



United Nations
Economic Commission for Africa

COUNTRY PROFILE

2016



GHANA



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Economic Commission for Africa

COUNTRY PROFILE **2016**



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Contents

Abbreviations and acronyms	v
Acknowledgements	vii
Ghana at a glance	viii
1. Overview	1
2. National and subregional context	3
3. Economic performance	7
3.1 Economic growth	7
3.2 Fiscal policy	9
3.3 Monetary policy	11
3.4 Current account	12
3.5 Capital and financial accounts	13
4. Social developments	15
4.1 Demography	15
4.2 Poverty and employment	15
4.3 Health	16
4.4 Education	17
4.5 Gender equality and women's empowerment	19
5. Thematic analysis: Poor energy supply hampers growth in Ghana	21
5.1 Introduction	21
5.2 The energy crisis in Ghana	21
5.3 Linkages between energy and economic growth	23
5.4 Towards increasing renewable energy	24
5.5 Key challenges for the advancement of the national electricity industry	27
5.6 Recommendations	29
6. National data quality evaluation	30
References	31

Abbreviations and acronyms

CEN-SAD	Community of Sahel-Saharan States
ECA	Economic Commission for Africa
ECOWAS	Economic Community of West African States
GDHS	Ghana Demographic and Health Surveys
GDP	gross domestic product
GSGDA	Ghana Shared Growth and Development Agenda
LFS	Labour Force Survey
LSMS	Living Standards Measurement Survey
UNDP	United Nations Development Programme

Acknowledgements

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Ghana at a glance

General Information		Rankings	Rank	Out of	Year	Source
Region	West Africa	Human development index	140	188	2014	UNDP
Official language(s)	English	Gender inequality index	127	155	2014	UNDP
Currency	Ghanian Cedi	Ibrahim index of African governance	7	54	2014	Mo Ibrahim Foundation
Capital city	Accra	Ease of Doing Business	112	189	2015	The World Bank
REC membership(s)	ECOWAS, CEN-SAD	Corruption Perceptions	47	168	2015	Transparency International



Economic performance

The economic performance of Ghana under its first Shared Growth and Development Agenda (2010-2013) was impressive, with an average real growth rate of 9.6 per cent per annum. That growth was largely due to oil production, which began in the last quarter of 2010. Since 2013, the economy of Ghana has endured growing fiscal and trade deficits, high inflation and a weakening currency. The average growth rate for 2014 and 2015 was around 4.1 per cent, below the West African average of 5.2 per cent. In an attempt to correct the fiscal and trade deficits and improve price and exchange rate stability, Ghana pursued macroeconomic stability policies, but its success was mitigated.



Fiscal policy

After two years of moderate fiscal deficits in 2010 and 2011, the deficit averaged 10.8 per cent between 2012 and 2014. Several factors contributed to the increase, including the drop in global commodity prices and overruns in the public sector wage bill. With several corrective measures, the budget deficit dropped to 6.3 per cent of gross domestic product (GDP) in 2015. For the first time in many years, the domestic primary balance in 2015 achieved a surplus despite it being lower than projected.



Monetary policy

After nearly three years of single-digit inflation, with annual averages of 8.7 per cent in 2011 and 9.1 per cent in 2012, the rate of price level increases reached 14.9 per cent on average from 2013 to 2015. The Ghanaian cedi depreciated sharply against the dollar, dropping from 1.4 cedi to the dollar in 2010 to 3.7 cedi in 2015. Behind the depreciation of the cedi were increased demand pressures, speculative activities and a general decline in forex inflows.



Current account

In recent years, the current account deficit has been unsustainably high at 8.3 per cent of GDP for 2015, down from 9.6 per cent in 2014. That deficit is expected to be further reduced to 7.2 per cent of GDP in 2016.



Capital and financial accounts

The financial account of Ghana should fall by 39 per cent from \$3,890 million in 2014 to \$2,380 million in 2015. That drop is largely on account of an expected reduction in foreign direct investment, from 8.7 per cent of GDP in 2014 to 8.0 per cent in 2015. Over the years, Ghana has benefited from numerous aids in the agricultural sector, ostensibly to boost production. The financial account contributed to the build-up of reserves towards the end of the year and benefited from the 2015 Eurobond issue and annual external borrowing by the Cocoa Board.



Demography

The population of Ghana was 27.4 million in 2015. The country recorded an average annual population growth rate of 2.7 per cent from 2000 to 2010. The population has a sizeable youth component, with a broad base consisting of large numbers of children and a small number of elderly persons. The proportion aged less than 15 years, which was 38.3 per cent in 2010, would increase to 38.8 per cent in 2015; the proportion over 65 years, which was 4.6 per cent in 2010, would decline to 3.4 per cent in 2015.



Poverty

According to the Ghana Living Standard Survey (GSS, 2014), taking 1,314 cedi as the upper poverty line of, the proportion of the population defined as poor dropped from 28.5 per cent in 2005/06 to 24.2 per cent in 2012/13.



Employment

The Ghana Labour Force Survey for 2012/13 shows that the unemployment rate was 5.2 per cent in 2013 (GSS, 2014a), up from 3.6 per cent in 2006 (GSS, 2008). However, according to the Ghana 2015 report on the Millennium Development Goals, vulnerable employment in Ghana remains high at 68.6 per cent, an indication of a decent work deficit. Two out of three people in employment are considered vulnerable, with rural areas reporting a rate of 84.5 per cent compared with 52.1 per cent in urban areas.



Health

Access to health care generally improved between 2005 and 2013, both across localities and income groups quintiles, but 34 per cent of people who reported illness did not seek health care in 2013, down from 40.6 per cent in 2005 (the Ghana Living Standards Survey 6). In addition, the infant mortality rate per 1,000 live births declined from 64 in 2003 to 41 in 2014. The overall child mortality rate (children surviving to the age of 12 months) per 1,000 children also dropped from 84 deaths in 2003 to 19 in 2014.



Education

The gross primary school enrolment target registered significant increases of 86.4, 100.5 and 110.4 per cent in 2005, 2012 and 2014, respectively. Gross secondary and tertiary enrolment ratios stood at 58.0 and 12.0 per cent, respectively, in 2014. With regard to the Millennium Development Goal related to achieving universal primary education (Goal 2), Ghana continues to record a rising primary school completion rate. The rate increased continuously from 86.3 per cent (2008/09 and 2009/10) to 112.4 per cent (2012/13), but then fell to 97.5 per cent (2013/14). Ghana is therefore 2.5 percentage points away from the target of 100 per cent.



Gender

The 2014 LSMS and LFS in Ghana indicated that there was a higher percentage of women (50.5 per cent) with ownership in a firm than men (41.9 per cent). Regarding survival rate and stunted growth, equality is observed between female and male children under 5 years of age. The labour force participation rate for women is estimated at 74.9 per cent compared with 79.9 per cent for men. In the educational sector, the status of gender equality is above the middle parity score (7) in relation to the literacy rate of persons aged 15-24 years. Gender inequality is, however, observed in representation in parliament. Only 10.9 per cent of parliamentary posts are filled by women, and 76.9 per cent of ministerial positions are held by men.

Overview

After years of good economic performance, Ghana entered an economic deceleration phase with rates of 7.3 per cent in 2013, down from 9.3 per cent in 2012 and 14.0 per cent in 2011. The slowdown continued in 2014 with a growth rate of 4.0 per cent, further down to 3.9 per cent in 2015. The main macroeconomic indicators paint a picture of unsustainable macroeconomic fundamentals, a situation which has been in the making for many years.

The fiscal deficit as a percentage of GDP remained high at 7.2 per cent in 2015, after a level of 10.2 per cent in 2014. The ratio of debt to GDP hovered around 70 per cent. The current account deficit reached 8.3 per cent in 2015, compared with 9.6 per cent in 2014. The threat of inflationary pressures is high, as the inflation rate rose from single digits in 2010 to 15.5 per cent in 2014 and nearly 17 per cent in 2015. The Ghanaian cedi depreciated against the dollar by 24.5 per cent from an annual average of 3.06 cedi to the dollar in 2014 to 3.81 in 2015. The high cost of borrowing is directly linked to the generally high domestic interest rates fuelled by inflationary pressures and the high public debt refinancing risk. In 2016, the economy is expected to recover, with expected growth of around 4.5 per cent, bolstered by increased oil and gas production, private sector investment, improved public infrastructure and the country's political stability.

The population of Ghana has a youthful structure, with a broad base consisting of large numbers of children and a small number of elderly persons. Based on the upper poverty line of about \$307.1, the proportion of the population defined as poor dropped from 28.5 per cent in 2005/06 to 24.2 per cent in 2012/13. Although inequality is reported to have worsened, access to health care generally improved from 2005 to 2013. The percentage of people who reported an illness but did not seek health care was 34 per cent in 2013, down from 40.6 per cent in 2005. The focus of education policy in Ghana over the past decade has been geared towards the attainment of the Millennium Development Goals relevant to education as well as the Education for All goals. The gross primary school enrolment goal was achieved in 2012, ahead of the 2015 schedule.

Since 2013, Ghana has been in the midst of a severe energy crisis, which has become a source of major public outrage and is paralysing the economy. Load-shedding power outages

have worsened since December 2014. Serious problems related to the availability of quality electricity have a negative impact on prospects for the country's economy. Therefore, in order to strengthen the recovery of the economy, strong policies should be implemented in the electricity sector. Such policies should include educating citizens on the better use of electricity, implementing programmes such as the prepaid metering system, investing in the electricity sector and developing renewable energy.

