



Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 23-May-2018 | Report No: PIDISDSA24767



BASIC INFORMATION

A. Basic Project Data

Country Ghana	Project ID P163984	Project Name Ghana - Energy Sector Transformation Initiative Project	Parent Project ID (if any)
Region AFRICA	Estimated Appraisal Date 18-Apr-2018	Estimated Board Date 21-Jun-2018	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) The Republic of Ghana	Implementing Agency Ministry of Energy	

Proposed Development Objective(s)

The Project development objectives is to: strengthen the capacity of the energy sector to implement sector reforms, and improve energy sector planning and coordination in Ghana

Components

- Component 1: Management of power sector financial sector flows
- Component 2: Sector Planning and coordination
- Component 3: Energy access
- Component 4: Natural gas
- Component 5: Project management

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	20.00
Total Financing	20.00
of which IBRD/IDA	20.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	20.00
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IDA Credit	20.00
Environmental Assessment Category	
C-Not Required	
Decision	
The review did authorize the team to appraise and negotiate	

Other Decision (as needed)

B. Introduction and Context

Country Context

- Over the past decade, Ghana’s economy grew strongly and poverty declined.** The 2015 World Development Indicators show that the national poverty headcount reduced from 39.1 percent in 2005 to 24.2 percent in 2012. Ghana also transitioned into Lower Middle-Income Country status following the start of oil production in 2011 as Gross Domestic Product (GDP) growth rose to 14 percent. However, the recent lower commodity prices on international markets negatively impacted this growth trend. Economic growth slowed from 7.3 percent in 2013 to 3.7 percent in 2016, putting a strain on the overall macroeconomic outlook.
- The strong growth was followed by external and domestic macroeconomic shocks, which fueled inflation and exacerbated fiscal imbalances.** The sharply lower prices for Ghana’s key exports - oil and gold - coupled with energy rationing due to the shortage of electricity generating capacity in 2014 and 2015, weighed heavily on the economy. The industry sector’s contribution to GDP fell from 26.6 to 25.1 percent between 2014 and 2015 accompanied by job losses especially in the mining and quarrying sub-sector, which contracted by 6.1 percent in 2015. In 2016, the mining and quarrying sector contracted a further 10.7 percent, much of which was attributed to production problems in the oil sector.
- Ghana’s medium-term economic prospects are expected to improve with increased oil production.** The GDP growth rate is expected to reach above 8 percent in 2018. The oil and gas sector is the main driver of the medium-term growth with oil production likely to increase by more than 50 percent as the Tweneboa Enyenra Ntomme (TEN) oil field started production in July 2017, followed by expected oil and gas production at the Sankofa field in 2018. The gas output of Sankofa is expected to bolster domestic energy supply and reduce fuel costs in the electricity sector. The recovery of the agriculture sector and stabilization of electricity supply are also expected to support overall growth.
- However, the macroeconomic outlook is subject to both domestic and external risks.** Ghana is likely to face high financing costs in the external market as the US Federal Reserve gradually increases its benchmark interest rate. Also, the country’s heavy reliance on primary commodities, including cocoa, gold and oil, together with the projected weakness and possible volatility in international commodity prices, create significant uncertainty about its growth, export receipts, and domestic revenue. In addition, the substantial legacy debt of the energy SOEs, costly generating capacity and operational losses within the power sector



pose substantial fiscal contingent liability risks and risks to the financial sector over the medium term. Delays in the resolution of the energy sector's legacy debt, drop in oil exports, and continued weak commodity prices and capital flows are risks for Ghana's economic outlook.

Sectoral and Institutional Context

Power Sector

5. **Ghana has connected 84 percent of its population to electricity supply.**¹ This high access rate (2017) is second only to South Africa in sub-Saharan Africa but there is disparity between rural and urban access. Total installed generation capacity is 3,795 MW (42 percent hydro, 57 percent thermal, 1 percent solar), while the peak load was 2,087 MW in 2016. Transmission and distribution losses were 4.4 percent and 25 percent respectively.² The Government's goal is to achieve universal access to electricity and 10 percent of power supplied by non-hydro renewable energy sources by 2020^{3,4}. Ghana is also participating in the United Nations' Sustainable Energy for All (SE4ALL) initiative, which sets the universal access target to be met by 2030.

