some estimates equates roughly to the size of the middle class in India or China (See, for example, Mahajan, 2009), will continue to grow, from 355 million (34 per cent of the Africa's population) in 2010 to 1.1 billion (42 per cent of the population) in 2060. (Figure 3). This middle class will assume the traditional role of the US and European middle classes as major consumers, and to play a key role in rebalancing the African economy. Consumer spending in Africa, primarily by the middle class, had reached an estimated \$680 billion in annual expenditures in 2008 (based on per capita consumption of more than \$2) - or nearly a quarter of Africa's GDP based on 2008 purchasing power parity. By 2030 Africa will likely reach \$2.2 trillion in annual expenditures and comprise about 3 per cent of worldwide consumption.

3.5.2 The Burden of AIDS

With only about 12 per cent of the world's population, sub-Saharan Africa accounts for over two-thirds of the global burden of infectious and parasitic diseases. Worldwide, Africa accounts for 9 out of every 10 child deaths due to malaria; 9 out of every 10 child deaths due to HIV/AIDS; and half of the child deaths due to diarrheal disease and pneumonia. While major progress can be expected in combating the majority of infectious and parasitic diseases, HIV/AIDS poses a particular challenge for the continent, especially for sub-Saharan Africa.

AIDS will remain an exceptional challenge

The emergence of HIV/AIDS as a global epidemic in the 1980s increased the enormity of Africa's disease burden. Although HIV - the virus that causes AIDS - has been identified and reported in every continent since the condition was first diagnosed, Africa has been the most affected region. According to the latest UNAIDS data, sub-Saharan Africa accounts for 67 percent of HIV infections worldwide, 68 percent of new infections among adults and 91 percent of new

infections among children. The region accounted for 72 percent of the AIDS-related deaths in the world in 2008. In countries with high HIV prevalence, life expectancy at birth has fallen, sometimes dramatically, adult and child mortality rates have increased sharply and the rate of population growth has fallen.

HIV/AIDS as an epidemic is exceptional in that it has continued uninterrupted for nearly thirty years. This sets it apart from other global epidemics such as SARS, the avian flu, Ebola fever and flu. Unlike some other epidemics, human behaviour plays an important role in determining risk. In Africa (and elsewhere) where the main mode of transmission is sexual intercourse, individual risk of becoming infected can be high in the absence of effective preventive measures. Responding to the epidemic therefore requires interventions outside the traditional domain of public health - interventions that address behavioural traits and present daunting socio-cultural challenges.

AIDS demographic impact will shape future economic prospects

The HIV/AIDS epidemic has the potential to change the course of Africa's development in the long-term through its impact on demographic parameters and social and economic structures. The groups most affected by AIDS are infants and the working age population. Infant mortality rates have increased in at least 40 sub-Saharan African countries between 2002 and 2010 due to AIDS. In southern Africa, the combined effects of premature deaths and reduced fertility among HIV-positive women have lowered population growth rates and reshaped the population structure.

Unlike other infectious and parasitic diseases such as malaria and tuberculosis, one of the most critical features of the HIV/AIDS epidemic is its concentration in the working-age population (aged 15-49 years). Estimates for 2005 by the International Labor Organization (ILO) showed that over 16 million African men and women of working age (15 to 64 years) were living with HIV/AIDS. More than 2.4 million were unable to work. The same study estimated that over 19 million working-age adults - 10.6 million men and 8.6 million women - had been lost since the epidemic began, equivalent to over 6 percent of the region's total labour force.

HIV/AIDS will lead to further depletion of human capital, as skilled workers die prematurely. AIDS has already resulted in the loss of large numbers of skilled workers and public and private sector professionals (civil servants, teachers, uniformed services, medical personnel, engineers) in several high prevalence countries. The full impact, however, goes far beyond the labour force. It also has profound implications for the structure of families and the integrity of communities.³¹

3.5.3 Land Tenure and Access

Recent trends in both rural and urban areas in sub-Saharan Africa suggest that the institutions governing land access may become a critical source of tension in the coming decades.

Land tenure systems need to be able to respond to demographic, physical and economic pressures. However, the process of change is typically very slow, and societal constraints on public action may be substantial.

Land tenure systems determine how societies deal with issues such as private appropriation of land and the corresponding decline of the commons and customary ownership; concentration of land ownership (through domestic and foreign investments); fragmentation of customary-owned land in areas exposed to high demographic pressure; and tenure upgrading as a response to the spatial expansion of informal urban settlements.

Tensions due to scarcity, population density and soil degradation will affect access to land in all regions of Africa over the next five decades. The slow demographic transition and the decrease in soil fertility will put increasing pressure on tenure systems. Unregulated land markets and the failure of land management and administration policies could result in increasing inequalities in access, and a rising number of land-related conflicts in both rural and urban areas. There are also substantial risks of land grabs and privatisation of the commons.

31 Lisk (2010)

There is an urgent need for better governance of land management and improved regulation of land markets, in order to limit the magnitude of land-related conflicts. New forms of governance will be needed to improve conflict resolution, the regulation of land markets and urban planning.

3.6 PRIVATE SECTOR AND DEMOCRATISATION

3.6.1 Private Sector

One of the consequences of economic reform in Africa over the 1990s was more openness to the private sector as the main engine of growth, in marked contrast to earlier development strategies. The roles of government and the private sector in economic activity and management have become clearer. Macroeconomic stability, trade and exchange rate liberalisation, and new policies and incentives supportive of the private sector have helped build credibility and a conducive environment for private sector development. This has increased private sector (both domestic and foreign) confidence in the African economy and generated substantial levels of private investment. Recent growth in African economies is largely attributed to the private sector. Even though foreign aid increased, governments reformed and new natural resources were discovered, it is largely the response of the private sector that caused growth to accelerate in the 2000s.

For the private sector to play its full role as engine of growth in Africa and poverty reduction, African countries will need to create an enabling environment for a vibrant private sector in which micro, small, and medium size enterprises (MSMEs) and labour-intensive activities thrive alongside large firms in both traditional and new areas. This will require improving the legal and regulatory environment for doing business, increasing access to finance, improving corporate governance, strengthening human capital and skills development and fostering entrepreneurship. Further impetus to private sector-led growth could be expected from substantial improvements in both 'hard' and 'soft' infrastructure, and the expansion of markets through regional integration.

3.6.2 Democratisation

Democracy has become increasingly prevalent across Africa over the last two decades. In 2011, 18 countries in Africa are considered electoral democracies, compared to only four in 1991.³² Electoral democracy is becoming institutionalised in several African countries, acting as a powerful force for economic growth and development.

It is commonly argued that there is a two-way relationship between democracy and development. Africa cannot develop without democracy. Democracy is required to improve governance and manage the ethnic tensions that impede and frustrate African development efforts. But at the same time, democracy in Africa cannot be sustained without improvements in human development.

Democracy and good governance promote economic development in several ways. The historical and geo-strategic interests that allowed East Asia to develop in more autocratic regimes cannot be replicated for Africa.

There is a growing body of empirical evidence and statistical research demonstrating the inseparable

link between democracy with good governance and sustainable development. Botswana and Mauritius, the only two African countries that have been continuously democratic since independence, have achieved relatively good development performance in the past three decades. African countries that democratised during the 1990s have made some development progress, while lingering semi-democracies and autocracies performed much more poorly as a group and have continued to slide backwards.³³

The evidence is not restricted to Africa. Among the most important factors explaining variations in per capita incomes during the 1990s are various measures of political openness and good governance.³⁴

It is estimated that the difference in the political openness between most democratic African states is associated with a growth gap of over 4.5 percentage points per year. Furthermore, the higher budget deficits, financial repression and black market premium associated with closed political regimes explain about half of the growth difference between East Asia and Africa over the past three decades.³⁵

32 USAID (2011): Africa, Democracy and Governance (website copy)

33 Diamond (2005): "Democracy, Development, and Good Governance: The inseparable links", paper presented at the maiden Annual Democracy and Governance Lecture of the Ghana Centre for Democratic Development, March 2005, Accra, Ghana

34 Op cit Larry Diamond (2005)

IV. The Consequences

The drivers of change outlined above are all likely to have profound implications for Africa's development pathway to the year 2060. But the implications remain unpredictable, depending on how these different factors interact. In this section, we discuss some of the most likely scenarios.

4.1 URBANISATION WILL ACCELERATE

By 2060, Africa's population will have radically shifted from rural to urban areas. The continent's urban dwellers in 2010 made up nearly 40 percent of the total, and this will rise to 50% by 2030 and 65% by 2060. In this configuration, domestic demand will be boosted by new patterns of consumption. Domestic sales will benefit from the rise of the middle class, improved telecommunications and banking operations and by the development of infrastructure in general.

On a regional basis, East Africa is projected to remain the least urbanised. Central Africa, on the other hand, is likely to overtake Southern Africa by 2050. Urban growth, usually linked to major migration flows from rural areas, presents daunting challenges for development, as inflows of migrants into cities have to be provided with access to land, infrastructure and basic services.

Rapid urbanisation will occur in response to rising demographic pressure, a likely deterioration in agricultural productivity, changing comparative advantage and reduced costs of migration. By 2060, much of the population of Africa will be in coastal mega-cities, as in Asia and Latin America. Some migration will be international, from the landlocked countries to the coastal ones; some will be internal. Existing coastal cities will face the dual challenge of coping with the population influx and developing a productive sector that can deliver the levels of efficiency necessary to support the growth of industry and high value-added services.

Paradoxically, despite the major challenges posed by rapid urbanisation, Africa's cities may be too small. It is believed that to be competitive globally in manufacturing and services, Africa will need cities in 2060 that are much larger than those of today. This is because big cities generate powerful economies of scale. One rule of thumb is that each time the size of a city doubles, the productivity of the activities within it increases by around 4-8 percent. A firm operating in a city of 10 million people has unit costs around 40 percent lower than if it operated in a city of only 100,000.

For big cities to emerge, there needs to be a large population. Overwhelmingly, city size is correlated with country size. If two identical countries are merged, the size of their largest city increases by 75 percent. A comparison of India and sub-Saharan Africa brings home the point. India has a larger population than the whole of sub-Saharan Africa, yet it is a single country while Africa is divided into 54 independent political units. India has two cities of over 20 million people. Africa's biggest city is Lagos, with 10 million, and that is located in Africa's most populous country. The more typical African capital, such as Nairobi, has a population of around three million. The implication is that the political fragmentation of Africa has inhibited the emergence of mega-cities and in turn closed off opportunities for global competitiveness.³⁶

4.2 MIGRATION WILL INCREASE

Population mobility has been a permanent feature of African history, and is likely to increase. Demographic pressure, persistent income differentials, spreading networks of migrants, increasingly intense communication and increased ability to afford the cost of migration will all contribute to substantially greater mobility of workers. In addition, the effects of climate change may increase the need to emigrate from the worst affected regions - either to cities within the continent or outside Africa.³⁷

³⁶ Collier and Venables (2008)

³⁷ Uri Dadush (2010)

The rise in communication across countries will serve to bolster migration. Increased communication will help individuals in origin countries become better informed about destination countries. As a result of access to more accurate information, people will be more motivated to migrate and will also face lower costs when doing so. In addition, better communication will reduce the psychological and sociological costs of migration, as connecting to those left at home becomes increasingly easy.

Growing demographic imbalances between Africa, Europe and North America, combined with large income gaps, will lead to strong migration pressures towards industrialised countries. In developed countries, 20 percent of the current population is aged 60 or more. This proportion will increase to 32 percent in 2060, with two elderly persons for each child aged 0 to 14 years. In the absence of an increase in fertility, immigration will be necessary to maintain an acceptable labour force/pensioner ratio. It is projected that the EU will need 1.6 million immigrants per annum between 2010 and 2060. In the short and medium term, that gap can be met from Central and East Europe. However, by 2060 these countries will find themselves in an increasingly similar position to the Southern European countries, and will progress from exporters to importers of labour. Africa has the demographic potential to close the gap.³⁸

The majority of African migrants, however, will remain within the continent. Historically, the major internal migrations have flowed from the Sahel to coastal countries, from Southern African countries to South Africa, and from sub-Saharan Africa to Libya. Intra-African international migrants grew from 7.9 million in 1960 to 15.8 million in 2005, and growing intra-regional income differences are likely to promote even more migration within Africa. Because the costs of migration are inversely correlated with distance, small differences in income nearby are likely to motivate migration. There will also remain the forced mobility

of displaced persons and refugees (over 16 million currently) linked to conflicts.