National and subregional context

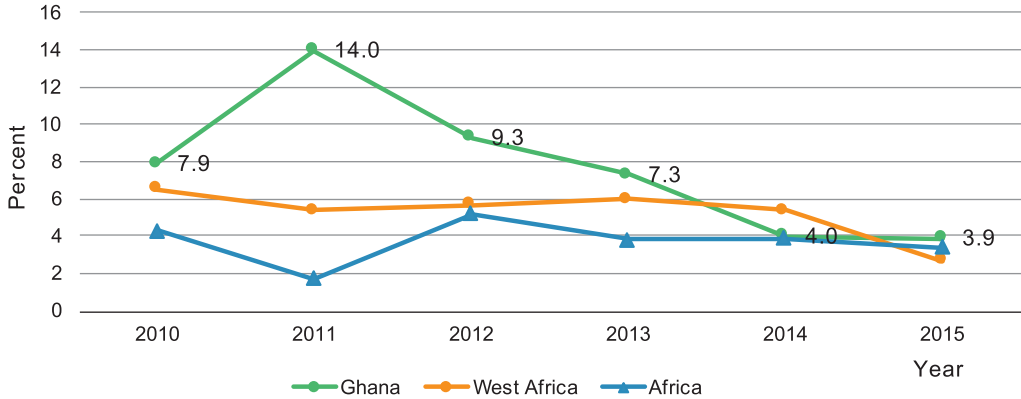
The Ghana Shared Growth and Development Agenda (GSGDA) II, 2014-2017, is the operational framework of the Coordinated Programme of Economic and Social Policies, 2014-2020 – An Agenda for Transformation. It is the fifth in the series of medium-term national development policy frameworks prepared over the past two decades to enhance overall development management and the transformation agenda of the country. Ghana is the world's second-largest exporter of cocoa and Africa's second-largest producer of gold. Ghana sits on the gold coast, and at one time provided half of the world's gold. Until the recent advent of oil, the country's main export products were cocoa and gold.

The recent economic development seen in Ghana can be divided into two periods. The country recorded an impressive economic performance during the implementation of the previous GSGDA (2010-2013), with an average real growth rate of 9.6 per cent per annum (see figure 1 below). That growth, largely related to the discovery of oil and its export, was higher than that of West Africa (6.4 per cent) and Africa as a whole (4.7 per cent). Since 2013, the economy of Ghana has endured a growing public deficit (fiscal and trade deficits of nearly 12 per cent in 2013), high inflation and a weakening currency. The average growth rate for the period of 2014 and 2015 was around 4.1 per cent, below the West African average of 5.2 per cent. Ghana pursued macroeconomic stability policies and strategies under a programme of the International Monetary Fund during the implementation phase of GSGDA II. The objectives, which were to correct the fiscal and trade deficits and improve monetary policy for price and exchange-rate stability, did not materialize as expected, largely because of fiscal indiscipline.

In 2015, growth in West Africa was 2.7 per cent, down sharply from 5.4 per cent in 2014. This 50 per cent drop in regional growth resulted mainly from the fall in primary commodity prices, in particular oil. The negative effects of the decline in oil prices affected oil-exporting countries such as Nigeria, the leading economy in West Africa, whose GDP growth rate dropped to 2.8 per cent in 2015, down from 6.3 per cent in 2014. A slowdown in the pace of activity was observed in most ECOWAS countries (ECA, 2016).

Ghana is an active member of key regional integration arrangements in West Africa and on the continent, including the African Union and ECOWAS. It also maintains a relatively open trade regime with the rest of the world. Outside the subregion, Ghana initiated an interim

Figure 1: Growth performance of Ghana, West Africa and Africa



Source: GSS and ECA database.

economic partnership agreement with the European Union at the end of 2007. It has signed the agreement but has not yet ratified it. Ghana maintains good relations with its traditional trading partners and donors, especially the United Kingdom of Great Britain and Northern Ireland and the United States of America, both of which have a large Ghanaian diaspora. In addition, Ghana has good relations with many emerging countries, backed by funding for various projects.

Table 1: Status of macroeconomic convergence criteria, 2014-2015

Criteria	ECOWAS standards	2014	2015
Primary criteria			
Ratio of the fiscal deficit, including grants (commitment basis)/nominal GDP	≤3%	-10.1%	-5.9%
Average annual inflation rate	≤5%	15.5%	16.7%
Fiscal deficit of previous year financing by central bank	≤10%	5% ^a	5% ^a
Gross reserves in months of imports	≥6	2.6	2.7
Secondary criteria			
Ratio public debt/nominal GDP	≤70%	70.2%	72.8%

Source: ECOWAS (2015) and IMF (2016).

Note: Only the criterion of fiscal deficit financing by the central bank or tax revenue of the previous year has been respected over the period 2014-2015.

^a Criteria satisfied.

Box 1: Africa regional integration index - Ghana

The Africa Regional Integration Index is designed to measure how well each country in Africa is meeting its commitments under the pan-African integration frameworks, including Agenda 2063 and the Abuja Treaty.

The index is a joint project of ECA, the African Development Bank and the African Union Commission (2015). The index covers the following dimensions: free movement of persons, trade integration, productive integration (development of regional value chains), regional interconnections and infrastructure and macroeconomic policy convergence. The following section gives highlights on selected indicators in the index. For more information, the reader may consult the report on the Index and the dedicated website. The table below also gives rankings awarded by CEN-SAD.

Overall rank:

Sixth in ECOWAS (score: 0.55). Eleventh in CEN-SAD (score: 0.42). Best performer in ECOWAS is Côte d'Ivoire (score: 0.68)*.

Free movement of persons	Trade integration	Productive integration	Infrastructure	Financial integration and macroeconomic policy convergence
First in ECOWAS (score: 0.8). Thirteenth in CEN-SAD (score: 0.64)	Fourth in ECOWAS (score: 0.6). Best performer in ECOWAS is Nigeria (score: 1). Twelfth in CEN-SAD (score: 0.47). 2nd in ECCAS (score: 0.96).	Third in ECOWAS (score: 0.47). Best performer in ECOWAS is the Gambia (score: 0.52). Eighth in CEN-SAD (score: 0.32).	Third in ECOWAS (score: 0.6). Best performer in ECOWAS is Cabo Verde (score: 0.68). Tenth in CEN-SAD (score: 0.32).	Twelfth in ECOWAS (score: 0.25). Best performer in ECOWAS is Niger (score: 1). Nineteenth in CEN-SAD (score: 0.35).

Ghana ranks moderate to high within ECOWAS in the overall index, attaining sixth place out of 15 countries in the bloc. The country's performance in CEN-SAD is also moderate to high, ranking eleventh out of 27 member countries in the overall index.

Free movement of persons: good score (joint-first in ECOWAS, thirteenth in CEN-SAD). Ghana allows nationals from all other ECOWAS countries to enter without a visa. Ghana has also ratified the relevant ECOWAS instruments concerning free movement of persons, rights of establishment and free movement of workers. Ghana has further ratified the relevant CEN-SAD instruments concerning free movement of persons, rights of establishment and free movement of workers. More than half (58.0 per cent) of other CEN-SAD member States may enter Ghana without a visa, and 15.0 per cent may enter with a visa on arrival. Although Ghana has recently liberalized its visa regime for other African countries, this information was too recent to be taken into account in the index.

Trade integration: good score (fourth in ECOWAS, twelfth in CEN-SAD). Ghana has an average applied tariff of around 4.8 per cent on imports from ECOWAS (based on data for 2014). This is the eighth-highest in the bloc. The country's average applied tariff on imports from CEN-SAD is 16.5 per cent. Trade (as a share of GDP) with the rest of the regional economic community is mixed. The share held by Ghana of total trade in the bloc is 9.2 per cent (based on data for 2015); this is the second highest in the bloc after Nigeria (76.0 per cent). Over the period 2010 to 2013, imports from the rest of ECOWAS accounted for only 5.4 per cent of GDP, which was the seventh lowest equivalent statistic for any other ECOWAS member country. Imports from the rest of CEN-SAD accounted for 6.0 per cent, the ninth-highest level among 24 countries for which data were available. Ghana exports to ECOWAS countries as a share of GDP averaged 2.4 per cent over the same period, the sixth-highest level among ECOWAS

* A continent-wide ranking, in which all African countries from all regional economic communities will be compared with one another, is currently under development for the Africa regional integration index and will be added to subsequent updates of the ECA country profiles.

member countries. Over the same period, exports to CEN-SAD countries averaged around 3.0 per cent of GDP, which was the eighth-highest level among the 24 CEN-SAD member countries.

Productive integration: good score (third in ECOWAS, eighth in CEN-SAD). The integration of Ghana into regional value chains appears to be mixed. Its trade is moderately complementary with that of its partners. It has a merchandise complementarity index of 0.15 (based on data from 2013). Its share of intermediates in terms of imports from the regional economic communities was 0.02 per cent. The share of intermediates in terms of total exports within the region averaged 0.46 per cent, the fourth-highest level among ECOWAS member countries, while 0.08 per cent of the country's imports from CEN-SAD were intermediates (meaning that it ranked thirteenth out of 14 countries for which data were available).

Infrastructure: good score (third in ECOWAS, tenth in CEN-SAD). The country ranked third among ECOWAS members in its average performance in the African Development Bank infrastructure development index between 2010 and 2012. Around 80.0 per cent of international flights to and from Ghana are within ECOWAS, which is the third-highest such ratio among ECOWAS members (behind Sierra Leone and Guinea-Bissau). Similarly, 81.0 per cent of those international flights were within CEN-SAD (the fifth-highest such ratio among CEN-SAD members). Intra-African mobile telephone roaming is quite expensive in Ghana. The country had the highest cost of roaming of the 38 African countries for which data were available (according to data collected in 2014).

Financial integration and macroeconomic policy convergence: poor score (twelfth in ECOWAS, nineteenth in CEN-SAD) the inflation rate for Ghana was 11.7 per cent both in ECOWAS and CEN-SAD, which was the second-highest and the fourth-highest level among the member countries, respectively.

Overall, Ghana performs to a moderate to high level, with strong performance in the area of free movement of persons, trade integration, productive integration and infrastructure, but the country has a poor score in financial integration and macroeconomic policy convergence. Where specific policy measures that could boost its performance are concerned, Ghana could consider further reducing inflation and look into other policy measures to boost intraregional trade in goods and services.

Economic performance

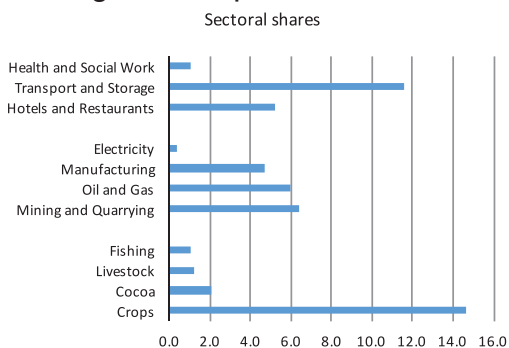
3.1 Economic growth

The medium-term national development policy framework of Ghana has been guided since 2010 by the Ghana Shared Growth and Development Agenda (GSGDA). The first GSGDA covered the period from 2010 to 2013 and emphasized structural transformation of the Ghanaian economy, based on industrialization, modernized agriculture and natural resource development. It was followed by GSGDA II, which covers the period 2014-2017.