6. **Ghana has implemented a wide range of power sector reforms and private sector participation is significant.** Ghana was one of the first countries in sub-Saharan Africa to unbundle its power sector and attract private investment through Independent Power Producers (IPPs), though all utilities are state-owned. The Volta River Authority (VRA) manages two of the three hydropower assets, one of two grid connected solar assets, and six dual fuel thermal generators. The transmission system is owned and operated by the state-owned Ghana Grid Company (GRIDCo), which was incorporated in 2006 following the separation of the transmission functions of the VRA from its other activities. The distribution of electricity is carried out by the Electricity Company of Ghana (ECG), with 2.6 million customers in the south and center of the country, accounting for 90 percent of retail power sales, and the Northern Electricity Distribution Company (NEDCo), a subsidiary of VRA, which services the remaining 10 percent of the market. Ghana's high-voltage power grid is interconnected with neighboring countries (Cote d'Ivoire, Togo, Benin and, soon, Burkina Faso) and the country is a member of the West African Power Pool (WAPP). The Ministry of Energy (MoEn) is responsible for energy sector policies. It was created in 2017 by merging the Ministry of Petroleum and the Ministry of Power. The Energy Commission (EC) and the Public Utilities Regulatory Commission (PURC) regulate the industry, as the technical and economic regulators respectively.

7. **High costs and operational inefficiencies have created serious financial difficulties.** The sector's financial difficulties mainly stem from: (a) high cost of fuel used by thermal power plants; (b) gas supply shortages⁵; (c) high payments for installed capacity to EPPs and IPPs; (d) high distribution losses; (e) low revenue collections by ECG; and (f) non-payment by Government entities. Due to these factors, electricity sector revenues from tariff collection do not cover costs and in 2016 the revenue gap was \$794 million. To continue their operations, the sector entities have had to resort to expensive external debt. VRA has relied on

¹ Ministry of Energy, Access Secretariat

² <http://www.energycom.gov.gh/energy-statistics>

³ Energy Commission: Strategic National Energy Plan 2006-2020; renewable energy does not include large scale hydro

⁴ At the end of 2016, non-hydro renewable energy generation accounted for 0.6 percent of total installed capacity.

⁵ The unreliable supply of gas from Nigeria and suspension of gas supply through the West African Gas Pipeline (WAGP) in 2016 due to nonpayment by Ghana, has led to stranded power plants without gas supply.



short-term financing on the domestic market to cover operating costs including fuel for many years. As of March 2017, the sector had accumulated \$2.3 billion of net debt⁶. The cost of servicing this debt has become a financial burden on the sector. In December 2015, electricity tariffs were increased by 47 percent but this did not improve the sector's financial position. Growth in electricity demand in 2016 has been lower than originally forecast, as consumers responded to the higher prices by rationalizing their consumption. This indicates that consumer elasticity of demand for electricity may impact the Government's ability to close the revenue gap through further tariff increases, particularly in the absence of sustained improvement in the quality and reliability of supply.

Oil and gas sector

8. **Ghana has oil and gas resources but their commercial utilization is limited.** Ghana has three commercial oil and gas development projects. Petroleum production from the Jubilee field began in 2010 and is now about 100,000 barrels per day (b/d), having recovered from production curtailments in April-May 2016 because of damage to the Floating Production, Storage and Offloading (FPSO) facilities. The TEN development began production in August 2016 and is expected to reach 65,000 b/d in 2017. Most of the gas from these fields is associated gas (130 MMcfd out of 150 MMcfd) resulting in inconsistent supply of gas. The Sankofa integrated oil and gas development began oil production in July 2017 and non-associated gas production is expected to start in June 2018. Following a September 2017 ruling by the International Tribunal for the Law of the Sea clarifying the boundary line with Cote d'Ivoire, new exploration activities are likely and current concessionaires will submit revised development plans for additional wells for TEN.

9. **The natural gas sector lacks clear institutional and regulatory mandates especially in the midstream⁷.** The National Petroleum Corporation (GNPC) is the state-owned natural gas aggregator. As such, GNPC purchases gas and sells it to consumers in the power sector at a blended price. The Ghana National Gas Company (GNGC) is a subsidiary of GNPC, which owns, maintains, and operates domestic gas transportation infrastructure. The state-owned Bulk Oil Storage and Transportation Company (BOST), historically responsible for oil storage and transportation, has also been given responsibilities to construct and operate the gas transportation infrastructure, causing confusion about the role of the two institutions. As the energy sector's price regulator, PURC is developing a gas pricing policy to guide GNPC in setting gas tariffs.