The major impacts on African economies of increased migration are likely to come through increased migrant remittances and highly skilled migration. Globally, remittances are a leading source of development finance, and in Africa they are of growing significance. The subject of skilled migration and the 'brain drain' on Africa's economic and social development is one that attracts high emotions but little consensus. Africa loses a higher proportion of its skilled labour force and of its population as a whole to migration than other developing region. On the positive side of the ledger, skilled migration results in the return of remittances and may provide incentives for skill formation. It may also, via the diaspora, encourage commerce, investment and knowledge transfer. Set against these gains are the reductions in institutional capacity, the loss of productivity of networked professions - such as health care - and lost public investment in skill formation.³⁹

4.3 AGRICULTURE IS LIKELY TO DECLINE IN IMPORTANCE

Agriculture is the sector in which the global, physical and human drivers of change are most likely to collide on the way to 2060. Global warming will tend to benefit Northern agriculture while seriously damaging African agriculture.⁴⁰ Rain-fed African agriculture is considerably more climate-sensitive than agriculture elsewhere, and soil degradation will have substantially increased due to population pressure. By 2060, there will be a significant decrease in suitable rain-fed land and in the production potential for cereals.

A number of simulations of the impact of changes in agricultural output on Africa's economic prospects suggest that from 2010 to 2060, overall economic growth is projected to decline by about 3 percent per annum, solely due to the impact of climate change on agriculture. The decline in economic growth as a result of reduced agricultural output will be of the order of 6

38 Dadush (2010)

39 Lucas (2006); Page and Plaza (2006)

40 Collier, Conway and Venables (2008)

percent in Southern Africa, 4 percent in North Africa and 2 percent in East Africa. By comparison, Asia will experience only a 1.2 percent decline in growth, while North America and the EU will both experience slight gains.⁴¹

The simulations also predict that, by 2060, the ratio of domestic to imported prices for agricultural products will fall in North America and the EU but rise substantially in developing countries. The steepest price rises will occur in Southern Africa, followed by North Africa and the rest of Sub-Saharan Africa in that order.

4.4 NATURAL RESOURCES WILL REMAIN IMPORTANT

By 2060, many of Africa's current mining operations will have exhausted their natural assets. Renewable resource stocks may also have been seriously depleted.⁴² This does not necessarily suggest an overall decline for Africa in natural resource revenues, but rather that these opportunities will have shifted in both location and composition.

For those countries that have depleted their natural assets, there will be issues of transition. South Africa, for example, will need to shift from being a resource-

rich economy to a resource-scarce, coastal economy. One consequence is that although South Africa has excellent infrastructure, much of it is not well located for a coastal future. South Africa's core infrastructure and industry is around the mining industry, many hundreds of miles from the coast. Industrialisation will depend upon integrating into global markets and so will cluster at the major ports of Durban, Cape Town and East London. Both infrastructure and housing will need to be built up in these locations. Similarly, the challenge to the Nigerian economy over the next two or three decades will be to use oil revenues to finance the huge investment in infrastructure that Lagos will require in order to become a productive mega-city.

Some of the countries that are not currently resource-rich will become so due to new discoveries and shifting global patterns of demand. For these economies, the major challenges will be how to deal with volatility and manage their new resource wealth for long-term development. Our understanding of the importance of terms-of-trade shocks in sub-Saharan Africa has been evolving. Historical data suggest that external shocks are important determinants of growth and managing them will be critical. Given the poor global record on natural resource management, a major change of approach in public finance policies to one suited for resource wealth will be needed.⁴³

41 Asafu-Adjaye (2010)

42 Veit et al (2010); and Collier (2010)

43 Collier and Goderis (2007)

V. Policy Choices and Strategies

By 2060, these changes will have transformed the opportunities and challenges facing Africa. The extent to which individual countries and Africa as a whole will be affected will depend to a large extent on their policy responses. Along the way, many important choices will need to be made. Some are within the purview of individual African countries; others will require collective action.

5.1 COUNTRY-LEVEL RESPONSES

Many of the responses to change will need to take place at the country level. For the foreseeable future, nation states will continue to be the dominant actors in defining the public policies and actions that affect their populations. The scope and scale of the challenges and opportunities faced by African countries suggest that early and decisive changes in public policies and actions will be needed.

Investing in cities

Africa has largely neglected its cities. It cannot afford to continue to do so if the urbanisation scenarios outlined above become a reality. Although small country size may constrain Africa's coastal cities from reaching the size of those in Asia, the main commercial city of most coastal African economies would have at least doubled or trebled in size by 2060. The first risk arising from such rapid growth is that it will take place in a largely unplanned manner. Very few African cities have municipal governments capable of thinking through the complex set of coordinated decisions needed to deal with explosive urban growth. National governments have similarly failed to come to grips with the urban challenge.

Africa will need to develop the policies and institutions to support urban growth. The main aim of urban

policy should be to help cities deliver agglomeration economies while reducing the costs that come with rising congestion. Land tenure and property rights are key instruments for efficient urban growth. Institutions governing property rights are the foundation of rapid and sustainable urbanisation. Without secure land and property rights, land transactions and urbanisation tend to become divisive. In many countries, urban land rights are insufficiently clear, or the market in them is not well-established. In such cases, legal action is needed to unblock the supply of land for building. In Africa, where customary institutions cover between 90 and 98 percent of the land, policies to formalise land tenure must start with customary systems and gradually add features of modern land registration.⁴⁴

Once property rights have been established, land use regulation and planning is needed for the allocation of land among different uses, such as preventing the location of heavily polluting industries in residential areas. It should also ensure the integration of private and public uses of land, such as providing space for transport infrastructure in densely populated areas. But if regulations are overzealous, they can reduce the benefits of density and agglomeration economies. Policy actions to reduce congestion costs ought to include investments in transport infrastructure to enhance connectivity - both within and between cities - and incentives to encourage socially efficient location decisions by firms.

Urbanisation will place growing demands on Africa's construction industry, which has been a severe constraint on the efficient provision of infrastructure and housing in the past. Sudden increases in demand give rise to construction booms, during which unit costs rise substantially. The danger is that unless high unit costs are tackled by policy, a quantum increase in expenditure on investment will largely be dissipated in higher unit costs. Public policy with respect to

44 Durand-Lasserve and Le Roy (2010)

45 World Bank (2009)

the supply of inputs and skills will be needed to address binding constraints to the expansion of the construction industry.⁴⁶

The non-economic factors associated with rapid urban growth are also problematic and will require appropriate policy responses. Ethnic and religious diversity will surely increase as internal and international migration respond to the shift of economic opportunities to cities and coasts. Although large cities have the potential for social stress, they also have the potential to forge a new sense of common belonging that rises above tribal identity. Mega-cities have the potential to be social melting pots. Whether this occurs or not will depend largely on the decisions of city governments with respect to land use regulations. Within cities it may be wise for local governments to discourage ethnically based zoning of residential settlements. Geographical equity in the provision of public services may also prove critical to reducing ethnic tensions within cities.

Managing migration

Migration will become an increasingly significant part of Africa's human and economic landscape between now and 2060. Because migration is an individual decision in response to incentives, attempts to control it - for example, through the use of exit visas - have uniformly failed, both inside and outside Africa. Rather, the demographic and economic forces that will boost migration by 2060 should be seen as an opportunity to manage migration in a way that maximises its benefits to the countries of origin, while minimizing its costs.

The most intriguing question arising from the concept of managed migration is whether some economies in Africa - especially the landlocked - might be able to use migration as part of a coherent development strategy. This would require investments in education to create the relevant skills. It may also require multilateral action with respect to mode 4 (service delivered within the territory of the Member, with supplier present as a natural person of the General Agreement on Trade in Services (GATS).

Africa has a large number of landlocked, resource-scarce countries, with the weakest prospects for development to middle-income levels. Viewing migration as part of the solution to the development problem for these countries - rather than as a symptom - offers considerable promise.

The economic future of Africa's landlocked, resource-poor economies is likely to require that they specialise in the export of goods and services that have high value to transport costs - mainly those that embody high levels of human skills. There need not be a trade off in policy terms between a strategy of promoting the export of goods and services that embody human skills and directly exporting the skills themselves. The same investments in education and training are required, and the limited evidence suggests that the opportunity to migrate raises the demand for skills. Falling transportation costs - and corresponding investments in transport infrastructure - can benefit both trade and migration. Aggressive investment in the skills needed for e-commerce (as, for example, Rwanda has done) can have the beneficial, if unintended, consequence of providing the language and interpersonal skills needed to equip nationals to compete in foreign labour markets. What is required is that governments contemplating a migration-based strategy clearly articulate the institutional and policy implications and build up the evidence base to understand its long-run costs and benefits.

Appropriate policy responses to migration will vary with the type of migration - skilled versus unskilled, permanent versus circular - and with its economic consequences. Some interventions are reasonably straightforward and have an ample evidence base to support them. For example, financial sector reforms to extend formal banking to rural areas and to provide a broader array of financial instruments to small savers can increase the share of remittances that flow into the formal financial system and increase financial depth. Active policies to encourage the physical or virtual return of skilled migrants - as have recently begun in Ghana and Nigeria - offer the potential for using the diaspora as a development agent.⁴⁷

46 Collier (2010)

47 Page and Plaza (2006); and African Development Bank and World Bank (2011)

At present, perhaps the most controversial area of migration policy is the appropriate response to brain drain - particularly the migration of highly skilled health professionals. Since at present we have scanty evidence as to whether the net impact of brain drain on the economy is positive or negative, policy responses are speculative at best. Nevertheless, a number of policy lessons drawn from the experience of countries outside of Africa - many of them concerning what not to do - are relevant to managing the brain drain.

The brain drain is rarely the root problem by itself. It is usually the symptom of other development problems. Without properly addressing the policy challenges in education, labour and financial markets, healthcare and public finance, efforts to harness the benefits and minimise the costs of skilled migration are unlikely to be very effective, and indeed may be futile. Existing evidence suggests that policies restricting the mobility of highly skilled individuals directly or through educational restrictions are unlikely to work. If mandatory service requirements are imposed following education, the terms and duration need to be carefully chosen to avoid creating the perverse effect of encouraging migration to avoid such burdens.

Interventions may be effective in helping to recover some of the publicly financed costs of skilled migration. Careers in medicine, engineering and other technical subjects are fast becoming global. These also tend to be the most costly subjects for training. Requiring students in these fields to pay for a portion of the cost of their training seems fair and efficient. On the other hand, tuition levels that reflect the actual cost of education would limit eligibility, since most African countries lack credit markets for financing education. One potential solution is a two-tiered tuition system, where there is partial (or full) cost recovery for a portion of students and free tuition for others. Eligibility would depend on academic merits and/or public service requirements.

It is possible that in the long run one of the political and social consequences of a large and permanent diaspora would be to reduce the incentives for conflict.

This might occur as simply as by a decline in ethnic identity among returning migrants who have spent years outside their traditional social context. Extending the vote to citizens resident abroad - as some Latin American countries have done - might reduce the appeal of ethnically-based parties and contribute to the formation of new political interest groups with a stronger national identity.

Transforming African agriculture

Africa needs an agricultural revolution. Given the continent's projected increase in food requirements and the limits to extensive agricultural growth, progress in agricultural yields is vital. Improved productivity is also necessary to meet non-African competition and contribute to reducing food prices without taxing smallholders. With the exception of cotton, Africa has lost competitiveness in most of its agricultural produce destined for export. If current policies are maintained, Africa will probably have lost global competitiveness in agricultural products by 2060.⁴⁸

There is growing concern among agricultural scientists that a decline in long-term soil fertility is already limiting agricultural production in Africa, and that the problem is getting worse.

One immediate area for action is to establish supporting mechanisms for increased use of nutritional supplements such as fertilisers in agricultural production, as agreed in the Abuja Declaration on Fertilizer for African Green Revolution of the African Union in 2006. This calls for: the development of national agricultural input credit guarantee facilities; use of "smart" (targeted and time-bound) subsidies to ensure that poor smallholders have access to fertilisers; creation of regional fertiliser procurement and distribution centres; and removal of trade barriers and impediments to local fertiliser production.