The growth of the economy of Ghana was relatively strong during the implementation of the first GSGDA (9.6 per cent on average), leading to significant improvement in per capita income from \$1,260 in 2010 to \$1,550 in 2012. Much of the growth is, however, attributed to the advent of oil exploration and production. The oil industry recorded the highest average growth rate over the period, followed by the services sector and the agriculture sector (GSGDA II, 2014-2017).

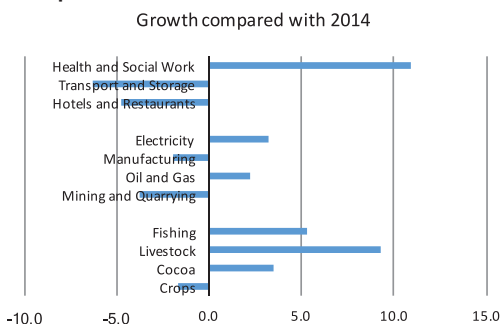
The composition of outputs has gradually shifted from agriculture to services. The services sector recorded the highest growth (5.2 per cent), followed by agriculture (2.5 per cent) and the industry sector (1.0 per cent) (see figures 2 and 3).

Figure 2: Sector shares of 2015 GDP and annual growth compared with 2014



Source: GSS (2015).

Figure 3: Annual sectoral growth in 2015, compared with 2014



Source: GSS (2015).

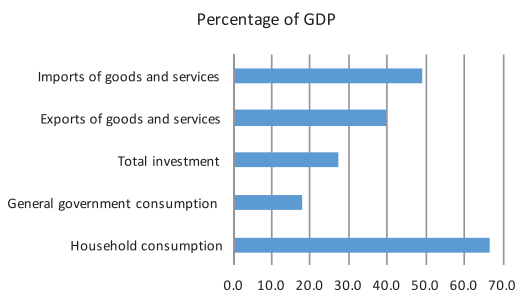
Services remain the largest sector. Its share of GDP increased from 52.0 per cent in 2014 to 53.3 per cent in 2015. However, the sector’s growth rate decreased from 5.6 per cent in 2014 to 5.2 per cent in 2015. Two of the subsectors within the service sector recorded double-digit growth rates, namely, information and communication (13.4 per cent) and health and social work (11.5 per cent).

The growth of the industry sector – the slowest-growing sector with a GDP share of 26.6 per cent – inched up from 0.8 per cent in 2014 to 1.0 per cent in 2015. Of all the industrial activities, the water and sewerage subsector recorded the highest growth of 21.5 per cent in 2015.

Growth in the agriculture sector contracted from 4.6 per cent in 2014 to 2.5 per cent in 2015. Its share of GDP also decreased, from 21.5 per cent in 2014 to 20.2 per cent in 2015. Crops remained the largest activity with a share of 15.7 per cent of nominal GDP.

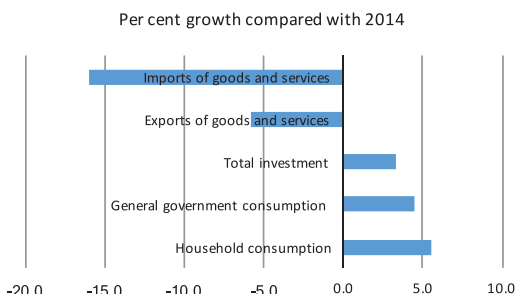
On the demand side, consumption expenditure decreased by 1.2 per cent in 2015, compared with a growth of 5.3 per cent in 2014. Household final consumption expenditure decreased by 2.7 per cent, while final government consumption expenditure jumped by 4.3 per cent. Investment expenditure grew by 2.7 per cent in 2015, compared with a growth of 2.8 per cent in 2014. Net exports of goods and services (exports minus imports) contracted by 3.9 per cent of GDP in 2015 compared with a contraction of 0.9 per cent in 2014. Despite this contraction, the changes in exports and imports are positive in 2015 at 5.3 and 7.9 per cent, respectively. See figure 4 for information on demand shares in 2015.

Figure 4: Demand shares of GDP in 2015



Source: GSS (2015).

Figure 5: Annual growth in 2015 compared with 2014



Source: GSS (2015).

Relatively poor levels of growth of 4.0 per cent in 2014 and 3.9 per cent in 2015 led Ghana to sign, in April 2015, a three-year programme with the International Monetary Fund.

3.2 Fiscal policy

After suppressed budget deficits of 6.5 and 4.3 per cent of GDP in 2010 and 2011, respectively, Ghana entered a phase of double-digit deficits of 11.6, 10.7 and 10.2 per cent of GDP in 2012, 2013 and 2014, respectively (see table 2). That situation is largely due to unplanned expenditures that occurred during the 2012 election year, overestimation of revenues (including oil revenues), higher interest payments and overruns in the public sector wage bill.

The public debt situation in Ghana has worsened in recent years and the country now faces a high risk of debt distress and increased overall debt vulnerability. According to the 2015 budget statement and economy policy report of the Ministry of Finance, the provisional debt stock as of December 2015 stood at 99,160.71 million cedi (\$26,120.36 million). That amount consists of 59,912.81 million cedi (\$15,781.89 million) and 39,247.91 million cedi (\$10,338.46 million) external and domestic debt, respectively. However, because of prudent measures, the public debt stock as percentage of GDP remained relatively flat from August 2015, reflecting a stable cedi/dollar exchange rate in the second half of 2015.

The fiscal policy of Ghana has generally been expansive. This explains to some extent the fiscal deficit levels and the fiscal vulnerabilities associated with adverse income shocks. Ghana signed up to a three-year International Monetary Fund Extended Credit Facility arrangement

Table 2: Financial operations of the Government (percentage of GDP)

DESIGNATION	2010	2011	2012	2013	2014	2015
Total revenue and grants	28.8	22.7	18.5	16.7	18.4	20.7
Tax revenue	13.7	16.8	15.4	14.2	15.8	16.9
Non-tax revenue	2.7	3.5	1.4	1.9	1.8	2
Grants	2.4	1.7	1.5	0.5	0.7	1.5
Total expenditure and net lending	44.6	27.3	30.1	27.4	28.6	27.8
Recurrent expenditures	29.4	17.8	12	11	9.7	9.8
Capital expenditures	10.9	6.4	4.8	4.6	5.4	4.9
HIPCb and MDRIc-financed	1.2	–	–	–	–	–
Arrears clearance and tax refunds	3.1	3.0	5.3	2.7	3.1	1.5
Overall budget balance	-6.5	-4.3	-11.6	-10.7	-10.2	-7.3
Primary budget balance	0.1	2.9	-8.7	-7.0	-5.6	0.2a

Sources: Calculation of ECA from the Ministry of Finance data, and IMF staff estimates and projections (2016).

^a The primary budget balance figure for 2015 is an estimate.

^b Heavily indebted poor country.

^c Multilateral debt relief initiative.

Box 2: Comparing economic forecasts for Ghana

Economic forecasts provide essential information for decision makers in the public and private sectors. Reliable economic forecasts inform and support a country’s decision-making process. A number of organizations currently produce forecasts on economic growth for Ghana, including the African Development Bank, Economist Intelligence Unit, the International Monetary Fund and the World Bank. The forecasts produced by those organizations remained within 3.3 percentage points of each other for the years 2008-2016 (see figure A below). On average, the Economist Intelligence Unit (at 7.2 per cent) provided the most optimistic forecasts of growth over the period 2008-2016. Looking forward, the most optimistic growth rate forecast for 2016 is from the International Monetary Fund (6.4 per cent), followed by the African Development Bank (5.8 per cent) and the World Bank (5.5 per cent), while the Economist Intelligence Unit forecasts a lower growth rate of 4.8 per cent.

The degree of accuracy of these forecasts is an important issue; hence, ECA has carried out an analysis to assess which forecasts tend to be more reliable, using the root-mean-square error and the mean absolute error, common measures to evaluate forecasts. The higher the value of these errors, the less accurate the forecasts.* The ECA analysis of forecasts over the period 2008-2014 indicates that forecasts by the International Monetary Fund were relatively more accurate, followed by those of the World Bank and the African Development Bank, while the Economist Intelligence Unit forecast had the highest forecast errors (see figure B below).

Figure A: Forecasted GDP real growth rates, by institution

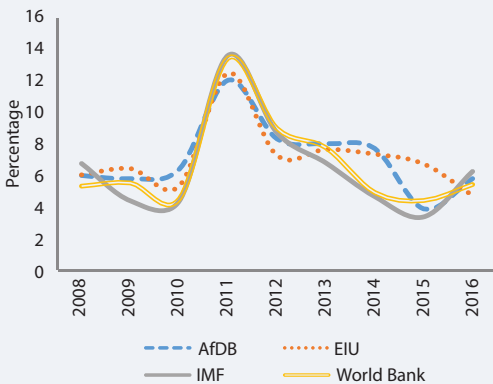


Figure B: Forecast error, 2008-2014



Source: ECA (2015).

* For more information on these terms and the ECA approach to evaluating the accuracy of forecasts, see ECA (2015).

in the amount of \$918 million on 3 April 2015 to support medium-term economic stabilization. A number of policies that are consistent with the Government’s “home-grown” policies and 2015 budget are being implemented. Those policies include tax and expenditure measures. Among the first results, the budget deficit in 2015 dropped to 7.2 per cent of GDP. Moreover, the primary deficit, according to estimates for 2015, had been eliminated and stood at 1.7 per cent of GDP.