10. **The West African Gas Pipeline (WAGP), an offshore pipeline built to transport natural gas from Nigeria to Ghana, has been an unreliable source of gas supply.** In June 2016, Nigeria suspended gas supplies due to accumulated payables. After Ghana made some payments in early 2017, gas supply restarted based on pay-as-use basis. Historically, however, severe supply shortages in Nigeria and interruptions in deliveries have compromised Nigeria's contractual ability to supply Ghana with 120 MMcfd of firm gas. The unreliable gas flows have led to about 700MW of idle electricity generation capacity, reliance on more expensive liquid fuels, and further deterioration of the financial viability of the power sector.

11. **Domestic gas transport infrastructure is not aligned with the location of power plants as result of unreliable gas supply from Nigeria and new domestic gas development.** With the commissioning of Sankofa in 2018, gas supply in the west of Ghana is expected to be more than the offtake there, while the power plants in the east will continue to experience gas supply shortages unless adequate gas transmission

⁶ Debt stock is net of intra-sectoral debt stock.

⁷ The gas midstream includes gas processing, storage, transportation, and aggregation including receipt and regasification of liquefied natural gas.



capacity interconnecting the west and the east is set up in time. This gas supply imbalance, if not addressed, would have significant financial consequences in the form of capacity charges for idle power plants in the east (Tema) and a capacity charge from non-utilization of Sankofa gas. Work is ongoing to complete the commercial arrangements with WAPCo and necessary infrastructure upgrades/investments before the gas balance in the west (Takoradi) would require Sankofa gas to be shut in. In addition, 450 MW Karpower barge has reportedly been docked at Takoradi as off-taker for Sankofa Gas.

Government's program to address sector issues

12. **Government has outlined a turnaround program for the sector.** The new Government, in place since January 2017, has outlined a turnaround program with four objectives to address the problems in the sector: (a) restoring the power sector's financial viability, (b) improving sector planning and investment decisions, (c) improving the regulatory framework, and (d) expanding electricity access to remote communities. As part of the turnaround program, the Government committed to implementing the following as Prior Actions under the \$200 million Macroeconomic Stability for Competitiveness and Growth II (P157343) Development Policy Operation (DPO), which is being proposed for Board consideration in December 2017.

- Implementation of a Cash Waterfall Mechanism (CWM) for transparent allocation of power sector revenues among the operating entities.
- Sector coordination function established within Ministry of Energy.

13. **In addition, Government has initiated specific measures to improve sector finances.** The Government intends to prepare a Sector Financial Recovery Plan, which would include the actions listed below. These would be in addition to the policy actions committed under the proposed DPO.

- Rationalizing power purchase agreements to buy electricity from IPPs;
- Negotiating an agreement with WAGP gas pipeline interconnection and the commercial and operational terms for reverse flow;
- Implementing a transitional mechanism to intercept budget transfers to the Ministries being considered by Ministry of Finance;
- Concession process for ECG under the compact with Millennium Challenge Corporation (MCC);
- Transitioning from credit meters to prepaid meters for all consumers, including Ministries and Government offices;
- Restructuring the debt stock through Energy Bond issuance in October 2017;
- Reduction in electricity tariffs in April 2018 to stimulate growth and job creation.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

The Project development objectives is to: strengthen the capacity of the energy sector to implement sector reforms, and improve energy sector planning and coordination in Ghana



Key Results

14. The Project's outcomes will contribute to achieving the Government's sector reform objectives, including: (a) stabilizing sector finances; (b) establishing transparent investment planning and regulatory frameworks; (c) increasing electricity access in remote areas; and (d) increasing the use of gas for power generation to reduce the cost of electricity. Some of these higher-level objectives would be achieved during the Project's implementation and some only after the closing date, depending on the Government's actions and resources. The implementation of the strategies and sector reform platforms to be defined under the Project would be supported by the future DPO series, which is expected to have a strong energy sector focus.