Adaptation to climate change will require that African farmers have access to new varieties of crops better adapted to the changing agro-climatic conditions. Africa needs a "double green revolution", combining the

48 Okello (2010)

intensification of agricultural production with adaptation to the diversity of ecosystems. While the continent was not well placed to benefit from the chemical-based green revolution, there is potential of a second-generation green revolution in which genetic engineering (GM) achieves productivity gains comparable to the chemical-based revolution of the 1970s.⁴⁹

GM technologies are currently excluded from the African continent, yet Africa is the region most likely to benefit from the new technologies. A biology-based green revolution would enable crops to be adapted in response to climate change, to be custom engineered for varying ecosystems, and to introduce resistance to pests and blights which affect crops in Africa far more than other regions. For as long as Africa bans GM, very little research will be conducted on the improvements most pertinent to the region. Because the lead time between research and application is long - around 15 years - urgent action is needed. Were the ban lifted within the next few years, new technologies would not become available until around 2030.

Even if agricultural innovations accelerate, a large number of complementary institutional and policy reforms will be needed to transform African agriculture. Among the most critical actions are:⁵⁰

- introducing intensive agriculture through consolidation of holdings and commercialisation;
- clarifying the nature and duration of land rights claims; formalising the terms of deeds, contracts and registration; and improving ways to document and uphold claims; and
- developing education, advocacy and awareness programs that target poor and insecure land users and inform them of their rights - especially those who face discrimination (such as many women and minority groups).

Agricultural innovation systems need to adapt to cover the range from development of new, appropriate

agricultural technologies to the dissemination of good practice. Countries will need to develop national programs for sustainable land and soil management to avoid and reverse soil degradation, especially in densely populated regions. Soil conservation, restoration and management are central to increasing crop yields. Investments in irrigation and a shift from dry-land to irrigated agriculture will also be required.

Avoiding the resource curse

Effective management of natural resources must remain high on Africa's public policy agenda. Resource extraction generates economic rent. Typically, governments establish the rules by which private investors are given access to rents and taxed. This requires institutions that support and regulate investment by the private sector. The challenge for government is to design policies and regulations that allow them to extract sufficient revenues from the exploitation of natural resources, while still providing the incentives to encourage and maintain private sector investment.

Private companies are likely to be better than government at assessing the value of a resource. In awarding a contract for resource extraction, it is therefore important to provide companies with an incentive to reveal information about its value. Normally, this is best achieved through an auction. The advantage of an auction is that, by forcing companies to compete against each other in a common framework, they each have an incentive to bid close to the true value of the extraction rights.

But private investors will shy away from bidding on resources if they believe that the terms of their contract will be subject to subsequent revision. Enforceability of contracts is equally as important as disclosure of value. Often courts within a national jurisdiction are not trusted by investors to be neutral in disputes involving their own government. This suggests that it may be useful to explore international or regional dispute resolution mechanisms.

49 Oyelaran-Oyeyinka and Sampath (2010); and Collier (2010).

50 Okello (2010)

Governments of resource-rich countries will also need distinctive approaches to the use of public revenues. The revenues from resource extraction are temporary, because natural assets will at some stage be exhausted or cease to be valuable. The right response to the temporary nature of revenues is to have a much higher savings rate out of these revenues than out of normal taxation.

Savings can be invested globally and in the domestic economy. The choice should be largely determined by the relative yields on each type of asset. Ideally, the government will have a stock of spending plans, each of them subject to rigorous ex-ante appraisal - a social cost-benefit analysis. However, assembling a set of prioritised spending plans and subjecting them to such analyses requires information and technical expertise. Investments by African governments and their development partners in creating the technical capacity for project and program appraisal are central to the efficiency of public expenditure programs.

Even if the information and technical skills are present, scrutiny is important. Misaligned incentives may cause decision makers to act in a manner that is inefficient or corrupt. When designing institutional reform programs in resource-rich economies considerable thought and imagination should be devoted to strengthening scrutiny.⁵¹

Countries taking a long-term view of the economy will benefit the most from their oil resources. Democratic development and maturity tends to promote the emergence of a national consensus on economic objectives and management. Groups favouring long-term goals promote continuous management of resources. Such groups may include well-functioning civil society organizations, parliaments and private business. They act as agents of restraint against the inefficient use of resources. External agents of restraint may also have a role in strengthening

economic management for the avoidance of the Dutch Disease.⁵²

Breaking in at the bottom

What is needed for African economies to seize the opportunity to reverse the 40 year decline in manufacturing production and exports? There is by now a large literature on improving the investment climate in Africa. This is of course central to the success of any strategy to compete globally. Appropriate structural and macroeconomic policies make it easier to attract private investment, and many African countries have an unfinished agenda of economy-wide reforms that will need to be pursued. But these policy and institutional reforms may not be sufficient. Because industrialisation is lumpy - in space, in production and in time - once an economy crosses over the threshold of competitiveness its industrial expansion can be explosive, but below that threshold the outcome is likely to be industrial stagnation. For countries below the threshold, marginal efforts to improve competitiveness are likely to fail.

The policy changes needed for Africa to break in at the bottom of the global economy fall into two groups. The first is the less controversial. It consists of policies directed at bringing the human and physical capital of Africa's economies to the minimum threshold needed to support industrial growth by improving skills and infrastructure. There is less agreement on the second set of policy actions. For Africa to learn to compete in the global economy, governments will need a strategy to raise the productivity of the industrial sector as a whole.

Lack of suitable skills has serious implications for efforts to build a competitive African industrial sector. Africa has achieved considerable success in primary education, but quality has suffered and there have been no comparable increases in secondary

51 Collier and Hoeffler (2008)

52 Benn Eifert et al (2003)

53 See for example the Doing Business surveys of the World Bank or the Africa Competitiveness Report of the AfDB, World Economic Forum and the World Bank.

and tertiary enrolments.⁵⁴ Africa needs new skills to compete and new approaches to post-primary education. International agreement on a more nuanced measure of success in building human capital than the current primary education Millennium Development Goal is critical. So too is strengthening the focus on educational relevance and quality, in particular by encouraging private provision of educational services in technical, vocational and tertiary education.

Africa lags badly in terms of the quality and coverage of basic infrastructure. Changing public expenditure priorities to increase the share of the budget devoted to infrastructure investments relevant to industrial competitiveness is a key first step. This will require agreement with the international community on the need to change aid priorities to allow expanded public financing of infrastructure projects. Governments will also need to improve the quality of investment and service delivery, in part by encouraging private investment and operation.

A first step toward learning to compete would be to create an “export push”. There is substantial evidence that African manufacturing firms improve their productivity by exporting.⁵⁵ Where productivity improvements in industry are linked to learning through exports, an “export push” strategy, involving a concerted set of investments, policy and institutional reforms to promote manufactured exports, can boost competitiveness and raise growth. It will require coordinated action across a wide range of government actors. Transport, power and communications infrastructure would need to be refocused at international markets. Export institutions - from customs administration to export promotion agencies - need to become more efficient and accountable to exporters. Institutional reforms to streamline and reduce the cost of trade logistics are needed, including measures to increase competition among service providers.

Compared with Asia, Africa has few industrial clusters, making it more difficult for African firms to compete

in the global market place. Policies to encourage the formation of industrial clusters may be another way of helping African firms to boost their competitiveness, but policy makers need to be quite careful to work with rather than against the market in designing spatial policies to promote industrial development. In fact, the most important policy tool to help realise agglomeration externalities in many African countries may be to get rid of urban zoning and land use policies that make it costly or impossible for firms to locate near each other.

Given the low level of industrial export dynamism in most of Africa, linking export promotion and spatial policies in an export processing zone (EPZ) may be an attractive way of encouraging agglomeration. Africa has few functioning EPZs. Most fail to attract a sufficient number of firms to realise cluster economies, and in many cases they offer excessive subsidies to the few firms that they succeed in attracting. Case studies suggest that concentrating investment on high quality infrastructure in a limited physical area is crucial. They also suggest that improving social services in an industrial zone to levels above national standards is highly desirable.

5.2 Collective Responses

Some responses to change will be beyond the reach of individual countries; they will require collective action. Some of these actions, such as regional integration, will primarily involve African countries themselves while others will involve the international community. This section sets out several possible collective responses to change.

Deepening regional integration

By 2060, many of the key issues confronting Africa will need to be dealt with at a sub-regional level, and the form of integration will need to be much deeper than free trade in goods and services. Regional integration is particularly important for Africa because it is divided

54 Page (2009)

55 Bigsten et al (2004) and UNIDO (2009)

into many small countries. The problem is not primarily that the domestic market is small. That can be overcome by focusing on the external market. Rather, in the African context regional integration holds the key to solving three other problems - one traditional and two more novel.

The traditional problem is that Africa is the continent with the largest number of landlocked countries. In these economies, prosperity depends fundamentally on their neighbours. For exporters in land-locked countries, poor infrastructure in neighbouring, coastal economies, incoherent customs and transport regulations, inefficient customs procedures and “informal” taxes in transportation corridors slow transit times to the coast and raise costs.

Global market access for landlocked countries requires collective action on such issues as common infrastructure, trade logistics and common services. Despite the plethora of regional organisations in Africa, collective approaches to improving market access for landlocked countries are still at an early stage. Tangible progress to improve trade logistics has been slow. Investments in regional infrastructure are hampered by the technical complexity of multi-country projects and the time required for decisions by multiple governments. Institutional reforms - such as common standards, regulations and one-stop border facilities - have also failed to materialise.

The reason for this failure is simple: infrastructure that spans frontiers does not generate equal gains. Roads that give port access to landlocked countries are far more important to the landlocked countries than to the coastal countries on which they depend. Road quality is determined by maintenance expenditures, yet the benefits of these expenditures accrue disproportionately to the coastal countries. Hence, political fragmentation results in the quality of these major arteries being consistently poor. The landlocked countries have no right to demand higher expenditure by their coastal neighbors, and no mechanism to compensate them for their expenditures.

The second problem is that small countries have small cities. Africa’s ability to compete may depend crucially on the ability of its cities to generate the economies of scale that make an industrial location efficient. To overcome this problem, a form of integration that allows the free movement of goods, capital and people across borders - allowing the formation of regional cities - would be needed. City formation will call for a form of political integration that is considerably deeper than that seen to this point. Africa may need the scope for large fiscal transfers to mitigate the pattern of winners and losers that will come from large population movements with gains concentrated in mega-cities.⁵⁶

Finally, the small economic size of the typical African state implies that it is not able to reap the scale economies that characterize the provision of security. Hence, despite some decrease in the risk of conflict, it may become increasingly difficult to contain the spread of conflicts once begun. The very high risks that post-conflict situations will revert into conflict could be brought down by regional action. Regional involvement is warranted because of the high costs of conflict in one country to the entire neighbourhood. One approach could be to regionalise security forces. For example, the East African Community could reasonably aspire to provide common security services for its member countries. A further benefit of the regionalisation of security forces would be the scope for mutual reductions in the level of military spending.⁵⁷

Boosting market access

Africa’s success in going global may ultimately depend as much on the actions of its international partners as on its own efforts. Aid agencies will need to support strategic investments in trade related infrastructure and institutions, mainly under the aegis of the WTO “Aid for Trade” initiative. In addition, more advanced economies can reduce tariffs directed at higher stage processing of Africa’s commodity exports.

56 Collier (2010)

57 Collier (2010)

Africa needs access, not only for goods but also services. African countries may be competitive in mode 2 (largely tourism) and mode 4 (temporary presence). African countries need strong negotiating skills to achieve liberalisation, particularly in mode 4. In addition, regional action may be required to improve the competitiveness of the commercial services.

In the short run, Africa would substantially benefit from a streamlining and harmonisation of the two preference programs that most affect its manufactured exports - AGOA and the EPAs. Europe and the United States still constitute the two principal markets for African exports, and the differences and lack of predictability in their preference schemes constrains investment. There is also a good case for a concerted OECD-wide approach to using trade preferences to pump-prime African economies into global markets.⁵⁸ At present, each OECD countries has its own scheme, and most of them are not well designed. Indeed, the very multiplicity of schemes is a needless source of complexity. What is needed is a simple system of temporary preferences with liberal rules of origin for the poorest and least developed manufacturing countries. In the long run, the future market for Africa lies in the emerging economies, especially in Asia. This suggests a need for similar preferences with ASEAN, either as a trading bloc or, preferably, under the WTO.

Improving Aid

For many countries in Africa, the donor community forms an important interest group that both boosts and influences the composition of public expenditure. Until quite recently, donors, and in particular the bilateral aid agencies, were almost exclusively focused on the human development objectives represented by the Millennium Development Goals (MDGs). Under the highly indebted poor countries (HIPC) initiative, countries receiving debt relief were required to increase budgetary provisions for education and health. Budget increases for investment in physical infrastructure were generally not allowed. Clearly there is a need for the donor community to reach a new and more inclusive set of understandings with African governments on

the objectives of development assistance and how progress in development will be measured.