3.3 Monetary policy

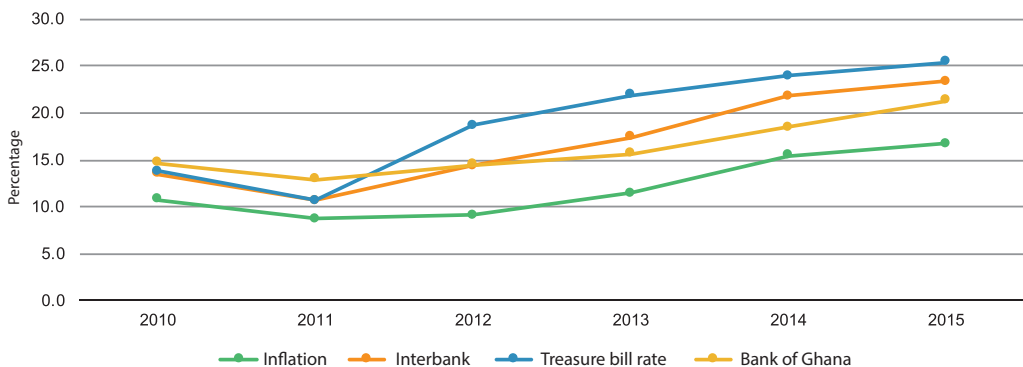
The monetary policy tool of the Bank of Ghana is the monetary policy rate (MPR), while the operating target is the overnight money market interest rate (Interbank rate). The Bank of Ghana uses its MPR to signal direction and gradually ease inflation over the policy horizon and steer it towards the medium-term target of 8 per cent \pm 2 per cent. Annual average inflation rates were 11.5, 15.5 and 17.7 per cent in 2013, 2014 and 2015, respectively (see figure 6). That inflation was driven by the pass-through effects of currency depreciation, upward adjustment in ex-pump prices following deregulation of petroleum prices and increased food prices arising from the cyclical dry season. Ghana is currently not close to reaching the ECOWAS first-order criteria of annual average inflation rate of less than 5 per cent.

In recent years the Ghanaian cedi has continually depreciated against the dollar. The annual average exchange rate increased from 1.4 cedi to the dollar in 2010 to 3.7 cedi in 2015, largely because of increased demand pressures, speculative activities and declining forex inflows, and weakening macroeconomic fundamentals.

The foreign exchange market experienced increased volatility in the first half of 2015, resulting in a faster depreciation of the cedi, declining 26.2 per cent against the dollar. The trend, however, lessened in the fourth quarter of 2015 as foreign exchange inflows improved amid policy tightness. According to the Bank of Ghana, foreign inflows from the cocoa loan and Eurobond issue totalling approximately \$2.8 billion provided a strong buffer to the foreign exchange market. Consequently, the cedi appreciated by 14.5 per cent during the second half of 2015. Cumulatively, however, the cedi depreciated by 5.7 per cent on a year-to-date basis in 2015, a much slower pace than 31.3 per cent depreciation in 2014.

From 2010 to 2015, the Monetary Policy Committee met more than 30 times and changed the monetary policy rate. Thus, the rate increased from 18 per cent in early 2010 to 26.0 per cent in December 2015. Figure 6 shows that since 2012, there is a synchronization between the monetary policy rate, the interbank rate and the Treasury bill rate. The annual averages

Figure 6: Inflation and interest rates, 2010 to 2015



Source: Data from Bank of Ghana website (2016).

increased from 2010 to 2015, from 13.5 to 23.4 per cent for the interbank rate and from 13.8 to 25.4 per cent for the Treasury bill rate.

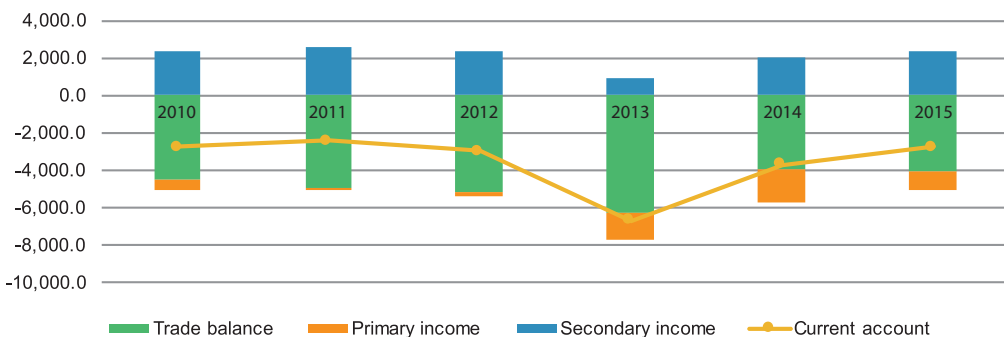
3.4 Current account

In recent years, the current account deficit has been unsustainably high, equalling 8.3 per cent of GDP for 2015 compared with 9.6 per cent in 2014 (see figure 7). That development was mainly due to the improvement in the trade account.

The trade balance (including service costs) recorded a higher deficit of \$4,098 million (7.1 per cent of GDP) in 2015 compared with \$3,989 million (3.6 per cent of GDP) in 2014. That change was the net result of a sharp slowdown in imports in 2015, rather than a reduction in export revenues. The value of merchandise exports for 2015 was estimated at \$11,011 million (19.1 per cent of GDP), indicating a decrease of 16.7 per cent compared with the outturn of 2014. The value of merchandise imports for 2015 was estimated at \$13,799 million (23.9 per cent of GDP), down by 5.5 per cent from 2014. Total expenditure on non-oil imports in 2015 declined by 6.6 per cent to \$11,303 million (19.6 per cent of GDP). The decrease was reflected in all categories of imports, namely capital, intermediate and consumption goods.

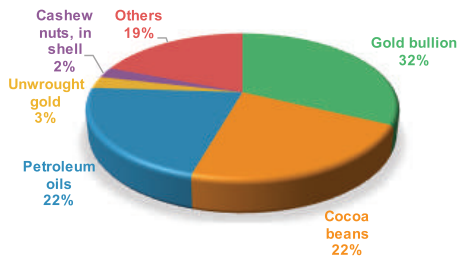
The export performance of Ghana was driven by gold, agricultural products and hydrocarbons (see figure 8). Gold exports were estimated to be nearly 36 per cent of total exports. Regarding imports, they remain dominated by machinery and mechanical appliances (23.1 per cent), followed by imports of chemical products (14.9 per cent) and mineral products (14.1 per cent) (see figure 9). The other products are composed of several products, of which the highest in value are base metals and articles of base metals (9.3 per cent), wood (4.5 per cent) and textiles (2.3 per cent).

Figure 7: Evolution of the current account balance and its components



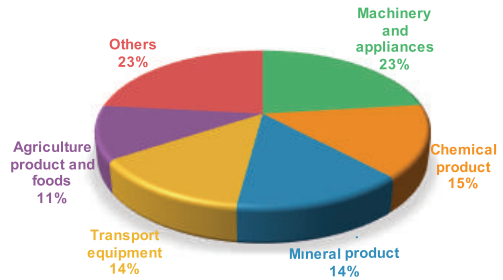
Source: Data from IMF website.

Figure 8: Share of exports by main components in 2015 (Percentage)



Source: ECA calculation based on data from GSS.

Figure 9: Share of imports by main components in 2015 (Percentage)

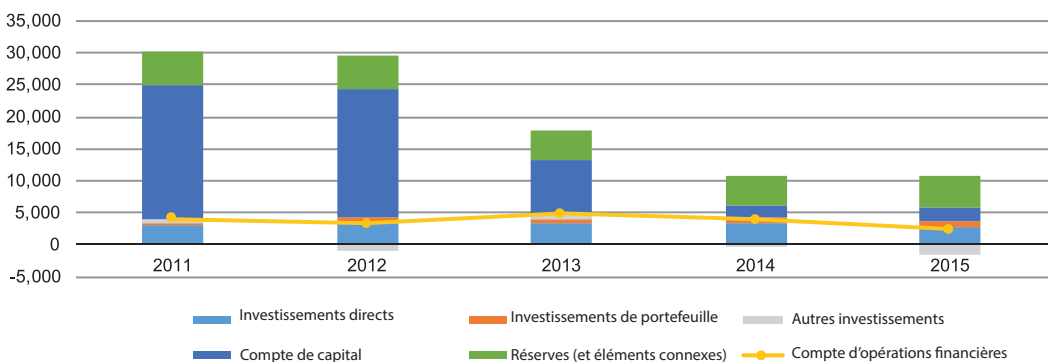


Source: ECA calculation based on data from GSS.

According to the 2015 annual bulletin of the Bank of Ghana, India receives the largest share of Ghana's total exports (27.2 per cent). The other destinations of Ghana exports are the 28 European Union member States (22.5 per cent), Switzerland (11.7 per cent), China (10.2 per cent), the United States (2.6 per cent) and other economies (6.9 per cent).

Concerning the origin of imports, China emerges as the leading source, accounting for 32.6 per cent of total imports, followed by the 28 European Union member States (20.7 per cent), Nigeria (14.0 per cent), the United States (5.4 per cent), India (3.9 per cent), Côte d'Ivoire (3.0 per cent) and other economies (6.1 per cent).

Figure 10: Evolution of the financial account balance (Millions of United States dollars)



Source: IMF (2016).

3.5 Capital and financial accounts

According to the International Monetary Fund (2016), the financial account balance of Ghana should have decreased from \$3,890 million in 2014 to \$2,380 million in 2015, a reduction of about 39.0 per cent (see figure 10) – a development mainly attributable to a reduction in net portfolio investments as well as net other investments. In addition, foreign direct investment fell to \$3.0 billion (8.1 per cent of GDP) in 2015 from \$3.3 billion (8.7 per cent of GDP) in 2014.

Ghana has benefited from high foreign direct investment inflows over the past few years, driven mainly by the hydrocarbon sector and reaching 8.7 per cent of GDP in 2014 despite increasing uncertainties surrounding the Ghanaian economy. Foreign direct investment in Ghana in 2015 declined 4.9 per cent, according to the World Investment Report 2016 of the United Nations Conference on Trade and Development. Such investment is projected to remain at around 7.0 per cent of GDP over the medium term, and then gradually decline to around 3.0 per cent in the long term (IMF, 2016). In terms of months of imports, gross international reserves remained broadly stable in Ghana from 2010 to 2015, slightly above 3 months of imports. However, since 2012, those reserves have risen gradually, from 3.0 (2012) to 3.2 (2014) and then 3.5 (2015).