15. The achievement of the Project development objectives will be measured through the following key indicators:

- Power sector revenue allocated to sector entities through the Cash Waterfall Mechanism (% annually, end target is 100%)
- E-billing/e-payment system is communicated to stakeholders and implemented by ECG and NEDCo (Yes/No)
- Sector coordination body has endorsed a least-cost power expansion plan⁸ (Yes/No)
- Strategy for Electrification and clean cooking for remote areas is adopted and communicated to stakeholders (Yes/No)
- Strategy for competitive tendering of gas/LNG volumes for balancing gas supply and demand for power plants is adopted and communicated to stakeholders (Yes/No)

D. Project Description

16. The Project has five components: (a) Management of power sector financial flows; (b) Sector planning and coordination; (c) Electricity access; (d) Renewable energy and gas; and (e) Project management. In addition to advisory and analytical work, the components also include training and capacity building to the staff of the energy sector entities and some software and small equipment for business operations.

17. **Component 1: Management of power sector financial flows.** The activities under this component will assist in addressing the financial viability of the energy sector, by improving revenue management at sector level, improving revenue collection at the utilities' level, and strengthening the utilities' operational and financial management functions. The activities include:

- *Cash Waterfall Mechanism (CWM).* This sub-component will support development of the CWM and its implementation arrangements, and selection of "Trustee" for the Mechanism.
- *Electronic billing and collection of electricity payments from customers.* This sub-component will help design the implementation arrangements for the e-billing/e-payment mechanism for ECG and NEDCo and finance the required software to roll it out.
- *NEDCo's distribution system upgrade.* This sub-component will assist NEDCo to improve its operational

⁸ The establishment of the sector coordination body is a prior action under the proposed DPO. The Project will provide it with knowledge tools and training to facilitate its work.



efficiency:

- Update of NEDCO's Distribution System Master Plan - The existing Master Plan will be updated to address system inadequacies in the distribution system for contingency planning; location of switches, lines, and substations to ensure minimum disturbance to customers during system faults.
- Update of NEDCO's Distribution Specifications and Construction Standards - Current engineering and construction standards are outdated and need to be updated.
- Development of a GIS system in NEDCO's Techiman operational area - The GIS will complete the capture of NEDCO's assets in its five operational areas.

18. *VRA financial management.* The final design of this sub-component will be determined following the planned restructuring of VRA.

19. **Component 2: Sector planning and coordination.** To enhance planning and coordination across the energy sector, this component will assist the Government to design effective institutional arrangements with clear mandates for the regulatory institutions, and to improve the planning capacity of the power and gas sector actors.

- *Electricity sector assessment and support for implementing recommendations.* The component will provide recommendations on optimal set up to enhance the coordinated planning and management capacity of the energy utilities and other relevant agencies, such as the regulators EC and PURC.
- *Gas sector assessment and support for implementing recommendations.* The gas sector assessment and recommendations will address the regulatory framework, institutional set-up, and the commercial arrangements to support coordination and sustainable development of the gas sector through to gas-fired power generation. The activity will explore the policy and operational requirements to take advantage of the hydro and gas assets in Ghana to allow the country to operate its energy system in a flexible and resilient manner.
- *Regional power trading.* As the cooperation deepens among countries in the West African Power Pool, policy and regulatory reforms will be required of all countries in the region to strengthen contractual and operational mechanisms for trading and securing payment. A gap analysis will identify any policies and regulations that are not in line with the evolving regional standards and outline the steps necessary for Ghana's full participation in regional trade.

20. **Component 3: Electricity access.** This component will support the development of a strategy for electrification and introduction of clean cooking in remote areas, to support the Government's commitment for universal electrification by 2030 committed under the SE4ALL initiative including both grid extension and off-grid solutions as appropriate for different regions of the country.

21. **Component 4: Renewable energy and gas.** The fourth component will develop guidance to promote grid-connected renewable energy and gas:

- *Grid resilience and reinforcement study for GRIDCo.* This study will help to (a) identify both the investments that will be needed to expand electricity from renewable energy and assess the impact of integration of



renewable energy in the grid, and (b) review the institutional, regulatory and technical aspects affecting GRIDCO's operations, to enable it to function as a fully interconnected and synchronized regional power system, while insulating Ghana from external disturbances to its system.