The volume of aid from traditional donors - the members of the OECD/DAC - has not kept pace with the commitments made at Gleneagles to double development assistance to low income countries. Whether new donors such as China and the mega-foundations will fill the gap left by the OECD is speculative at best, but there is no doubt that non-traditional exports will become an increasingly important part of Africa's aid scene. It is therefore imperative that the traditional donors find ways to collaborate more effectively with new aid providers, while at the same time preserving a measure of competition in the market place for development ideas and assistance.

It will also be important that the pace of progress in implementing the Accra agreements on harmonization and alignment accelerate. If, as seems likely, aid will shrink as a share of Africa's financing resources over the next 50 years, improvements in the efficiency of aid delivery are imperative.

5.3 Private Sector, Infrastructure and Democratization

Some of the most important policy choices facing Africa are those that will increase competitiveness and build consensus on a long-term vision for African development. These policy choices will include investment in infrastructure, promoting private sector development and broadening democratic governance beyond periodic elections.

Many African countries have undertaken the first level of reforms necessary for private sector development, including macroeconomic, exchange and trade liberalisation. There is growing evidence that the private sector in Africa can be competitive. Measures to reduce transactions costs, including maintaining delivery schedules, are crucial. Both the World Economic Forum (WEF) Global Competitiveness Report and the World Bank's Cost of Doing Business Report indicate

58 Collier and Venables (2007)

that African competitiveness has improved in spite of several remaining difficulties. However, it is also clear that cost competitiveness at the production level is not enough to generate competitive advantage.

There is need for further reforms to the regulatory environment and the rule of law ensuring property rights, ease of doing business, accountability and responsible government. All of these depend on progress on democratisation and good governance, including the fight against corruption.

Developing hard infrastructure - roads, power supply, railways etc. - would facilitate private sector development. In addition, it is suggested that the following policies may be useful for African private sector development:

- improving regional trade agreements;
- private-public partnerships;
- facilitating investment financing and developing financial markets;
- supporting small and medium-scale enterprises; and
- support for micro-enterprise and finance.

Infrastructural Development

It is well known that infrastructural development is essential to boosting trade and competitiveness. But Africa faces some important choices on how to prioritise its infrastructure activities, and how to cooperate in achieving its infrastructural development objectives.

For several small countries, particularly the landlocked ones, the levels of investment required for economic development may be beyond their individual effort. Regional cooperation, an African-wide approach or cooperation among the numerous trading blocs may be necessary. So far, joint infrastructure projects which rely on individual government contributions or completion have not worked. Some form of international financing, whereby individual countries agree to share the burden of servicing loans for major projects, might be helpful.

Private-public partnerships for infrastructural development may be needed. We need to explore creative financing approaches, such as risk instruments that guarantee a certain volume of transactions such as in tolls for road construction, in order to attract private investment.

Democratic Governance

Electoral democracy is not enough for the critical role that democracy needs to play in economic governance and the rapid and sustainable development of Africa. The interlinks between democracy and economic development require that electoral democracy leads to the emergence of institutions of good economic governance. Critical elements of such good democratic governance for development include policies to promote:

- a) state capacity;
- b) commitment to public good;
- c) transparency and accountability;
- d) Rule of law; and
- e) mechanisms for conflict resolution.

Democracy for development may also require the emergence of consensus for long-term perspective on the economy. And finally, concepts of 'participatory budgeting' where communities are involved in determining how resources are allocated and spent may need to be encouraged.

The transition to good democratic governance in Africa must involve the building of systems that are responsive and accountable to citizens and that effectively support economic investment and growth. Economic development needs to be supported by and lead to the establishment and development of institutions that support and facilitate sound economic management.

Institutional development and processes for effective management and checks and balances are essential to create diversified and dynamic economies in Africa. The objectives of effective institutions for sound economic management will include among other things:

- 1) Long Policy Horizon: to avoid the myopia of the current political contest;
- 2) Stable Policies and Predictable Incentives System: this creates credibility (avoids the time inconsistency problem), and provides an environment that is conducive for both domestic and foreign investment. Policies are stable because they emerge from the social consensus emerging from the participation allowed by the institutional framework;
- 3) Transparency and Institutional Accountability;
- 4) High Competitiveness;
- 5) Effective Expenditure Management Systems; and
- 6) Accelerated Economic Growth.

A fundamental challenge in managing an economy is to ensure an effective and prudent fiscal policy. There is a need to adhere to good policy rules on inter-temporal public spending. At the same time, the levels of investment and the allocation of investment are critical. Investment to support and enhance private sector productivity, reduce transactions costs, and increase competitiveness will ensure sustainable growth. Prudent, effective and efficient expenditure systems are required.

Under the present political contest, addressing these issues in a sustainable way can be difficult as one may lose political advantage to an opponent in doing so. To address this issue, it has been suggested that good policy rules must be embedded in the Constitution. In other words, what society or the country needs is a

“fiscal” constitution - representing a widely-shared and broadly-measurable consensus about how goods and services of the economy as a whole are to be spent in the coming decades, collectively and privately, which is the only way of insuring that those choices are compatible with monetary stability.

Embedding policy rules in the constitution is one means of creating agencies of restraint. The experience suggests that these provisions have not acted as effective agents of restraints. Parliament has not exercised all the powers bestowed on it in these provisions. What is clear is that constitutional and legal provisions are not sufficient to ensure sound management even though they are important. No constitutional provisions can irrevocably bind successive governments. The strength and capacity of Parliament, their social horizon, and pressure from their respective constituents are critical ingredients.

Effective institutions of economic management are those that the citizens participate. Citizens’ participation can occur through formal or informal institutions such as civil society organizations, labour unions, trade and product associations, and private sector associations such as the trade associations. Transparency and accountability in policy formulation and public expenditure management are crucial.

Dialogue between government and citizens’ groups is essential for good policy formulation. Policies emerging from such dialogue may tend to have a long horizon as they may reflect the emerging social consensus. Such policies may also be more realistic, transparent, and command broad-based support from the private sector and other economic agents.⁵⁹

⁵⁹ Paul Collier (2007): “Managing Commodity Booms: Lessons of International Experience”, paper prepared for the African Economic Research Consortium (AERC), January 2007

VI. Conclusions

Economists - perhaps especially in light of the experiences of 2008-2009 - ought to be very modest in making predictions. In some respects, however, it may be easier to understand the far future than the present. There are a number of trends - some physical, some man-made - that cumulatively define the options available to Africa over the next half-century. Global production and trade, technological change, population growth, HIV/AIDS and climate change are examples of gradual processes which over a span of five decades are likely to cumulate to large consequences.

By 2060, these gradual exogenous changes will have transformed the opportunities and challenges facing Africa in at least six dimensions. Urbanization will accelerate. Migration will increase. Agriculture may well decline, both in relative and absolute importance. Natural resources will remain an important part of the development picture and a major development challenge. Some African economies may have learned to compete globally, and conflicts will continue to diminish but not wholly disappear.

How individual economies in Africa respond to these challenges will depend on the choices they make, individually and collectively. Broadly, countries in the region need to respond by investing in their cities, managing migration, transforming agriculture, managing their natural resources better, and making concerted efforts to break in at the bottom of the global market in goods and services. Collective action - by Africans, themselves, in the form of deeper regional integration, and by the international community in the form of improved performance on trade and aid - must support the efforts of individual countries.

The uncertainties surrounding this vision of Africa in 2060 are of course enormous, but one thing seems clear: change of the kind analysed here calls for policy response. And this is perhaps the most substantial of the risks facing Africa. If the pace of policy and institutional change in Africa over the next 50 years mirrors that of the past 50, the continent is likely to be overwhelmed by the challenges it faces, while seeing opportunities slip through its fingers. But if we are clear sighted and decisive, Africa in 2060 holds out the promise of significant improvements in the lives and livelihood of millions of Africans.

References

A. ESSAYS IN THE AFRICA 2050 SERIES

Asafu-Adjaye, John (2010) *Climate Change Tunis*: African Development Bank

Collier, Paul (2010) *A 2050 Vision of Africa and its Implications for Conflict Scenarios* Tunis: African Development Bank

Dadush, Uri (2010) *In 2050, A World Transformed* Tunis: African Development Bank

Durand-Lasserve, Alain and Étienne Le Roy (2010) *La Situation Foncière en Afrique à l'Horizon 2050* Tunis: African Development Bank

Favennec, Jean-Pierre (2010): *L'Énergie en Afrique à l'Horizon 2050* Tunis: African Development Bank

Guengant, Jean-Pierre (2010): *Population et développement en Afrique: faut-il accélérer la transition démographique?* Tunis: African Development Bank

Lisk, Franklyn (2010) *HIV/AIDS in Africa* Tunis: African Development Bank

Page, John (2010), *Africa 2050: Drivers, Consequences, and Choices*, Tunis: African Development Bank.

Oyelaran-Oyeyinka, Banji and Padmashree Gehl Sampath (2010): *Technology Innovation and Africa's Industrialization* Tunis: African Development Bank

Okello, Robert M (2010). *Africa Strategic Vision 2050: Responses and Policy Recommendations* Tunis: African Development Bank

Veit, Peter with Sarah Lupberger and Arisha Ashraf (2010): *Challenges of Natural Resources for Africa* Tunis: African Development Bank

B. OTHER REFERENCES

African Development Bank (2009): African Competitiveness Report, Part 1 Selected Issues of African Competitiveness

African Development Bank (2011): Africa in 50 Years Time (mimeo)

African Development Bank and World Bank (2011): Leveraging Migration for Africa: Remittances, Skills and Investment

Benn, Eifert, Alan Gelb and Nils Borge Tallroth (2003): "Managing Oil Wealth: The political economy of oil exporting countries - why some of them have done so poorly" *Finance and Development*, Vol. 40, No. 1, March

Bigsten, A., P., Collier, S., Dercon, M., Fafchamps, B. Gauthier, J. W. Gunning, A. Oduro, R. Oostedorp, C. Pattillo, M. Söderbom, F. Teal, and A. Zeufack (2004): "Do African Manufacturing Firms Learn from Exporting", *Journal of Development Studies*, 40(3), 115-41

Bigsten, Arne, Mulu Gebreeyesus, and Mans Söderbom (2008): Agglomeration effects in Ethiopian manufacturing, UNIDO.

Chuhan-Pole, Punam and Brendan Fitzpatrick (2008): "More and Better Aid: How Are Donors Doing?" in Delfin Go and John Page (eds.) *Africa at a Turning Point? Growth, Aid and Shocks*. Washington: World Bank

Collier, P. and B. Goderis (2008): Structural Policies for Shock-Prone Commodity Exporters, mimeo, Centre for the Study of African Economies.

_____ (2007) "Prospects for Commodity Exporters: Hunky Dory or Humpty Dumpty?" *World Economics*.

Collier, P., G. Conway and A.J. Venables (2008): "Climate Change and Africa" *Oxford Review of Economic Policy*.

Collier, P. and A. Hoeffler (2008): "Testing the Neo-Con Agenda: Democracy and Natural Resource Rents", *European Economic Review*.

Collier, P. and A.J. Venables (2007) "Rethinking Trade Preferences: How Africa Can Diversify its Exports", *The World Economy* 30 (8): 1326-1345.

Collier, P. and A. J. Venables (2008): "Trade and Economic Performance: Does Africa's fragmentation matter" *Annual World Bank Conference on Development Economics*. Washington: World Bank.

Larry Diamond (2005): "Democracy, Development, and Good Governance: The inseparable links", paper presented at the maiden Annual Democracy and Governance Lecture of the Ghana Centre for Democratic Development, March 2005, Accra, Ghana

Lucas, R.E.B (2006): "Migration and Development in Africa" *Journal of African Economies* Mahajan, V. (2009), *Africa Rising: How 900 Million African Consumers offer more than you think*. Pearson Education, Inc.