Social developments

4.1 Demography

Ghana recorded a population of 27.6 million in 2015 (see figure 11).¹ The population increased from 6.7 million in 1960 to 18.9 million in 2000 and 24.7 million in 2010. The period 2000-2010 recorded an average annual growth rate of 2.7 per cent. The population of Ghana has a sizeable youth component, with a broad base consisting of large numbers of children and a small number of elderly persons. The structure of the population undergoes changes over time by rejuvenation. For instance, the proportion of persons under 15 years of age was 38.3 per cent in 2010 and increased to 38.8 per cent in 2015, while the proportion over 65 years of age totalled 4.6 per cent in 2010 and declined to 3.4 per cent in 2015.

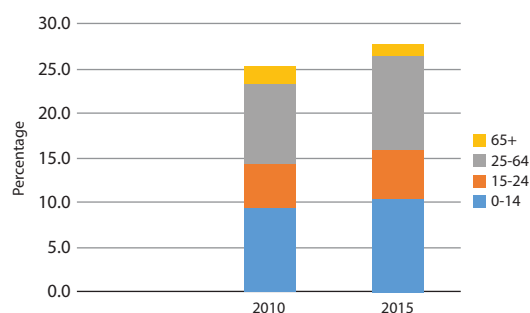
The proportion of the population living in urban areas has more than doubled in the last five decades, expanding from 23.0 per cent in 1960 to 51.0 per cent in 2010, thus placing greater demand on urban public amenities such as housing, transportation, sanitation, public health and education.

4.2 Poverty and employment

According to the Ghana Living Standards Survey (GLSS 6, Poverty profile in Ghana 2005-2013), the proportion of the population defined as poor (based on the upper poverty line of 1,314 cedi) dropped from 28.5 per cent in 2005/06 to 24.2 per cent in 2012/13 (see figure 12). The poverty gap index is estimated at 7.8 per cent, meaning that about 6.4 million people in Ghana are poor.

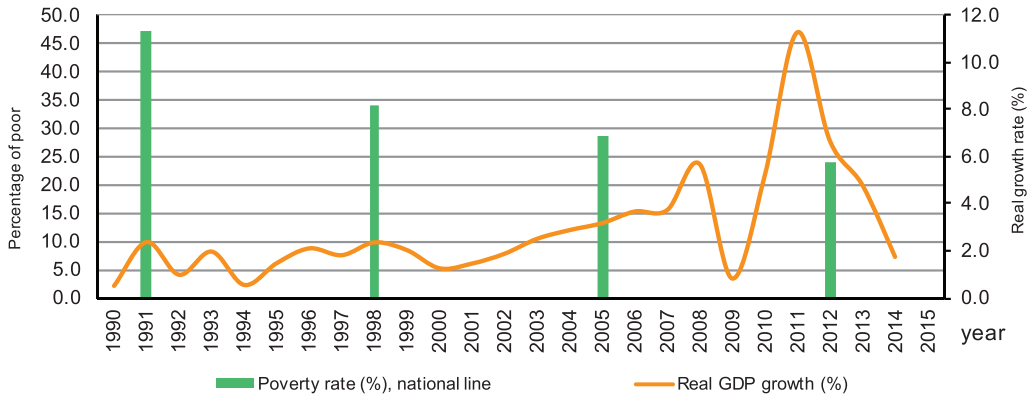
Ghana has made significant progress with poverty reduction over the past decade. Millennium Development Goal 1 target of halving extreme poverty was achieved as far back as 2006, after the extreme poverty rate dropped consistently from 36.5 per cent in 1991 to 18.2 per cent in 2006 and further to 8.4 per cent in 2013. The Gini coefficient

Figure 11: Population by age group (Millions)



Source: GSS (2010 and 2015).

¹ Data Production Unit of GSS, 16 September 2016.

Figure 12: Poverty and economic growth (Percentage)

Source: GSS (2014).

rose marginally from 0.41 in 2005/06 to 0.42 in 2012/13, indicating a slight worsening of income inequality.

The 2012-2013 Ghana Labour Force Survey measured an unemployment rate of 5.2 per cent in 2013, up from 3.6 per cent in 2006 (GSS, 2008 and GSS, 2014a). However, according to the Ghana 2015 report on the Millennium Development Goals, vulnerable employment in Ghana remains high at 68.6 per cent, an indication of a decent work deficit.

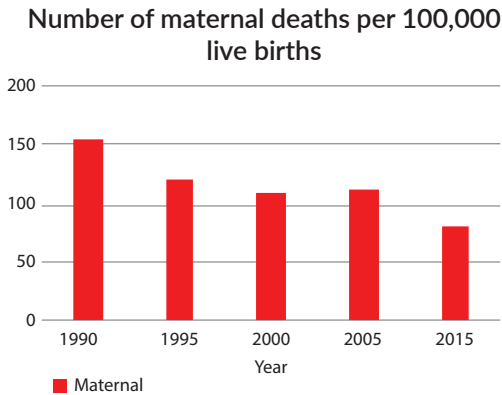
Also according to Ghana Living Standards Survey (GLSS 6), the agriculture sector remains the largest employer (44.7 per cent) and the main driver of jobs in rural areas. In 2013, the services sector was second, with a share of about 41.0 per cent of total employment, absorbing the urban labour force, mainly in the wholesale and retail trade subsectors. The industry sector accounts for about 14 per cent of total employment.

4.3 Health

Although access to health care generally improved between 2005 to 2013 across all localities and income quintiles, but nonetheless, 34 per cent of the people who reported an illness in 2013 did not seek health care, down from 40.6 per cent in 2005 (Ghana Living Standards Survey, GLSS 6).

According to Ghana Statistical Service, the mortality rate per 1,000 children under 5 years of age declined from 115 in 1988 to 111 in 2003, and declined further to 60 in 2014 (see figures 13 and 14). Similarly, the infant mortality rate per 1,000 live births declined from 64 in 2003 to 41 in 2014. The overall child mortality rate (children surviving to age 12 months) per 1,000 children also dropped from 84 deaths in 2003 to 19 in 2014. In addition, life expectancy increased from 58.7 years in 2005 to 61 years in 2013.

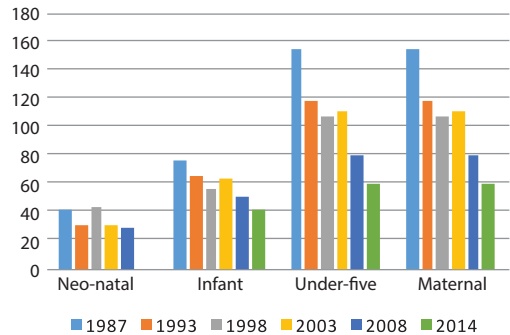
Figure 13: Evolution of maternal mortality rates



Source: Ghana and UNDP (2015) and GSS, Ghana Health Service and ICF International (2015).

Figure 14: Evolution of mortality rates in newborns, infants and those under five years of age

Number of deaths per 1,000 live births



Source: Ghana and UNDP (2015) and GSS, Ghana Health Service and ICF International (2015).

The Government of Ghana is a signatory to the Abuja Declaration, committing to spend at least 15 per cent of its budget on health (SEND-Ghana and STAR-Ghana, 2014). However, the 2014 planned government expenditure allocated 11 per cent to health (Government Spending Watch, 2015).

4.4 Education

The focus of education policy in Ghana over the past decade has been geared towards the attainment of the Millennium Development Goals related to education and the Education for All goals. The target on gross primary school enrolment was achieved in 2012, three years ahead of schedule. It registered increases of 86.4, 100.5 and 110.4 per cent in 2005, 2012 and 2014, respectively. Gross secondary and tertiary enrolment ratios stood at 58.0 and 12.0 per cent, respectively, in 2014. Although the net primary school enrolment ratio increased from 88.5 per cent in 2008 to 91.0 per cent in 2014, it fell short of the target by 9.0 per cent. See figures 15 and 16 for information about net enrolment rates and literacy rates, respectively.

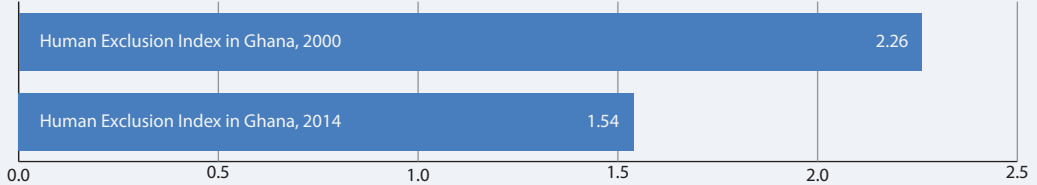
According to the Ghana Living Standards Survey (GLSS 6), Ghana is on track to achieve Millennium Development Goal 3 focusing on ensuring gender parity, especially at the primary and junior high school levels, although level of gender parity at the primary level has stagnated at 0.96 since 2006/07. Gender parity at junior high school level increased marginally from 0.91 in 2006/07 to 0.92 in 2007/08 and remained at that level in 2008/09 and 2009/10.

The primary school completion rate increased continuously from 86.3 per cent in 2008/09 and 2009/10 to 112.4 per cent in 2012/13, but then fell to 97.5 per cent in 2013/14. Ghana is therefore 2.5 percentage points away from the target of 100 per cent (UNDP, MDG (2015) and GSS, Ghana Health Service and ICF International (2015)).

Box 3: African social development index: Ghana

Human exclusion in Ghana is estimated to have fallen by nearly 32 per cent in the period 2000-2014 (see figure A). That development is likely to be attributable to the healthy economic growth over that period, complemented by targeted social policies that include specific measures for improved inclusive health through the National Health Insurance Scheme and programme packages such as Livelihood Empowerment Against Poverty. Both schemes targeted the access of vulnerable groups to public services including education and health.

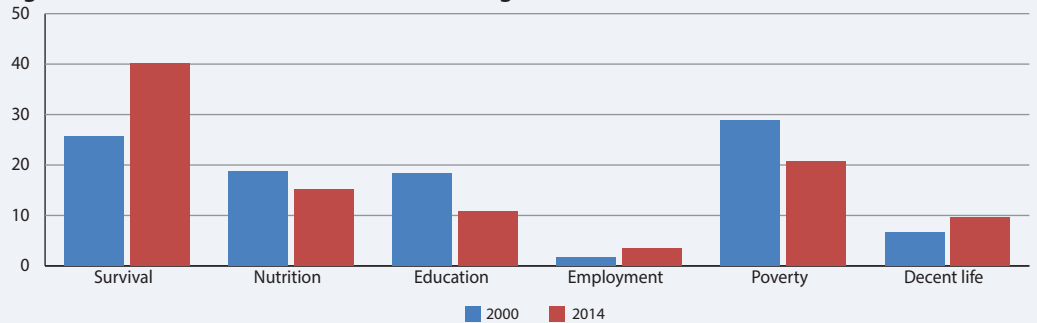
Figure A: African social development index in Ghana



Source: ECA computations based on national data.