- *Gas market review and development studies.* This sub-component includes three activities:
 - Strategy for balancing gas supply and demand - This activity will review the functioning of the gas sector and develop a strategy to aggregate and allocate natural gas flows.
 - Review of WAGP treaties - This study will review the WAGP treaties and operation to identify what is required to further utilize WAGP for the benefit of the region.
 - Capacity building for GNPC - The component will provide technical support to GNPC to reinforce their capacity to price and allocate gas transparently to facilitate the reintegration of natural gas in the power sector.

- Capacity building for GNPC and other gas sector entities, as well as training program aimed at increasing local employment in the oil/gas sector as continuation of the Gas and Oil Capacity Building Project.

22. **Component 5: Project management.** This component will cover support to the PIU to manage the activities described in Components 1 through 4.

E. Implementation

23. The implementation arrangements mirror those successfully used for the ongoing Ghana Electricity Development and Access Project (GEDAP). The MoEn will have the overall responsibility for the Project's implementation.

Institutional and Implementation Arrangements

24. **Steering Committee.** This Committee will oversee implementation and ensure effective coordination and cooperation between the energy sector entities involved in the Project. It will be chaired by a high-level official of the MoEn and consist of the Chief Executives of the energy entities involved in the project: ECG, NEDCo, GRIDCO, GNPC, Energy Commission and PURC. It will meet at least twice a year or more frequently, if required, and report to the Minister of Energy. The members of the Committee will be designated before Board approval.

25. **Technical Committee.** For quality control, the Government will establish a Technical Committee, consisting of senior level technical specialists from sector entities. The Committee will review the outputs of the activities and be responsible for their technical quality and strategic relevance. It will be set up before Project effectiveness with clear responsibilities and reporting arrangements.

26. **Project Implementation Unit.** The PIU will manage the day-to-day operations of the Project under the purview of the MoEn. It will report to the Steering Committee. Its responsibilities include: (a) managing procurement and financial management of project funds; (b) serving as a single-point for tracking of the progress of implementation and monitoring and evaluation of project outcomes; (c) monitoring of costs and financing; and (d) preparing quarterly reports. The PIU will be led by a Project Manager and will eventually be transitioned to be a fully budgeted unit within the Ministry of Energy. The staff includes Procurement and



Financial Management specialists, and Monitoring & Evaluation and consultation specialists.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

This is a technical assistance project which would include many specialized sector diagnostic work, which would not involve any physical activity. All the activities will be conducted from the offices of the Ministry of Energy, and specialized energy related agencies.

G. Environmental and Social Safeguards Specialists on the Team

Gloria Malia Mahama, Social Safeguards Specialist
Anita Bimunka Takura Tingbani, Environmental Safeguards Specialist

SAFEGUARD POLICIES THAT MIGHT APPLY

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	No	
Performance Standards for Private Sector Activities OP/BP 4.03	No	
Natural Habitats OP/BP 4.04	No	
Forests OP/BP 4.36	No	
Pest Management OP 4.09	No	
Physical Cultural Resources OP/BP 4.11	No	
Indigenous Peoples OP/BP 4.10	No	
Involuntary Resettlement OP/BP 4.12	No	
Safety of Dams OP/BP 4.37	No	
Projects on International Waterways OP/BP 7.50	No	
Projects in Disputed Areas OP/BP 7.60	No	



KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The project is an EA category C project. Project activities include studies and capacity building. No physical impacts as in land acquisition, relocation, displacement or irreversible impacts are anticipated.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

The anticipated long term impact will be positive as outcome of the TA if to be implemented by client outside the scope of this project may result in efficient management of the energy sector.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

Not applicable considering the scope of project activities which do not pose significant adverse impacts.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

No safeguards policies have been triggered for this project. Notwithstanding, the PIU for the earlier GEDAP project has an Environmental and Social specialist. This PIU will be maintained for the project and the specialist will focus more on Gender, social inclusion and Citizen's Engagement activities proposed for the project.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

There are no identified PAPs as covered by the scope of the safeguards policies. Project beneficiaries are key government agencies in the energy sector who will benefit from the various studies and capacity building efforts of the project. Notwithstanding, the project intends to discuss findings of the various studies with relevant stakeholders including CSOs, NGOs, the general public through the media etc.

B. Disclosure Requirements

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank for disclosure?

No



Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?

No

All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

No

Have costs related to safeguard policy measures been included in the project cost?

No

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

No

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

No

CONTACT POINT

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APPROVAL

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