Page, John (2009): "Africa's Growth Turnaround: From Fewer Mistakes to Sustained growth" Commission on Growth and Development Working Paper No. 54 Washington: World Bank

Page John and S. Plaza (2006): "Migration and Development: A Survey of the Global Evidence" *Journal of African Economies*

Raddatz, Claudio (2008): "Have External Shocks Become More Important for Output Fluctuations in African Countries?" in Delfin Go and John Page (eds.) *Africa at a Turning Point? Growth, Aid and Shocks*. Washington: World Bank

UNIDO (2009): *Industrial Development Report 2009, Breaking-in and Moving-up: New industrialization challenges for the bottom billion and the middle income countries*. Vienna: UNIDO

World Bank (2009): *World Development Report: Reshaping Economic Geography* Washington: World Bank

Statistical Appendix

Contents

Africa's Demographic and Economic Projections, 2010-2060.....	55
DEMOGRAPHIC PROJECTIONS	55
ECONOMIC PROJECTIONS	62
Statistical Appendix Tables	65

List of Tables

TABLE A.1: TOTAL POPULATION OF AFRICA BY SUB-REGION AND CASE SCENARIOS (BILLION).....	65
TABLE A.2: AFRICA'S POPULATION GROWTH RATES BY SUB-REGION AND CASE SCENARIOS (%).....	65
TABLE A.3: URBAN AND RURAL CLASSIFICATION OF AFRICA'S POPULATION (%).....	66
TABLE A.4: AFRICA'S URBAN POPULATION CLASSIFIED BY SUB-REGIONS AND CASE SCENARIOS (%).....	66
TABLE A.5: ECONOMICALLY ACTIVE POPULATION 15-64 YEARS: CLASSIFIED BY SUB-REGIONS (THOUSANDS).....	67
TABLE A.6: AFRICA'S FEMALE LABOUR FORCE (% OF TOTAL): CLASSIFIED BY CASE SCENARIOS.....	67
TABLE A.7: LIFE EXPECTANCY AT BIRTH YEAR: CLASSIFIED BY SUB-REGIONS AND CASE SCENARIOS.....	68
TABLE A.8: UNDER FIVE MORTALITY PER 1,000 LIVE BIRTHS: CLASSIFIED BY SUB-REGIONS AND CASE SCENARIO	68
TABLE A.9: HIV PREVALENCE IN TOTAL POPULATION (%)	69
TABLE A.10: AFRICA'S LITERACY RATE: CLASSIFIED BY CASE SCENARIOS.....	69
TABLE A.11: AFRICA'S URBAN LITERACY RATES: CLASSIFIED BY CASE SCENARIOS.....	69
TABLE A.12: DISTRIBUTION OF AFRICAN POPULATION BY CLASSES AND CASE SCENARIOS (% OF TOTAL POPULATION).....	70
TABLE A.13: REAL GDP GROWTH RATES (%).....	70
TABLE A.14: REAL PER CAPITA GDP GROWTH RATES (%)	71
TABLE A.15: GROSS DOMESTIC PRODUCT AT CURRENT MARKET PRICES (US\$ BILLION).....	71

TABLE A.16: GROSS DOMESTIC PRODUCT PER CAPITA (US DOLLARS).....	72
TABLE A.17: FIXED TELEPHONE LINES PER 1,000 INHABITANTS	72
Table A.18: Mobile Cellular Telephone Subscriptions (Post-Paid And Pre-Paid) Per 1,000 Inhabitants	72

List of Charts

CHART A.1: PROJECTION OF AFRICAN POPULATION.....	55
CHART A.2: POPULATION GROWTH RATES BY SUB-REGIONS AND HIGH/LOW-CASE SCENARIOS	56
CHART A.3: URBAN AND RURAL POPULATION PROJECTIONS IN HIGH-CASE AND LOW-CASE SCENARIOS (% OF TOTAL).....	57
CHART A.4: ECONOMICALLY ACTIVE POPULATION (THOUSANDS OF PERSONS)	58
CHART A.5: PERCENTAGE SHARE OF FEMALES IN TOTAL LABOUR FORCE	59
CHART A.6: LIFE EXPECTANCY AT BIRTH-HIGH-CASE AND LOW-CASE SCENARIOS.....	60
CHART A.7: UNDER-FIVE MORTALITY PER 1,000 LIVE BIRTHS-CLASSIFIED BY SUB-REGIONS AND CASE SCENARIOS.....	61
Chart A.8: HIV Prevalence in Total Population.....	62

Africa's Demographic and Economic Projections, 2010-2060

The graphs and tables in this Statistical Appendix are supplementary to the graphs and tables used in the main report. The main report uses the base case, which is an average. In this Statistical Appendix, we provide data according to the two main scenarios that produced the base data - the low- and high-growth scenarios. This Appendix describes in brief, demographic and economic projections over the fifty-year period based on data for the two scenarios - high-case and low-case - developed at the African Development Bank (AfDB). The analyses above are the most likely scenarios. The graphs provide a snapshot while the tables provide detailed information that could be used for further analysis. They provide the range within a certain degree of confidence within which the point estimates may occur.

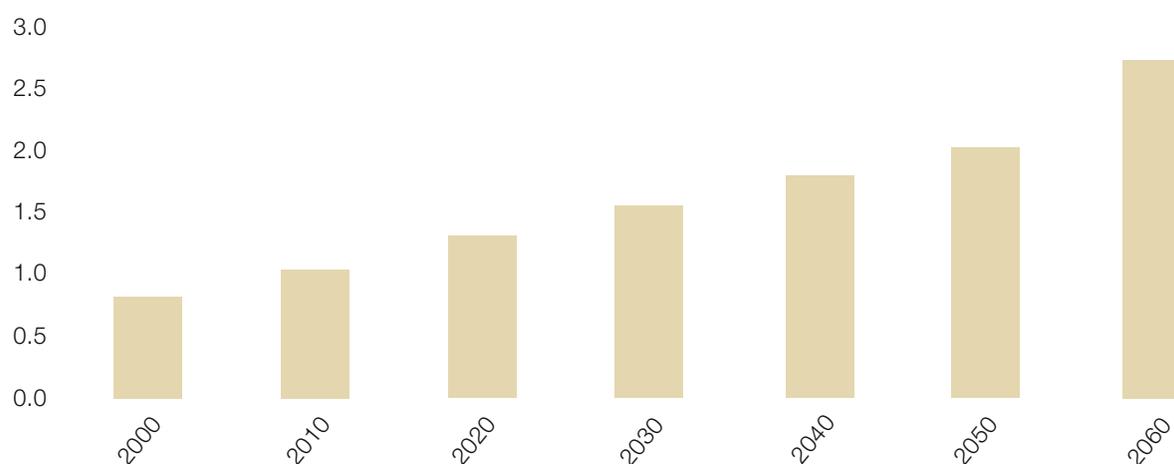
Demographic Projections

The demographic projections are more extrapolations of current trends than forecasts per se. They rely upon assumptions about vital rates: in particular, fertility is assumed to decline at a varying pace, dictated by the specificities of the individual countries; the population of Africa is assumed to grow at a declining growth rate similar to the trajectory in other major global areas and with expectations that the population increase will overtake that of China and India.

Using the high-growth scenario, Africa's population is projected to double from the current level of 1.03 billion people in 2010 to reach a peak of 2.75 billion by 2060. This is slightly higher than the low-case scenario, which shows the population increasing to 2.42 billion in the next fifty years [Chart A.1].

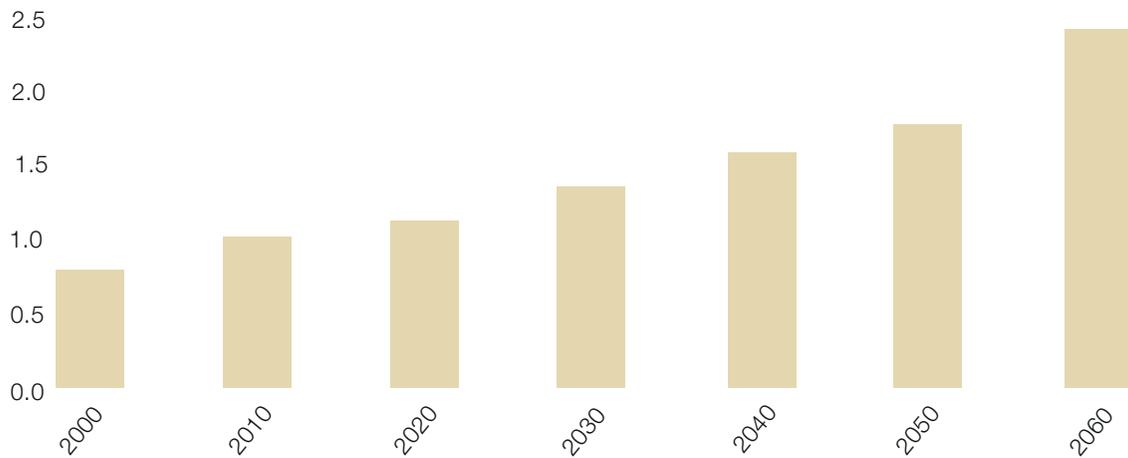
Chart A.1 | Projection of African Population

(a): Projection of African Population (billion) - High-Case Scenario



Data source: African Development Bank database and AfDB staff estimates

(b): Projection of African Population (billion) - Low -Case Scenario



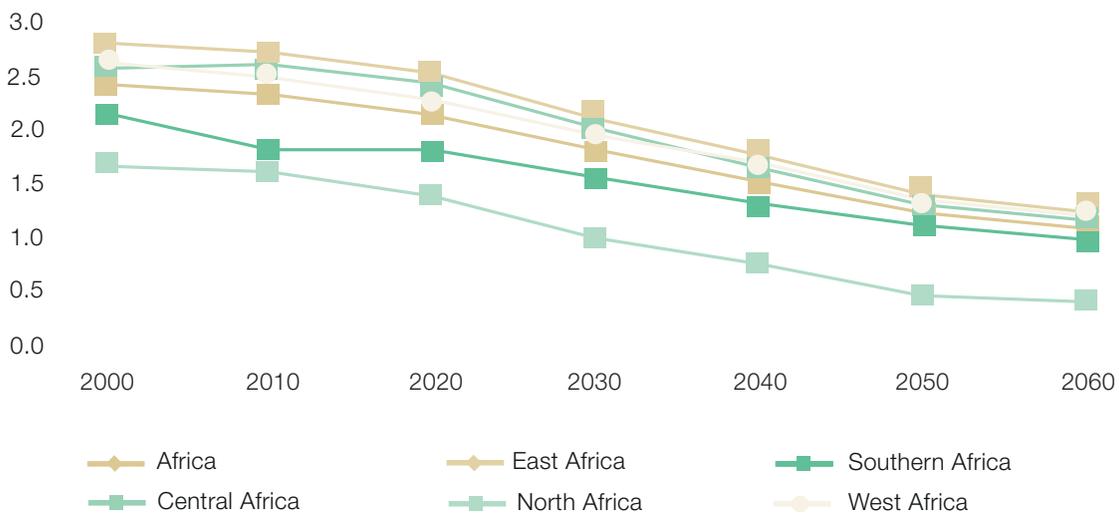
Data source: African Development Bank database and AfDB staff estimates

Population growth rates decline continuously in both scenarios, reflecting the same dynamics. However,

they decline more rapidly for the North African sub-region [Chart A.2].

Chart A.2 | Population Growth Rates by sub-regions and high/low-case scenarios

(a): Population Growth Rates by sub-regions (%) - High-Case Scenario

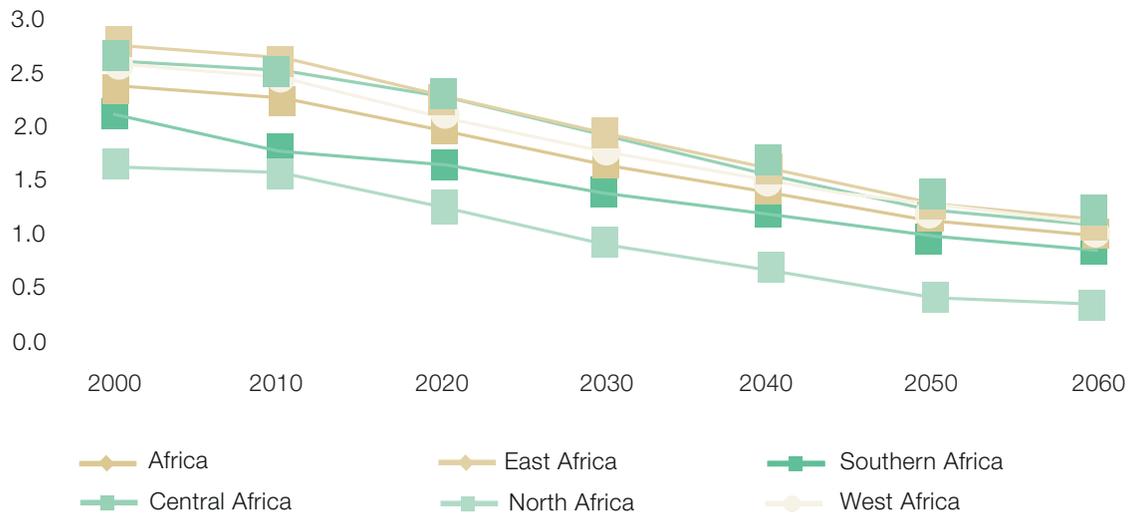


Data source: African Development Bank database and AfDB staff estimates

The composition of Africa's population in terms of urban and rural is expected to change significantly with the population being more urbanized. On the basis of the high-growth scenario, Africa's urban population is expected to double from 40 percent of the total population in 2010 to 84

percent by 2060, with the rural population steadily declining to 18 percent of the total population over the same period. A similar trajectory is expected in the low-case scenario, with the urban population share increasing at a rather slower pace [Chart A.3].