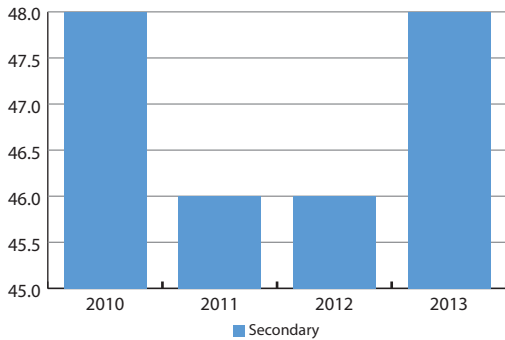
Despite the improvements in human inclusion, the six dimensions have varying relative contributions to the African social development index, which have changed over the period under review (see figure B). The contribution of infant mortality has increased sharply since 2000, reaching about 40 per cent to the human exclusion in Ghana in 2014. The data in the figure below show that infant mortality has dropped over the period 2000-2014, but it remains a crucial contributor to overall human exclusion, possibly because of inequitable access to health services across income and location determinants.

Figure B: Drivers of human exclusion (Percentage)

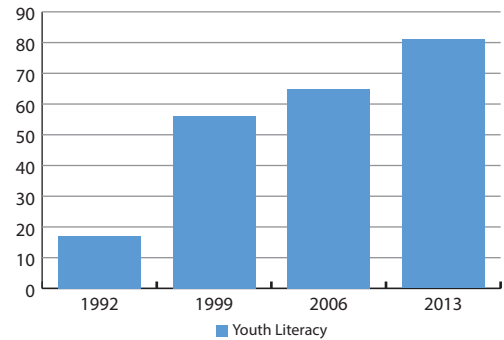


Source: ECA computations based on national data.

In 2010, Ghana rebased its national accounts to 60 per cent more than what had been previously estimated. A significant outcome of the rebasing exercise was that the service sector now accounts for almost half (49.3 per cent) of GDP. This large service sector is mainly of an informal contractual status, which gave rise to some serious challenges to NHIS, introduced in 2003. NHIS is a success story for achieving health inclusion, although the large informal sector in Ghana seems to be relatively marginalized from the scheme, which may explain the inordinate jump in the contribution of infant mortality to overall exclusion. There is therefore a need to design appropriate targeting mechanisms and strategies to reach this segment of the population, taking into account the informal nature of their work. Designing such mechanisms requires a deeper analysis of the income levels of informal workers and their ability to pay.

Figure 15: Net enrolment rates

Source: Ghana and UNDP (2015) and GSS, Ghana Health Service and ICF International (2015).

Figure 16: Youth literacy rates (Percentage)

Source: Ghana and UNDP (2015) and GSS, Ghana Health Service and ICF International (2015).

According to the Ministry of Education, although public expenditure on education accounts for 25.8 per cent of total government expenditure and 6.3 per cent of GDP, about 71 per cent of the expenditure goes into the payment of salaries, allowances and administration, leaving less than 30 per cent for the delivery of goods, services and infrastructure investments in education.

4.5 Gender equality and women's empowerment

The status of gender equality and women's empowerment is measured in terms of the key areas indicated in the circular chart below. These areas are important for the improvement of women's lives and their contribution to sustainable and inclusive growth in Africa.

To assess the actual extent of gender inequality and to achieve the goal of measuring gender equality and women's empowerment in Africa, ECA has developed a monitoring tool, the African Gender Development Index (AGDI), which allows policymakers to evaluate their own performance in implementing policies and programmes geared towards ending women's marginalization.

The calculation for the scoring is based on Gender Status Index (GSI) data. GSI is one of the components of AGDI. For each key indicator, the score is calculated as an unweighted arithmetic average by taking the female to male ratio of the indicator values, multiplying it by 10 and rounding the result off to the nearest whole number. A score of zero represents the highest level of inequality, five shows middle parity level and 10 represents perfect parity. Parity levels exceeding 10 represent situations in which women have outperformed men, irrespective of the level of development of the area being assessed. Box 4 discusses the extent to which Ghana has promoted women's empowerment and the achievement of gender equality.

Most data used to calculate scoring are drawn from the latest nationally available data sources. However, for a few indicators where the country has no disaggregated data, international data are used.

Box 4: Gender equality and women’s empowerment – Ghana

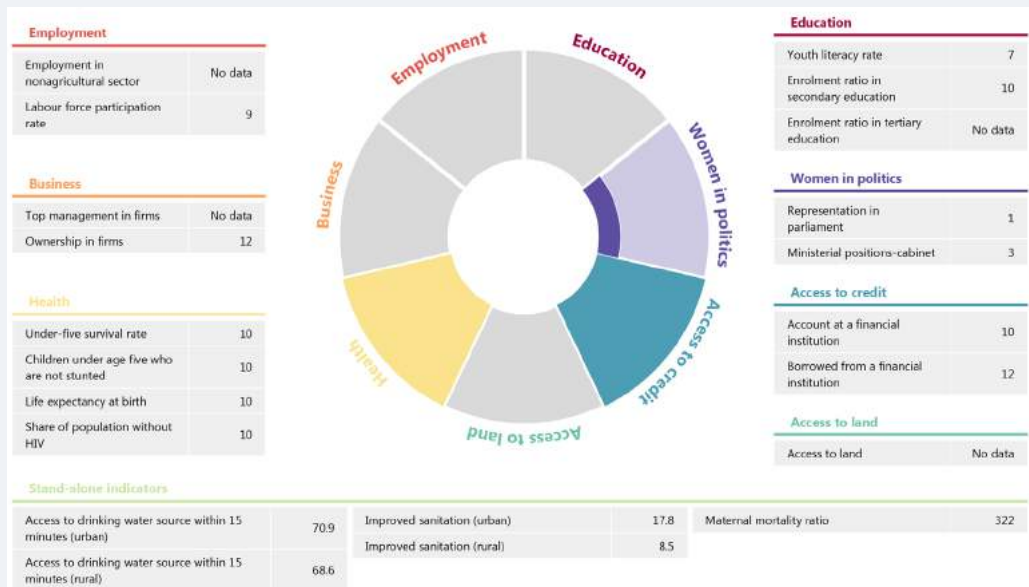
Data for Ghana indicate that there is gender equality in key areas that include: share of population without HIV, access to credit in terms of having an account at and borrowing from financial institutions, child health and secondary school attendance ratio. In terms of women and men who have borrowed from financial institutions, the proportion of women (8.9 per cent) exceeds that of men (7.2 per cent).

The 2014 LSMS and LFS in Ghana indicated that there is a higher percentage of women (50.5 per cent) with ownership in a firm than men (41.9 per cent).

Regarding the issues of survival rate and stunted growth, equality is also observed between female and male children under five years of age.

The labour force participation rate for women is 74.9 compared with 79.9 per cent for men. In the educational sector, the status of gender equality is above middle parity score (7) in relation to the literacy rate of persons aged 15-24 years.

Gender inequality is, however, observed in representation in parliament. Only 10.9 per cent of parliamentary posts are filled by women, and 76.9 per cent of ministerial posts are held by men.



Source : African Union Commission and ECA, 2015.

* The data for the share of the population without HIV relates to persons aged 15-24 years.

Thematic analysis

Major policy challenges: poor energy supply hampers growth in Ghana

5.1 Introduction

In March 2015, the Bank of Ghana announced that the country's GDP growth had slowed from 7.3 per cent in 2013 to 4.2 per cent in 2014, due largely to energy supply constraints and rising input costs. Indeed, since 2013, Ghana has been in the midst of a severe energy crisis, which is paralyzing the economy and causing outrage among the population. Load-shedding power outages began in 2013 and have worsened since December 2014 to 24 hours off, followed by 12 hours on.

The economy continued to decelerate, falling to 4.1 per cent in 2015, owing to the severe energy crisis, unsustainable domestic and external debt burdens, and the aggravation of macroeconomic and financial imbalances. The drivers of growth continue to be the service sectors, which constitute 50.2 per cent of the economy, followed by industry and agriculture at 28.4 per cent and 19.9 per cent, respectively.

In particular, the proper functioning of the industry sector and much of the service sector depends on a reliable energy supply. Serious problems in the availability of quality energy, therefore, have a negative impact on the prospects for economic recovery in Ghana. As a result, this country profile takes a look at the energy sector in Ghana in recent years.

5.2 The energy crisis in Ghana

The energy sector in Ghana has been hard hit by the supply side of the sector, undermining the accessibility, affordability and reliability of the energy supply (Enu and Havi, 2014). The energy mix in Ghana is comparatively simple, but it is not without its challenges. The country relies on biomass/charcoal (39.8 per cent in 2014), gas and crude oil, plus petroleum products (46.6 per cent), and electricity (13.6 per cent) to meet the total energy needs of its population and industry (Energy Commission, 2015). Currently, however, electricity demand outweighs supply, creating an erratic electricity distribution situation. Electricity is rationed through load shedding.

According to the Ghana Grid Company Limited, the electricity consumer base in Ghana exceeds 2 million residential consumers and 1,150 industrial consumers. According to its Energy Commission (2012 and 2014), it appears that the peak power demand of electricity increased from 1,943 megawatts (MW) in 2012 to 2,061 MW in 2014. Given the pace of increase in peak power demand, Ghana requires a generation capacity of between 16,398 and 17,350 gigawatt hours (GWh). This translates into an additional capacity requirement of 4,000 to 4,200 MW to keep up with the growth in demand.