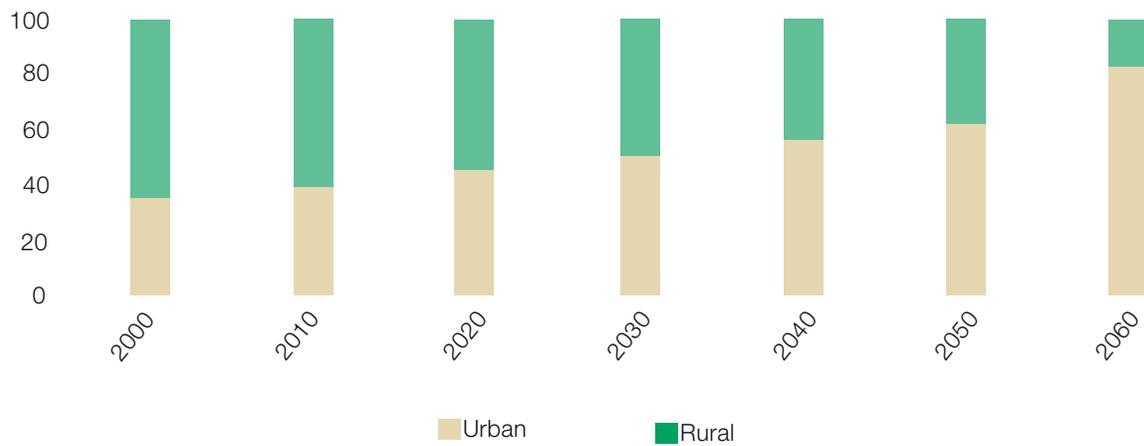
(b): Population Growth Rate by sub-regions (%) - Low-Case Scenario



Data source: African Development Bank database and AfDB staff estimates

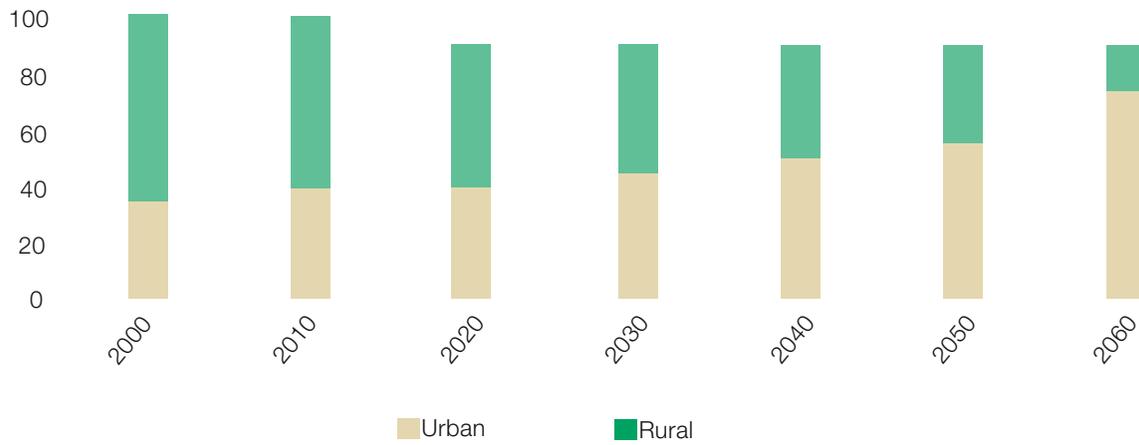
Chart A.3 | Urban and Rural Population Projections in High-Case and Low-case Scenarios (% of Total)

(a): Urban and Rural Population - High-Case Scenario (% of Total Population)



Data source: African Development Bank database and AfDB staff estimates

(b): Urban and Rural Populations - Low-Case Scenario (% of Total Population)

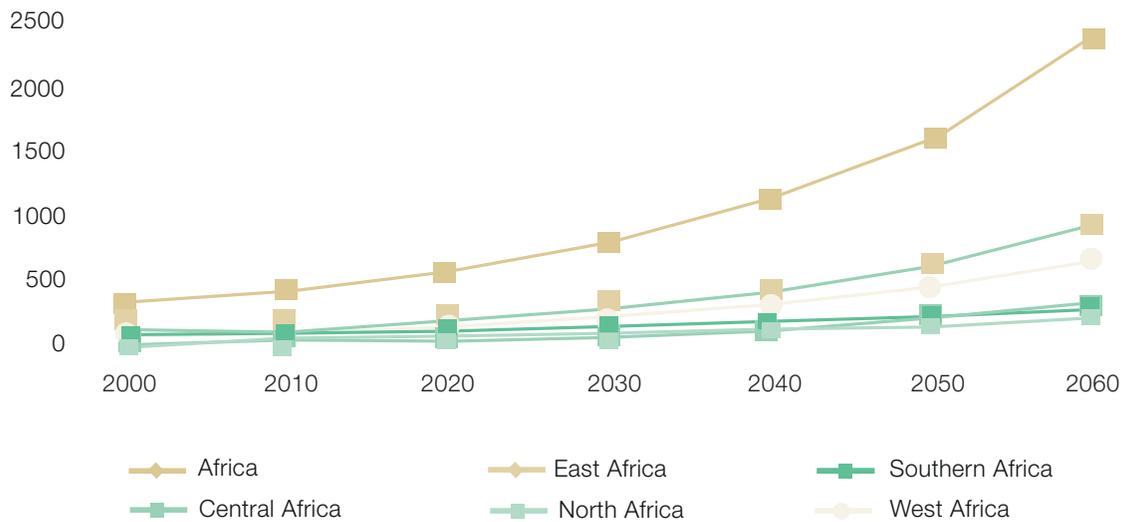


Data source: African Development Bank database and AfDB staff estimates

Chart A.4

Economically Active Population (thousands of persons)

(a): Economically active population High-Case Scenario (thousands)

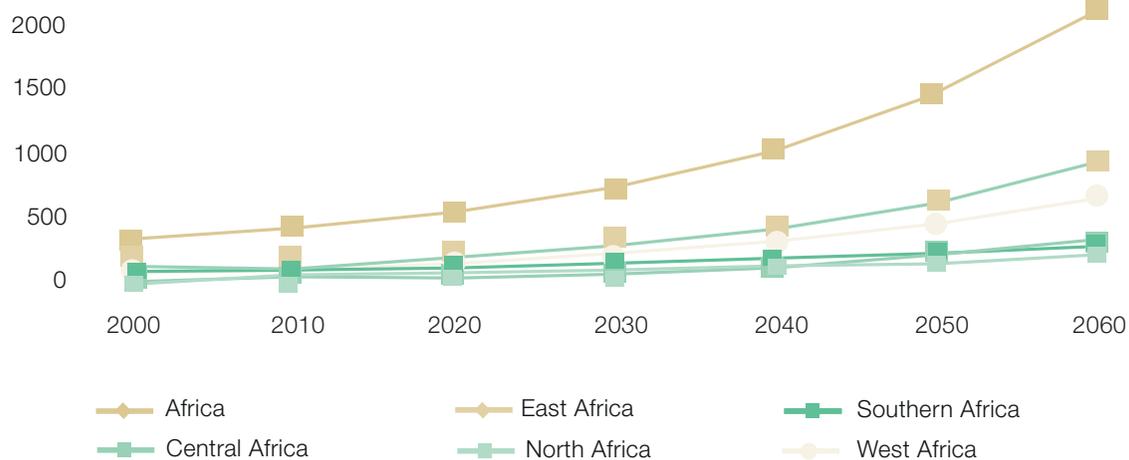


Data source: African Development Bank database and AfDB staff estimates

Consistent with the increasing trend of the economically active population, the share of the female labour force is expected to increase

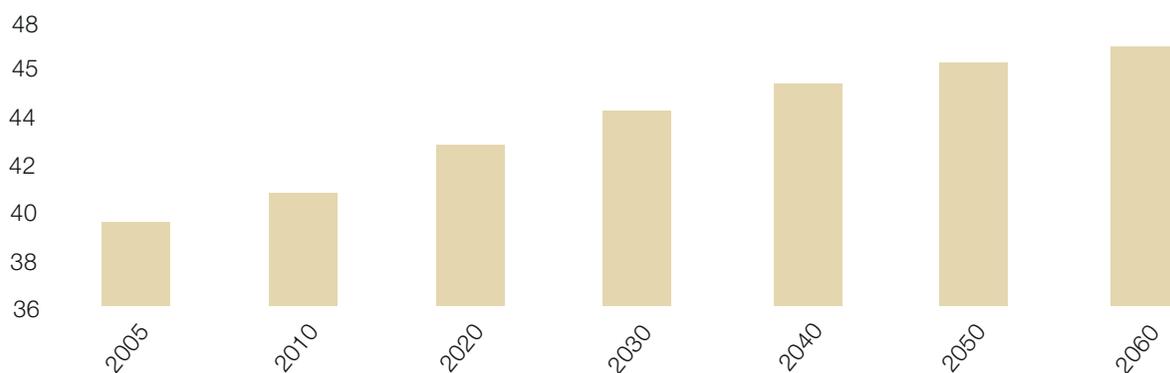
from 40.9 percent of the total labour force in 2010 to 47 percent of the total by 2060 [Chart A.5].

(b): Economically active population - Low-Case Scenario (thousands)



Data source: African Development Bank database and AfDB staff estimates

Chart A.5 | Percentage Share of Females in Total Labour Force



Data source: African Development Bank database and AfDB staff estimates

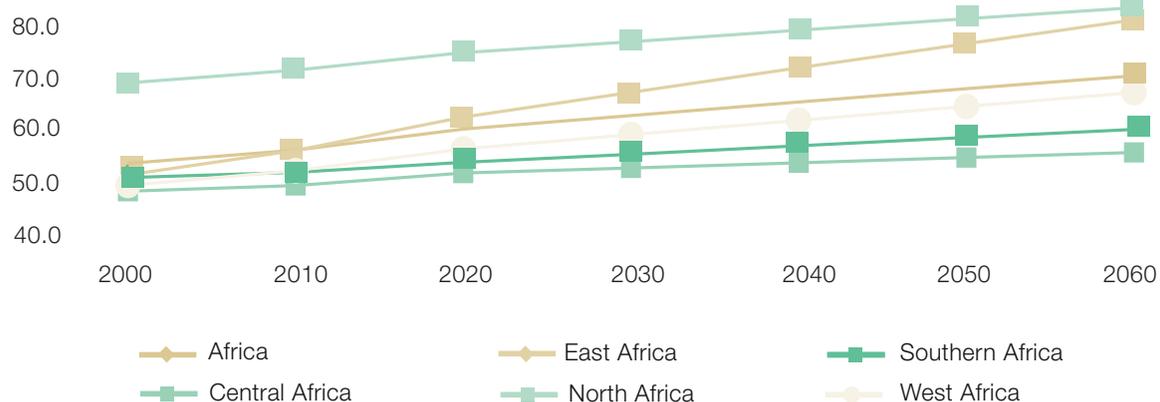
Life expectancy at birth are projected in the high-case scenario to increase from 56 years for all of Africa to 70.3 years by 2060 - slightly higher than the 69 years projected in the low-

case scenario. In both cases, however, the North African and East African sub-regions are expected to have the highest life expectancies [Chart A.6].

Chart
A.6

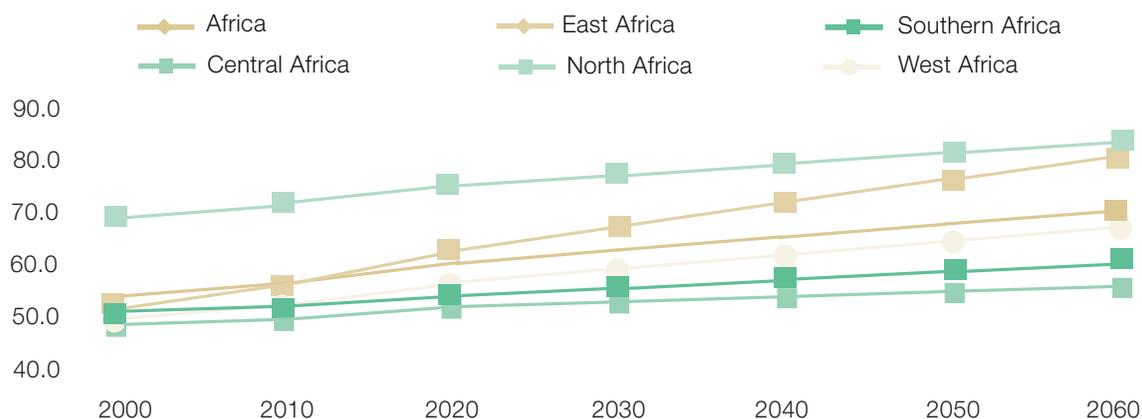
Life Expectancy at Birth - High-Case and Low-Case Scenarios

(a): Life Expectancy at Birth (in years) - High-Case Scenario



Data source: African Development Bank database and AfDB staff estimates

(b): Life Expectancy at Birth (years - Low-Case Scenario



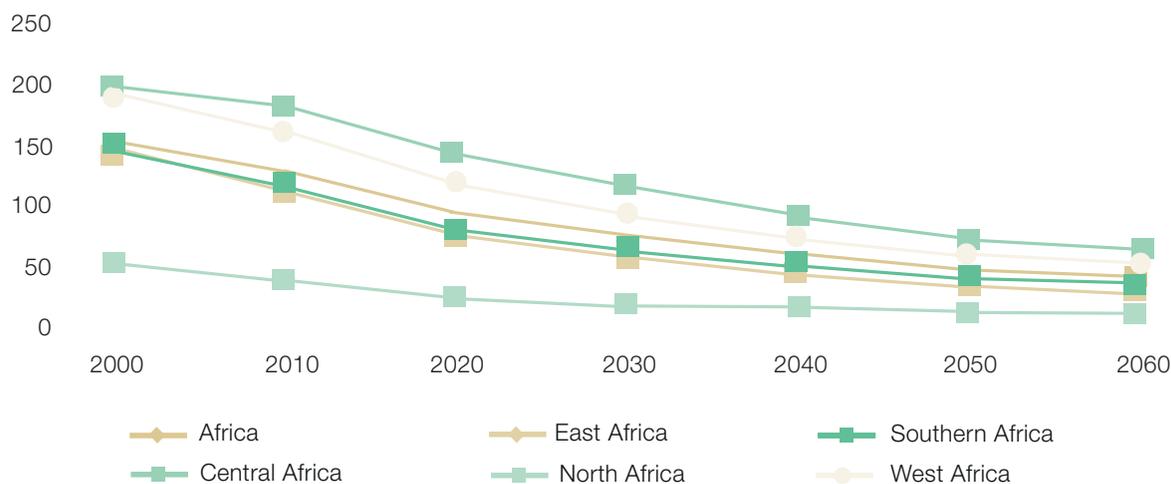
Data source: African Development Bank database and AfDB staff estimates

Under-five mortality per 1,000 live births are projected in the low-case scenario to decline steadily from 127 deaths in 2010 to 47 deaths by 2060. It declines to a

lower level of 40 deaths per 1,000 live births by the close of 2060 in the case of the high-growth scenario [Chart A.7].

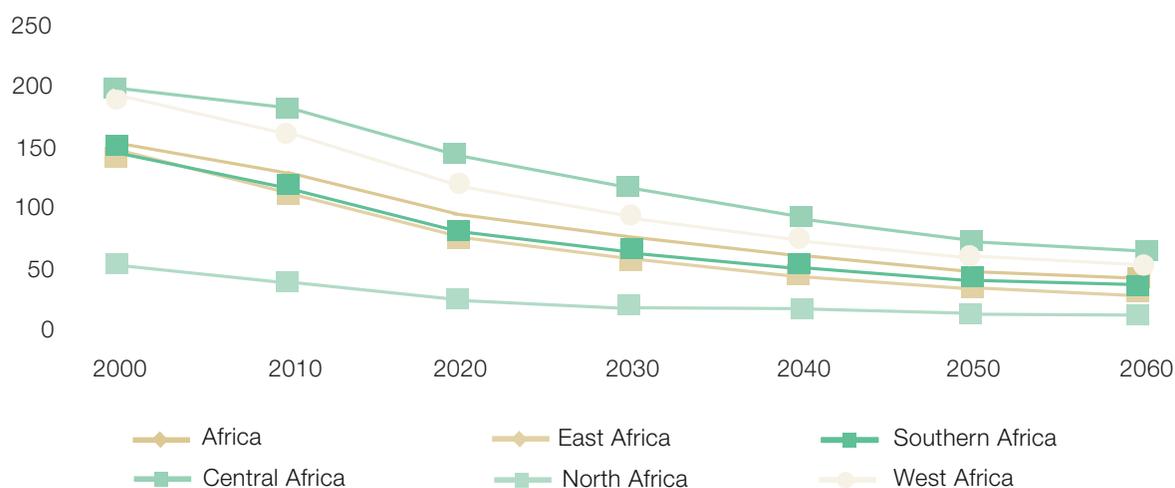
Chart A.7 | Under-Five Mortality per 1,000 Live Births - classified by sub-regions and case scenarios

(a): Under-five mortality per 1000 - High-Case Scenario live births



Data source: African Development Bank database and AfDB staff estimates

(b): Under five mortality per 1000 live births - Low-Case Scenario



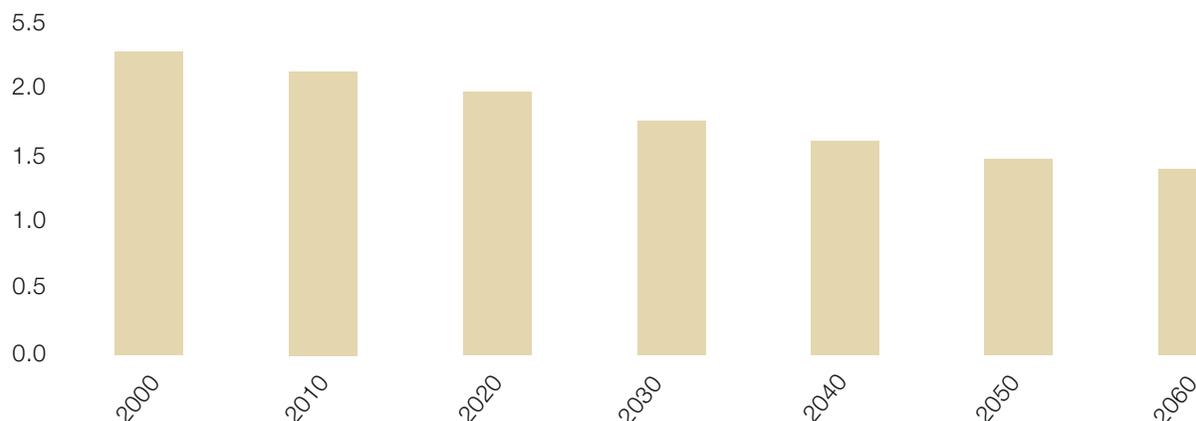
Data source: African Development Bank database and AfDB staff estimates

The prevalence of HIV in the total population of Africa is projected to witness a steadily-declining path over the fifty year period to 2060. The expectation is for the pandemic to decline from the 2.13 percent

level registered in 2010 to 1.39 percent of the total population by 2060 in the case of the high-case scenario and to 1.36 percent in the low-case scenario [Chart A.8].

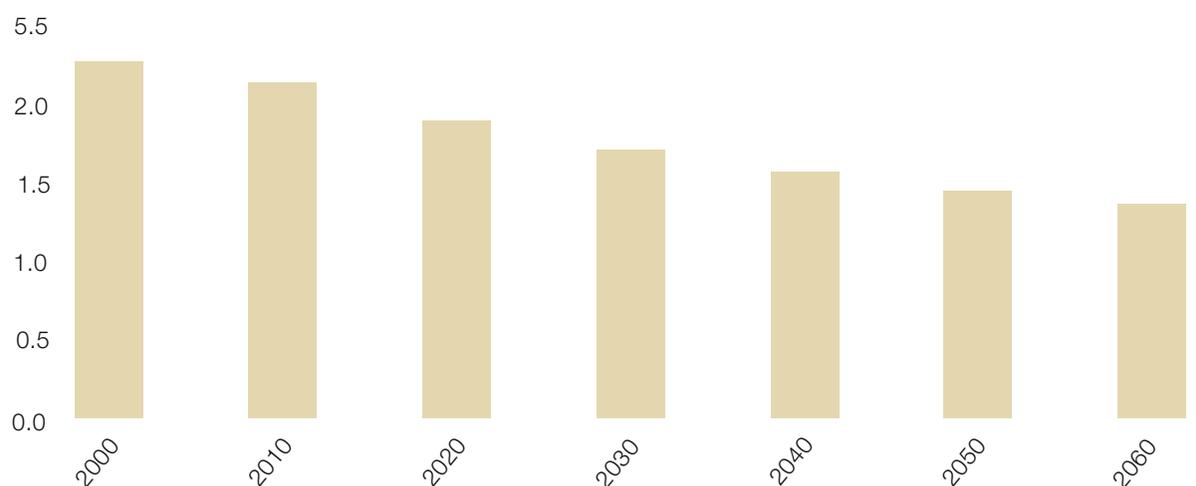
Chart A.8 | HIV Prevalence in Total Population

(a): HIV Prevalence in total population (%) - High-Case Scenario



Data source: African Development Bank database and AfDB staff estimates

(b): HIV Prevalence in total population (%) - Low-Case Scenario



Data source: African Development Bank database and AfDB staff estimates

Africa's literacy rate is projected to increase from 66.6 percent of the population in 2010 to about 97 percent by 2060 both in the high-case and low-case scenarios. This will occur largely in urban communities [Appendix Tables A.10 and A.11].

In terms of the distribution of the African population by income-classes, the expectation is for the middle-income class to increase from 34.32 percent of the population in 2010 to 42.1 percent by 2060. The population earning below US\$1.25 a day is expected to fall to 33.3 percent by 2060 while those earning

between US\$1.25 and US\$2.00 per day are expected to increase to 16.1 percent [Appendix Table A.12].

Economic Projections

Projections of real GDP growth and per capita GDP over the fifty-year period are included in Tables A.13 through A.16. Real GDP for the whole of Africa is expected to grow steadily and peaks at 6.6 percent per annum in 2020 before decelerating gradually to 5.4 percent per annum by 2060. Even though under the high growth scenario GDP growth decelerates after

2060 per capita income growth accelerates because population growth rate decelerates at a faster rate.

In both scenarios, the East African sub-region is expected to have the highest real GDP growth while the North African sub-region registers the lowest growth rates.

Real per capita GDP growth is projected to follow a similar pattern as the real GDP growth for all of the

African sub-regions [Table A.14]. In US dollar terms, the gross domestic product per capita is projected to be highest in the North African sub-region-rising from US\$3,413 in 2010 to US\$14,668 in 2060 in the high-case scenario [Table A.16].

Finally, access to communication equipment, including fixed telephone lines and mobile cellular subscriptions are projected to increase per 1000 inhabitants [Tables A.17 and A.18].