The total electricity demand of Ghana in 2015 was between 14,000 to 16,400 GWh (Energy Commission, 2015), while its available supply is approximately 15,000 GWh. Up until 1998, the electricity supply of Ghana was mainly from hydropower sources from the Akosombo Dam (1,020 MW installed capacity), constructed in 1966. Two new dams have since been added, bringing total installed capacity to approximately 3,200 MW. The power-generation trend seen in Ghana has been influenced by rainfall conditions, mishaps and delays in construction of new plants. The Volta River Authority runs 83 per cent of the generation capacity while the independent power producers share the remaining 17 per cent.

It is a source of frustration for Ghanaians that their country has more than enough installed capacity to meet its demand. Of the approximately 3,200 MW installed capacity, hydropower accounts for 49.9 per cent, while thermal generation from natural gas, light oil, and diesel-

Table 3: Electricity generation (2014 and projections for 2015)

Hydro plant		Thermal plant		Renewable	
Site name	Capacity (MW)	Site name	Capacity (MW)	Site name	Capacity (MW)
Akosombo	1 020	Takoradi Power Company (TAPCO, T1)	330	Volta River Authority's solar	2.5
Bui	400	Takoradi International Company (TICO, T2)	220	Noguchi solar	0.7
Kpong	160	SunonAsogli	200	Other solar	3.8
		Osagyefo Power Barge	125	Juabeng Oil Mill biomass	1.2
		Mines Reserve Plant (MRP)	40		
		Takoradi (T3)	132		
		Tema thermal plant 1	126		
		Tema thermal plant 2	50		
		CENIT Energy Ltd.	126		
		Karpower Barge	225		
		Genser Power	5		
Total hydro	1 580 (49.9%)	Total thermal	1 579 (49.8%)	Total renewable	8.2 (0.3%)
TOTAL			~ 3 200 MW		

Source: Ghana's Energy Commission (2014 and 2015).

run plants together constitute 49.8 per cent, and renewables provide just 0.3 per cent. The peak demand in Ghana fluctuates between 1,900 and 2,200 MW, but recently, at most, only about 1,500 MW (half of its total capacity) has been available, necessitating the chronic load shedding.

According to the country's Energy Commission (2014), annual electricity consumption per capita since 2010 has averaged around 400 kilowatt-hour (kWh) compared with the global minimum average of 500 kWh for lower middle-income developing countries. Even though the country recorded a marginal increase from 399 to 410 kWh per capita between 2013 and 2014, there is still a significant electricity deficit to be cleared.

The supply challenges of the power sector of Ghana are mainly seen in the periodic hydrological shortfalls as a result of the uncertain pattern of rainfall and inflows into the hydropower facilities. Relying on rainfall to supply water to the hydro dams to generate power may not be optimal owing to changing climate patterns. According to the Energy Commission (2014) higher inflows into the hydropower facilities would have improved the overall power generation in 2013, when there was limited gas supply from Nigeria.

The limited water inflows compel the country to rely on thermal power plants fuelled by oil and gas. The inability of these plants to attain full generation capacity as a result of a limited and expensive fuel supply inhibits the reliability of the power supply. The supply of gas in 2014 was, at best, limited to between 30 million and 50 million standard cubic feet per day, as opposed to the contractually agreed volume of 123 million from Nigeria to power the thermal plants. The deficit in gas supply has necessitated the use of crude oil by the Volta River Authority, which has also proved costly in recent times. As a result, the thermal plants are unable to run efficiently and at full capacity, thus decreasing the power supply.

The weak financial position of the Volta River Authority,² the Electricity Company of Ghana and the Ghana Grid Company Limited, coupled with the obsolete infrastructure, have resulted in the huge load pressure partly responsible for blackouts. The Tema Oil Refinery's processing capacity since its establishment in 1963 has largely remained the same, and it is not able to import and process enough crude oil to meet demand.

5.3 Linkages between energy and economic growth

Capital (machinery) in the production function can only be powered by energy, and energy is also necessary for technology to be adopted for production. Activities related to manufacturing and production use electricity to power factories and equipment. Tertiary businesses (including the service sectors and retail) need electricity for lighting, heating, cooling, and operating

² For example, a fault developed in early 2015 at the West African Gas Pipeline Company, which includes the 220 MW Asogli plant, the 110 MW Cenit plant, the 110 MW Tema thermal plant 1 and the 50 MW Tema thermal plant 2. Reports indicated that Nigeria had cut gas supply to Ghana over an indebtedness of \$120 million. The latest development means Ghana lost about 600 MW of power from the national electricity grid.

computers and business equipment. Without power, the infrastructure that forms the basis of development, including agriculture, transportation, technology, communication, and other basic necessities of life that depend on power will collapse. The future of industry, therefore, depends on the availability of an affordable and reliable power supply.

The World Bank (2013) has indicated that electricity is the second most important constraint to business activities in the country and that Ghana lost about 1.8 per cent of GDP during the 2007 power crisis. That seems relevant in the current energy crisis.

Alam (2006) has revealed that the current low electrification rate in Ghana is detrimental to economic growth and development. Therefore, the absence of adequate energy in the production function distorts the sources of growth. Without adequate and reliable energy, growth and development become unattainable.

The Institute of Statistical, Social and Economic Research, in its 2014 study (Charles Ackah, 2015), also indicated that on the average, Ghana was losing production worth about \$2.1 million per day (or \$55.8 million per month) as a result of the power crisis alone and that the country had lost about \$680 million in 2014, translating into about 2 per cent of GDP because of the power crisis. The Institute further indicated that firms lacking sufficient access to electricity had lower output and sales of about 37 to 48 per cent on an annual basis.

During periods of power outages, firms that do not have backup energy supply may shut down, downsize or perhaps change their business line. The Institute of Statistical, Social and Economic Research reported that only 20 per cent of about 350 small and medium-sized enterprises (SMEs) surveyed had access to backup generators, and of the microfirms visited, only 10 per cent had such generators. Between December 2014 and the end of the first quarter of 2015, about 1,000 workers were laid off because of low industrial output as a result of inadequate power (P. Enu and E. Havi, 2014).

Lack of electrical power reduces output, creates shortages and induces overinvestment in installed generating capacity. Given that the potential losses could be significant, many firms and industries tend to insure themselves against outages by purchasing costly standby generators and plants, thereby increasing direct costs of production. The economic cost of unreliable power supply and disruptions becomes very high. As production costs increase, profits plummet, limiting expansion and the ability to create more jobs.

5.4 Towards increasing renewable energy³

In view of global efforts to reduce carbon emission and the devastating effects of climate change, the need to increase the proportion of renewable energy in every country's energy

³ Most of the information in this section was taken from "Business opportunities for renewable energy in Ghana", prepared by the Netherlands Enterprise Agency (2016) of the Embassy of the Netherlands in Ghana.

mix cannot be ignored. In Ghana, charcoal made from wood, acacia plant and compressed sawdust are the preferred source of energy for cooking in rural and low-income urban areas. About 40 per cent of households use wood for cooking and about 33.7 per cent use charcoal (GSS, 2010 and 2013). Renewable energy resources under consideration include bioenergy (biomass, including waste-to-energy and biofuel), tidal and wave power, solar energy (photovoltaic and thermal), wind power and hydropower (small and large).

5.4.1 Bioenergy

Bioenergy includes the conversion of municipal waste into energy, and the use of biofuels (biogas and biodiesel) and biomass. Biomass includes charcoal, wood used as fuel, agricultural waste from plantations or oil processing that is used in the production of energy, and the burning of palm kernel shells for heating and cooking.

Biomass

Everywhere in Ghana, but especially in the middle and the north of the country, charcoal is produced and traded over long distances. Indeed, it has been a reliable source of energy in Ghana for decades. However, available data from the Energy Commission indicate that biomass is slowly losing its dominance of national energy consumption, in line with the Government's plan to reduce its use. In comparison with electricity and petroleum energy sources, biomass consumption has fallen from 54 per cent in 2005 to 43 per cent in 2010 to the current 39.8 per cent, a clear indication that Ghanaians are adopting the use of other sustainable resources, including liquefied petroleum gas and biogas. The use of organic waste material for charcoal production in the large palm oil extraction factories also has great potential.

Waste-to-energy and biogas

The organic composition of waste stream in Ghana makes the production of energy from it viable in most cases. The proportion of organic waste in Accra is more than 60 per cent. That amount of waste makes it viable to use digesters and advanced biomass gasification to produce biogas/syngas, which can in turn be used to power generators to produce electricity. Faecal matter and cow dung can also be used as a feedstock for some applications. The Sani Sana project, partially funded by the Ghana WASH Window, adopts an approach that mixes faecal matter with organic waste. There are also open dumps in Accra and elsewhere where landfill gas could be converted to usable energy forms.

Biofuel

Biofuels have not yet gained popularity as an alternative source of fuel for automobiles and industrial engines compared with conventional diesel. In the past, the Government has promoted biodiesel from the *Jatropha* plant. As a result, many farmers used the biodiesel instead of growing cassava and maize, which negatively affected food security and farmer income, and was subsequently abandoned. Nonetheless, other feedstock, such as water hyacinth, which is abundant on some water bodies like the Volta River, could be alternatives.

5.4.2 Hydropower (small and large)

As many as four provisional licences have been obtained by private companies intending to build small hydropower systems in Ghana, thus indicating that interest is slowly developing in this subsector. According to the Sustainable Energy for All Action Plan, there are about 22 exploitable mini-hydropower sites in Ghana. The potential hydrocapacities at these sites are estimated to be between 5.6 MW to 24.5 MW. Up to now, the Akosombo, Kpong and Bui dams are the only plants that produce electricity for the national grid.

5.4.3 Wind power

Studies by the Energy Commission of Ghana have shown that there is enough potential to generate wind energy. Data available to the Ministry of Energy of Ghana indicate that the annual average amount that wind speed is 8 m/s, although a few excellent spots with excess wind speeds of between 8.4 and 9.9 m/s are available. The best wind resources are primarily found along narrow stretches of the eastern coastline of Ghana and on the hill tops around Lake Volta and the border with Togo. Currently, there are about five companies who have acquired sites to establish wind farms in Ghana. One of them, Upwind Akplabnya Ltd, is working on a 225 MW wind farm at Ningo Prampram in the Greater Accra region, which was due to be completed by end of 2016, with funding from Lekela and Actors. The Volta River Authority also intends to develop 100 - 150 MW of wind power in the southern part of Ghana. NEK, a Swiss company, has partnered with the Accra-based Atlantic International Holding Co. for the development of a 50 MW project.

5.4.4 Solar energy (photovoltaic and thermal)

Solar resources are abundant in Ghana. The monthly average solar irradiation is between 4.4 and 5.6 kWh/m²/day (equivalent to 16-20 MJ/m/day), with sunshine duration of between 1,800 and 3,000 hours per year. However, until recently, little was done to exploit this resource and the solar market is relatively untapped, both for photovoltaic systems and for solar water heaters. For example, the use of solar energy to provide street lighting has recently been approved by the Ghanaian Government, and there are some projects that have taken off on the N6 (Nsawam road in Accra). A 20 MW solar photovoltaic farm has been built at Onyadze in Gomoa East to serve communities there. There are more companies with licences to establish solar farms in Ghana and interest in that regard is increasing slowly. The Volta River Authority has built a small 2 MW solar photovoltaic grid-connected plant as a pilot project in the Upper East Region and it is seeking concessionary funding to develop another 8 MW plant. Four other sites in the north (Kaleo, Lawra, Jirapa and Navrongo) have been identified with a potential 10 MW.

5.4.5 Tidal and wave power

Technologies to harvest energy from ocean waves are new to Ghana. So far only one company, TC's Energy, has expressed interest. The company acquired a construction permit in late 2013 to build its facility in Ada Foah in the Greater Accra Region. According to documents available

to the Energy Commission of Ghana, the 14 MW wave power facility by TC's Energy, using submerged surge technology, was due to be running by early 2016 (Energy Commission, 2015).

5.5 Key challenges for the advancement of the national electricity industry

The power sector faces a host of challenges, including inadequate power supply infrastructure that requires huge investment; inadequate access to electricity; high cost of fuel for electricity generation; an inadequate regulatory capacity; enforcement, operational and management difficulties; and vulnerability to climate change. Future power development faces great challenges due to rising living standards and increasing demand for cleaner energy.

5.5.1 Effective tariff setting to encourage investment

In addition to the lack of a reliable and affordable source of fuel for power generation, other factors inhibit the development of the electricity sector in Ghana. Generation tariffs set by the Public Utility Regulatory Commission have a crippling effect on the electricity sector. According to J. Fritsch and R. Poudineh (2015), the Public Utility Regulatory Commission approved a tariff rate for 2015 of \$0.04 per kWh for electricity produced by the Volta River Authority and \$0.06 per kWh for electricity produced by independent power producers. The electricity generation tariff in Ghana is thus approximately \$0.09 below the average of \$0.14 per kWh in Africa, excluding North Africa. Although Ghana has historically relied on cheap hydroelectric power generation, nearly 50 per cent of power generation is now thermal, for which the marginal cost is significant. So, current electricity tariffs are too low to permit producers to operate in a fiscally sustainable manner, while investment levels in the industry also suffer as a result.

5.5.2 Lack of an effective regulatory framework for investment

Similar to regulation and implementation of electricity tariffs, the framework for private investment in the power sector of Ghana is weak. The Government recently began to design feed-in tariffs to encourage the growth of renewable energy forms, but those laudable efforts will not suffice to develop the generation capacity needed on a national scale.

According to the Ministry of Finance and Economic Planning (2011), the electricity sector does not offer attractive conditions for private investors. There are just two independent power producers, one American and one Chinese, operating thermal power plants in Ghana. The Volta River Authority is a minor stakeholder in both ventures, effectively making independent power producers in Ghana public-private partnerships. Incentives for independent power producers in Ghana are substantial and include tax breaks, government guarantees and preferential treatment. For instance, the Electricity Company of Ghana has to pay independent power producers before paying the Volta River Authority for the electricity they produce.

However, despite that advantageous arrangement, the company had outstanding bills with the two independent power producers amounting to \$15 million in 2012 (World Bank, 2013). Although the debts of the Electricity Company of Ghana with the Volta River Authority are larger, the inability of the Electricity Company of Ghana to pay independent power producers has been compromising its credibility with investors in those producers, who naturally prefer market conditions in which there is a reliable off-taker. The erratic supply of an affordable fuel for thermal electricity generation, as already discussed with regard to the Volta River Authority, acts as another obstacle to attracting private investors.

5.5.3 Missing skills and experience

According to J. Fritsch and R. Poudineh (2015), the electricity sector in Ghana – with the notable exception of the Ghana Grid Company Limited – suffers from severe human-capacity constraints. As in many other countries in Africa, brain drain is a prominent problem for the workforce of Ghana, particularly as high-skilled migration from Ghana to work overseas (Gibson and McKenzie, 2009). As a result, there is a shortage of staff with skills and experience required for technical and managerial roles at all levels of seniority throughout the electricity sector.

In a study sponsored by the Government of the United States of America, lack of professional experience and skills have, to a large extent, been blamed for an erratic and non-transparent tariff collection regime in semi-urban areas (United States Department of State, 2011). From a technical perspective, the World Bank stresses that many power outages in Ghana are not actually caused by a capacity overload but through poor technical maintenance by the Electricity Company of Ghana (World Bank, 2013).

5.5.4 Addressing the issues of renewable energy

The following institutional and economic challenges are applicable to the renewable energy industry in Ghana:

- Although a licence was provided for one tidal and wave power company in 2013, there is still no feed-in tariff specifically for tidal and wave power to electricity
- Decentralized technologies have competitive advantages over grid systems in satellite communities and islands. However, these communities have a poor understanding of the advantages it offers and often request for grid connection
- Although Ghana has recently instituted some energy efficiency policy measures, such as promotion of compact fluorescent lamps and LED lights, the efficiency agenda is currently not well developed in terms of policy, technology, marketing or equipment, neither for institutions, nor for industries and households

- Financing terms and conditions currently available in Ghana make funding renewable energy investments challenging.

5.6 Recommendations

The present analysis has identified that the Ghanaian economy depends heavily on electricity consumption per capita and, therefore, the load shedding observed in recent years due to inadequate electricity supply affects the Ghanaian economy negatively and makes recovery arduous (i.e., lower production levels, high inflation, high rates of unemployment and lower standard of living). Therefore, the following policies should be considered:

1. Citizens should be instructed to use the limited electricity supply wisely.
2. It seems important to train enough Ghanaian engineers in electricity for better management of the sector.
3. The prepaid metering system should be extended to public and private institutions and the remaining households of the country. Doing so will further ensure wise usage of the limited electricity supply, reduce or prevent illegal connections drastically and ensure 100 per cent revenue collection for the power providers.
4. Industries should invest in machinery that uses energy sources other than hydroelectric power in order to encourage research and development of new technologies that do not rely solely on hydroelectric power generation.
5. The Government should invest heavily in electricity infrastructure in order to ensure sufficient energy to meet the needs of the agricultural, manufacturing and services sectors of the Ghanaian economy.
6. There are insufficient data on renewable energy sources available in Ghana. Even with those that are currently available, there are doubts as to their reliability for use in investment decision-making. To overcome that risk, the Government of Ghana should consider providing more site-specific technical data on renewable energy resources. The Government could then make that information available to developers.

6. National data quality evaluation

Methodological note: The quality of national data sources for key indicators in the country profiles was evaluated. The results are presented in colour codes, with green indicating that the data source is “good”; yellow, “satisfactory”; and red, “needs improvement”.

The evaluation focused on the transparency and accessibility of the national data sources, while taking into account the periodicity of the published data based on the timeliness and frequency of the data updates in accordance with international standards. It measured the comparability of the data series based on length, definition and standard units of measurement. Also reviewed were the accessibility of the data to the general public, the format of the data and the ease with which the data can be downloaded and shared. In addition, data citations, together with references to primary or secondary sources, were assessed. Lastly, the completeness of metadata for data release and the clarity of documentation and notes were evaluated.

Demography	Value	Evaluation
Population (millions)	27.6 (2015)	1
Child (0-14 years)	10.4 (2015)	1
Adult (15-64 years)	16.1 (2015)	1
Aged (65+ years)	1.2 (2015)	1
Urban population (%)	50.9 (2010)	1
Growth rate (%)	2.5 (2010)	1
Total fertility rate	3.2 (2010)	1
Life expectancy at birth (years)	61 (2013)	1
Crude death rate (deaths per 1000 population)	6.8 (2010)	1
Crude birth rate (births per 1000 population)	25.3 (2010)	1

Key Macroeconomic and Sectoral Performance	Value	Evaluation
Real GDP growth rate (%)	3.9 (2015)	1
GDP, current prices (Billion USD)	139 (2015)	1
Inflation rate (%)	16.7 (2015)	1
Current account balance (Billion USD)	-2.8 (2015)	2

Economic trends and Performance Indicators	Value	Evaluation
Inward flows of foreign direct investment (Million USD)	2885 (2015)	1
Total Exports (Million USD)	45476.2 (2015)	1
Total Imports (Million USD)	46830.1 (2015)	1

Education and employment	Value	Evaluation
Literacy rate (15-24) (%)	80.5 (2013)	1
Net enrolment rate in Primary (%)	89.3 (2014)	3
Proportion of pupils starting grade 1 who reach last grade of primary	97.5 (2014)	3
Ratios of girls to boys in primary	0.99 (2014)	3
Ratios of girls to boys in secondary	0.95 (2014)	3
Employment to population ratio total (%)	75.6 (2013)	1
Population below national poverty line (%)	24.2 (2014)	1
Unemployment rate (%)	5.2 (2013)	1
Youth unemployment rate (%)	10.9 (2013)	1

Health	Value	Evaluation
Under 5 mortality rate (per 1,000)	60 (2014)	1
Maternal mortality ratio per 100,000 live births	380 (2013)	1
Prevalence of underweight children under-five years of age (%)	11 (2014)	1
Infant mortality rate per (per 1,000 live births)	41 (2014)	1
Proportion of births attended by skilled health personnel	55.3 (2013)	4
Contraceptive prevalence rate	29.5 (2013)	1
HIV prevalence among population aged 15-24 years	1.8 (2014)	4
Incidence and death rates associated with malaria (%)	108.3 (2010)	4

Data Sources Code Index

1. Ghana Statistical Service(GSS)
2. IMF
3. INE, Annuaire statistique 2015
4. UNDP, Millennium Development Goal 2015 and GDSH(2014)

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