Statistical Appendix Tables

Table A.1 | Total Population of Africa by sub-region and case scenarios (billion)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	0.82	1.03	1.30	1.55	1.80	2.04	2.75
Central Africa	0.08	0.11	0.14	0.17	0.21	0.24	0.33
East Africa	0.22	0.28	0.37	0.46	0.54	0.62	0.89
North Africa	0.15	0.17	0.20	0.22	0.24	0.26	0.29
Southern Africa	0.14	0.16	0.20	0.23	0.26	0.29	0.36
West Africa	0.23	0.30	0.39	0.47	0.55	0.63	0.87
Low-Case Scenario							
Africa	0.82	1.03	1.15	1.37	1.59	1.80	2.42
Central Africa	0.08	0.11	0.13	0.15	0.18	0.21	0.29
East Africa	0.22	0.28	0.33	0.40	0.48	0.55	0.78
North Africa	0.15	0.17	0.18	0.20	0.21	0.23	0.26
Southern Africa	0.14	0.16	0.17	0.20	0.23	0.26	0.32
West Africa	0.23	0.30	0.34	0.41	0.49	0.56	0.77

Data sources: African Development Bank database and AfDB staff estimates

Table A.2 | Africa's Population Growth Rates by sub-region and case scenarios (%)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	2.37	2.27	2.10	1.76	1.47	1.16	1.04
Central Africa	2.56	2.53	2.40	1.98	1.61	1.26	1.13
East Africa	2.76	2.66	2.46	2.04	1.69	1.33	1.19
North Africa	1.63	1.57	1.33	0.95	0.70	0.42	0.36
Southern Africa	2.11	1.79	1.76	1.50	1.26	1.06	0.95
West Africa	2.58	2.46	2.22	1.91	1.64	1.31	1.18
Low-Case Scenario							
Africa	2.37	2.27	1.96	1.64	1.37	1.09	0.97
Central Africa	2.56	2.53	2.25	1.85	1.51	1.18	1.06
East Africa	2.76	2.66	2.30	1.91	1.58	1.24	1.11
North Africa	1.63	1.57	1.24	0.89	0.66	0.39	0.33
Southern Africa	2.11	1.79	1.65	1.40	1.17	0.99	0.89
West Africa	2.58	2.46	2.07	1.78	1.53	1.23	1.10

Data sources: African Development Bank database and AfDB staff estimates

Table A.3 | Urban and Rural Classification of Africa's Population (%)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Urban	36	40	45	51	57	63	84
Rural	64	60	57	51	45	39	18
Low-Case Scenario							
Urban	36	40	40	45	50	55	74
Rural	64	60	50	45	40	35	16

Data Sources: African Development Bank database and AfDB staff estimates

Table A.4 | Africa's Urban Population classified by sub-regions and case scenarios (%)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	35.9	39.9	45.5	50.9	56.6	62.4	73.4
Central Africa	35.2	40.4	47.9	54.3	60.8	67.1	80.6
East Africa	20.1	23.1	27.8	33.5	40.1	47.2	59.9
North Africa	50.9	53.6	58.0	62.4	67.4	72.0	82.4
Southern Africa	40.3	44.9	49.9	55.2	60.9	66.5	76.3
West Africa	38.8	45.0	52.4	58.4	64.2	69.6	81.1
Low-Case Scenario							
Africa	35.9	39.9	43.7	49.1	55.0	61.0	72.1
Central Africa	35.2	40.4	45.6	52.1	58.5	64.8	77.9
East Africa	20.1	23.1	26.6	32.2	38.8	46.1	58.9
North Africa	50.9	53.6	56.7	61.6	66.7	71.7	82.4
Southern Africa	40.3	44.9	49.5	55.0	60.7	66.4	76.2
West Africa	38.8	45.0	50.0	56.2	62.0	67.7	79.3

Data sources: African Development Bank database and AfDB staff estimates

Table A.5 | Economically Active Population 15-64 years: classified by sub-regions (thousands)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	301	399	540	777	1122	1625	2362
Central Africa	30	41	59	89	136	208	317
East Africa	89	123	172	261	395	598	906
North Africa	48	62	75	97	124	159	205
Southern Africa	53	67	88	118	158	212	283
West Africa	80	106	147	213	309	448	650
Low-Case Scenario							
Africa	301	399	510	736	1065	1548	2253
Central Africa	30	41	55	84	129	197	300
East Africa	89	123	162	246	374	570	865
North Africa	48	62	72	92	119	153	197
Southern Africa	53	67	85	114	152	204	273
West Africa	80	106	138	201	292	426	618

Data sources: African Development Bank database and AfDB staff estimates

Table A.6 | Africa's Female Labour Force (% of total): classified by case scenarios

Region	2005	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	39.7	40.9	42.9	44.3	45.4	46.3	47.0
Low-Case Scenario							
Africa	39.7	40.9	42.9	44.3	45.4	46.3	47.0

Data sources: African Development Bank database and AfDB staff estimates

Table A.7 | Life Expectancy at birth year: classified by sub-regions and case scenarios

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	53.4	56.0	60.1	62.7	65.2	67.8	70.3
Central Africa	48.1	49.2	51.6	52.6	53.6	54.6	55.6
East Africa	51.2	55.9	62.4	67.1	71.8	76.4	81.0
North Africa	68.9	71.4	74.8	76.8	79.1	81.3	83.4
Southern Africa	50.7	51.7	53.6	55.2	56.8	58.4	60.0
West Africa	49.2	52.0	56.2	59.0	61.7	64.4	67.1
Low-Case Scenario							
Africa	53.4	56.0	57.6	60.5	63.3	66.2	69.0
Central Africa	48.1	49.2	49.2	50.4	51.5	52.7	53.7
East Africa	51.2	55.9	59.5	64.5	69.5	74.7	79.6
North Africa	68.9	71.4	73.1	75.8	78.3	80.9	83.4
Southern Africa	50.7	51.7	53.3	55.0	56.7	58.4	59.9
West Africa	49.2	52.0	53.7	56.7	59.7	62.7	65.6

Data sources: African Development Bank database and AfDB staff estimates

Table A.8 | Under five Mortality per 1,000 live births: classified by sub-regions and case scenario

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	152	127	93	75	58	46	40
Central Africa	194	182	141	115	90	70	63
East Africa	145	114	80	62	47	36	31
North Africa	50	36	23	18	14	11	10
Southern Africa	146	113	77	61	48	38	34
West Africa	189	159	118	94	74	59	52
Low-Case Scenario							
Africa	152	127	107	86	67	53	47
Central Africa	194	182	163	133	104	81	73
East Africa	145	114	92	71	54	41	36
North Africa	50	36	27	20	16	13	11
Southern Africa	146	113	89	71	56	44	39
West Africa	189	159	136	109	86	68	60

Data sources: African Development Bank database and AfDB staff estimates

Table A.9 | HIV Prevalence in Total Population (%)

Region	2005	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	2.27	2.13	1.97	1.77	1.61	1.48	1.39
Low-Case Scenario							
Africa	2.27	2.13	1.89	1.71	1.56	1.44	1.36

Data sources: African Development Bank database and AfDB staff estimates

Table A.10 | Africa's Literacy Rate: classified by case scenarios

Region	2005	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	62.6	66.6	76.8	84.5	90.1	94.1	96.8
Low-Case Scenario							
Africa	62.6	66.6	73.7	81.6	87.4	91.9	95.0

Data sources: African Development Bank database and AfDB staff estimates

Table A.11 | Africa's Urban Literacy Rates: classified by case scenarios

Region	2010	2020	2030	2040	2050	2060
High-Case Scenario						
Africa	67	77	84	90	94	97
Low-Case Scenario						
Africa	67	75	83	89	93	96

Data sources: African Development Bank database and AfDB staff estimates

Table A.12 | Distribution of African Population by Classes and case scenarios
(% of total population)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
1st poverty line (<\$1.25)	47.82	44.15	42.25	40.01	37.77	35.52	33.28
2nd poverty line (\$1.25-\$2)	18.51	16.70	17.71	17.31	16.90	16.50	16.09
Middle class	27.17	34.32	33.44	35.60	37.76	39.91	42.07
Low-Case Scenario							
1st poverty line (<\$1.25)	47.82	44.15	42.25	40.01	37.77	35.52	33.28
2nd poverty line (\$1.25-\$2)	18.51	16.70	17.71	17.31	16.90	16.50	16.09
Middle class	27.17	34.32	33.44	35.60	37.76	39.91	42.07

Data sources: African Development bank database and AfDB staff estimates

Table A.13 | Real GDP Growth Rates (%)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	4.5	4.9	6.6	6.4	6.3	5.7	5.4
Central Africa	-1.4	4.7	7.7	7.3	3.7	3.0	4.4
East Africa	7.5	6.2	8.4	9.9	9.8	8.8	7.2
North Africa	3.9	4.7	5.8	5.1	4.9	3.9	3.5
Southern Africa	5.4	3.3	4.1	5.7	6.3	4.8	4.4
West Africa	4.1	6.7	9.4	5.8	5.2	4.9	5.2
Low-Case Scenario							
Africa	4.5	4.9	5.5	5.4	5.3	4.8	4.5
Central Africa	-1.4	4.7	6.5	6.2	3.2	2.5	3.7
East Africa	7.5	6.2	7.1	8.3	8.3	7.4	6.1
North Africa	3.9	4.7	4.9	4.3	4.1	3.3	2.9
Southern Africa	5.4	3.3	3.5	4.8	5.3	4.0	3.7
West Africa	4.1	6.7	7.9	4.9	4.4	4.1	4.4

Data sources: African Development Bank database and AfDB staff estimates

Table A.14 | Real Per Capita GDP Growth Rates (%)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	2.1	2.6	4.5	4.6	4.8	4.5	4.3
Central Africa	-4.0	2.2	5.3	5.3	2.1	1.8	3.3
East Africa	4.8	3.5	6.0	7.9	8.2	7.5	6.1
North Africa	2.2	3.1	4.5	4.1	4.2	3.5	3.1
Southern Africa	3.3	1.6	2.4	4.2	5.1	3.7	3.4
West Africa	1.5	4.2	7.2	3.9	3.6	3.6	4.0
Low-Case Scenario							
Africa	2.1	2.6	3.8	3.9	4.0	3.8	3.6
Central Africa	-4.0	2.2	4.5	4.5	1.8	1.5	2.7
East Africa	4.8	3.5	5.0	6.6	6.9	6.3	5.1
North Africa	2.2	3.1	3.8	3.5	3.5	2.9	2.6
Southern Africa	3.3	1.6	2.0	3.5	4.3	3.1	2.9
West Africa	1.5	4.2	6.0	3.3	3.0	3.0	3.4

Data sources: African Development Bank database and AfDB staff estimates

Table A.15 | Gross Domestic product at current market prices (US\$ billion)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	586	1719.1	3145.1	5016.7	7626.5	11181.8	15739.6
Central Africa	35	85.2	271.4	483.2	655.6	746.2	894.1
East Africa	65	185.8	417.2	862.4	1810.3	3592.6	6216.4
North Africa	258	589.0	1386.0	2081.4	2821.9	3606.0	4307.0
Southern Africa	145	541.4	571.1	805.3	1203.5	1696.9	2232.9
West Africa	83	317.7	499.2	784.9	1135.3	1539.9	2089.0
Low-Case Scenario							
Africa	586	1719.1	2448.6	3905.7	5937.6	8705.6	12254.0
Central Africa	35	85.2	211.3	376.2	510.4	580.9	696.1
East Africa	65	185.8	324.8	671.4	1409.4	2797.0	4839.8
North Africa	258	589.0	1079.1	1620.5	2196.9	2807.4	3353.2
Southern Africa	145	541.4	444.6	626.9	937.0	1321.1	1738.4
West Africa	83	317.7	388.7	611.1	883.9	1198.9	1626.4

Data sources: African Development Bank database and AfDB staff estimates

Table A.16 | Gross Domestic Product per Capita (US dollars)

Region	2000	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	717	1,667	2,419	3,231	4,231	5,492	5,729
Central Africa	424	777	1,907	2,771	3,185	3,175	2,695
East Africa	297	657	1,128	1,895	3,346	5,775	7,007
North Africa	1758	3,413	6,841	9,262	11,637	14,123	14,668
Southern Africa	1072	3,314	2,882	3,493	4,598	5,825	6,149
West Africa	354	1,051	1,292	1,680	2,061	2,438	2,397
Low-Case Scenario							
Africa	717	1,667	2,135	2,851	3,733	4,846	5,055
Central Africa	424	777	1,682	2,445	2,811	2,801	2,378
East Africa	297	657	995	1,672	2,952	5,096	6,183
North Africa	1758	3,413	6,036	8,172	10,268	12,462	12,942
Southern Africa	1072	3,314	2,543	3,082	4,057	5,139	5,425
West Africa	354	1,051	1,140	1,483	1,818	2,152	2,115

Data sources: African Development Bank database and AfDB staff estimates

Table A.17 | Fixed Telephone Lines per 1,000 Inhabitants

Region	2005	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	29.9	32.4	55.9	95.3	163.1	269.6	409.0
Low-Case Scenario							
Africa	29.9	32.4	53.6	92.1	158.3	263.3	401.5

Data sources: African Development Bank database and AfDB staff estimates

Table A.18 | Mobile Cellular Telephone Subscriptions (post-paid and pre-paid) per 1,000 Inhabitants

Region	2005	2010	2020	2030	2040	2050	2060
High-Case Scenario							
Africa	150.3	480.1	1166.5	1408.8	1427.7	1424.8	1419.5
Low-Case Scenario							
Africa	150.3	480.1	1119.2	1360.6	1386.1	1391.5	1393.8

Data sources: African Development Bank database and AfDB staff estimates





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